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Joint Social and Economic Assessment

for the Republic of Yemen

THE WORLD BANK

UNITED NATIONS

EUROPEAN UNION

ISLAMIC DEVELOPMENT BANK

Joint Social and Economic Assessment for the Republic of Yemen

World Bank
United Nations
European Union
Islamic Development Bank
In collaboration with
The Government of Yemen, represented by the
Minister of Planning and International Cooperation

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Abbreviations and Acronyms

ACAPS	Assessment Capacities Project
AFPPF	Agriculture and Fisheries Production Promotion Fund
AFSED	Association Française des Syndromes d'Ehlers-Danlos
AMPs	Advanced Medical Posts
ANC	Ante Natal Care
AQAP	Al Qaeda of the Arabian Peninsula
AREA	Agriculture Research and Extension Authority
ARI	Acute Respiratory Infection
ART	Antiretroviral Therapy
AWD	Acute Watery Diarrhea
BBC	British Broadcasting Corporation
BCG	Bacillus Calmette-Guérin
BCM	Billion cubic meters
BDP's	Beneficiaries Development
BEC	Basic Education Certificate
BMONC	Basic Emergency Obstetrics Center
CAP	Country Assistance Program
CBOs	Community Based Organizations
CCA	Common Country Assessment
CCGT	Combined Cycle Gas Turbine
CCT	Conditional Cash Transfer
CEDAW	Committee on the Elimination of Discrimination against Women
CFR	Case Fatality Risk
CFSS	Comprehensive Food Security Survey
CfW	Cash-for-Work
CoC	Chamber of Commerce
CPI	Consumer Price Index
CRC	Convention of the Rights of the Child
CSO	Central Statistical Organization
CSP	Concentrated Solar Power
CSR	Country Sector Report
CTA	Chief Technical Advisor
DCGE	Dynamic Computable General Equilibrium
DF	Disability Fund
DFID	Department for International Development
DHMT	District Health Management Team
DHO	District Health Office
DHS	District Health System
DOTS	Directly Observed Therapy for the Treatment of Tuberculosis
DPPR	Development Plan for Poverty Reduction
DPs	Development Partners
DPT3	Diphtheria, Pertussis, Tetanus3
DRA	Demand-Responsive Approach
EC	European Commission
EEZ	Exclusive Economic Zone
EFA	Education for All
EIA	Environmental Impact Assessment
EMONC	Emergency Obstetric Care
ERS	Emergency and Rescue Services
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FAO	Food and Agriculture Organization
FCs	Father Councils
FCS	Fragile and Conflict Situations
FGM	Female Genital Mutilation
FMCs	Father and Mother Councils
FMG/C	Female Genital Mutilation Cutting
FTI	Fast Track Initiative
GAFSP	Global Agriculture and Food Security Program
GAM	Global Acute Malnutrition

GARWSP	General Authority for Rural Water Supply Projects
GASSP	General Authority for Social Security and Pensions
GBV	Gender Based Violence
GCC	Gulf Cooperation Council
GCSI	General Corporation for Social Insurance
GDP	Gross Domestic Products
GHO	Governorate Health Office
GIZ	Die Deutsche Gesellschaft für Internationale Zusammenarbeit
GoY	Government of Yemen
GPOBA	Global Partnership on Output-Based Aid
GSCP	Groundwater and Soil Conservation Project
Gwh	Gigawatt Hour
HBS	Household Budget Survey
HFC	Health Facility Committee
HFO	Health Facility Office
HH	Households
HIS	Health Information Systems
HIV-AIDS	Human Immunodeficiency Virus-Acquired Immune Deficiency Syndrome
HMIS	Health Management Information System
HRC	Human Rights Council
HSR	Health Sector Reform
IDA	International Development Association
IDPs	Internally Displaced Persons
IFAD	International Fund for Agricultural Development
IFC	International Finance Cooperation
IFPRI	International Food Policy Research Institute
IIP	Irrigation Improvement Project
ILO	International Labour Organization
IMCI	Integrated Management of Child Illness
IMF	International Monetary Fund
IMR	Infant Mortality Rate
IsDB	Islamic Development Bank
IWRM	Integrated Water Resource Management
IYCF	Infant/Young-Child Feeding
JAR	Joint Annual Review
JICA	Japanese International Cooperation Agency
JSEA	Joint Social Economic Assessment
KfW	Kreditanstalt für Wiederbau
Kv	Kilovolt
Kwh	Kilo Watt/hour
LAEO	Literacy and Adult Education Organization
LCs	Local Corporations
LDCs	Local District Councils
LIPW	Labor-intensive public works
LIW	Labor Intensive Works
LNG	Liquefied Natural Gas
M&E	Monitoring and Evaluation
M&I	Municipal and Industrial
MAI	Ministry of Water and Irrigation
MAM	Moderate Acute Malnutrition
MCS	Monitoring Control and Surveillance
MCs	Mother Councils
MDG	Millennium Development Goal
MDTFs	Multi Donor Trust Fund
MENA	Middle East and North Africa
MF	Micro Finance
MFIs	Micro Finance Institutions
MFW	Ministry of Fish Wealth
MICS	Multiple Indicator Cluster Survey
MIS	Management Information System
MNSPR	Middle East and North Africa Social and Poverty Reduction
MNSPS	Middle East and North Africa Public Sector
MOAI	Ministry of Agriculture and Irrigation
MOE	Ministry of Economy
MOEd	Ministry of Education
MOEE	Ministry of Electricity and Energy
MOF	Minister of Finance
MOHESR	Ministry of Higher Education and Scientific Research

MOHP	Ministry of Public Health and Population
MOLA	Ministry of Local Administration
MOPHP	Ministry of Public Health and Population
MOPIC	Ministry of Planning and International Cooperation
MOPWH	Ministry of Public Works and Highways
MOSAL	Ministry of Social Affairs and Labor
MOWE	Ministry of Water and Environment (see MWE)
MSF	Médicine Sans Frontières
MSME	Micro Small and Medium Enterprises
MTVET	Ministry of Technical and Vocational Education and Training
MW	Mega Watt
MWE	Ministry of Water Environment (see MOWE)
NASS	National Agriculture Sector Strategy
NBEDS	National Basic Education Development Strategy
NCYS	National Children and Youth Strategy
NFSS	National Food Security Strategy
NGO	Non Governmental Organizations
NGSES	National General Secondary Education Strategy
NIDs	National Immunization Days
NIP	National Irrigation Program
NSDHEY	National Strategy for the Development of Higher Education in Yemen
NSDVTE	National Strategy for the Development of Vocational and Technical Education
NWRA	National Water Resources Authority
NWSSIP	National Water Sector Strategy and Investment Program
OBA	Output-based Aid
OBGNY	Obstetric Gynecologist
OCHA	Office for the Coordination of Humanitarian Affairs
OPV	Oral Polio Vaccine
OTPs	Outpatient Therapeutic Programs
PAR	Portfolios at Risk
PAWS	Program Aid to the Water Sector
PEC	Public Electricity Corporation
PES	Payment for Environmental Services
PHC	Primary Health Care
PHCs	Public Health Centers
PMU	Project Monitoring Unit
PPCR	Pilot Project for Climate Resilience
PPP	Public Private Partnership
PRSP	Poverty Reduction Strategy Paper
PSE	Private Preschool Education
PTSD	Post-Traumatic Stress Disorder
PWP	Public Works Project
QIP	Quick Import Project
RALP	Rainfed-Agriculture and Livestock Development Project
RDA	Regional Development Authorities
RH	Reproductive Health
RWSSP	Rural Water Supply and Sanitation Project
SABER	Systems Approach for Better Education Results
SAF	Sisters Arab Forums
SAM	Severe Acute Malnutrition
SAWAS	Sources of Water for Sana'a
SBWMP	Sana'a Basin Project
SCEP	Supreme Council for Education Planning
SCMC	Supreme Council for Motherhood and Childhood
SDF	Skill Development Fund
SFD	Social Fund for Development
SGBV	Sex and Gender Based Violence
SMART	Standardized Monitoring and Relief Transition
SMEPs	Small and Medium Enterprises Promotion Agency
SMEs	Small and Medium Sizes Enterprises
SPM	Social Protection Monitoring
STATA	Data Analysis Statistical Software
SWAP	Sector-Wide-approach
SWF	Social Welfare Fund

TB	Tuberculosis
TFC	Therapeutic Feeding Center
TFP	Total Factor Productivity
TFR	Total Fertility Rate
TIMSS	Trends in Mathematics and Science
TIPS	Trade and Industrial Policy Strategies
TVET	Technical and Vocational Education and Training
UK	United Kingdom
UN	United Nations
UN DESA	United Nations Department of Economic and Social Affairs
UN Women	United Nations Women
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNFPA	United Nations Populations Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nation Children Fund
UWSSP	Urban Water Supply and Sanitation Project
VAW	Violence Against Women
WACC	Weighted Average Cost of Capital
WASH	Water, Sanitation and Hygiene
WDR	World Development Report
WEC	Water and Environment Center
WFFC	World Fit for Children
WFP	World Food Programme
WHO	World Health Organization
WSSP	Water Sector Support Program
WTO	World Trade Organization
WUAs	Water User Associations
YFHS	Yemen Family Health Survey
YR	Yemen Riyal

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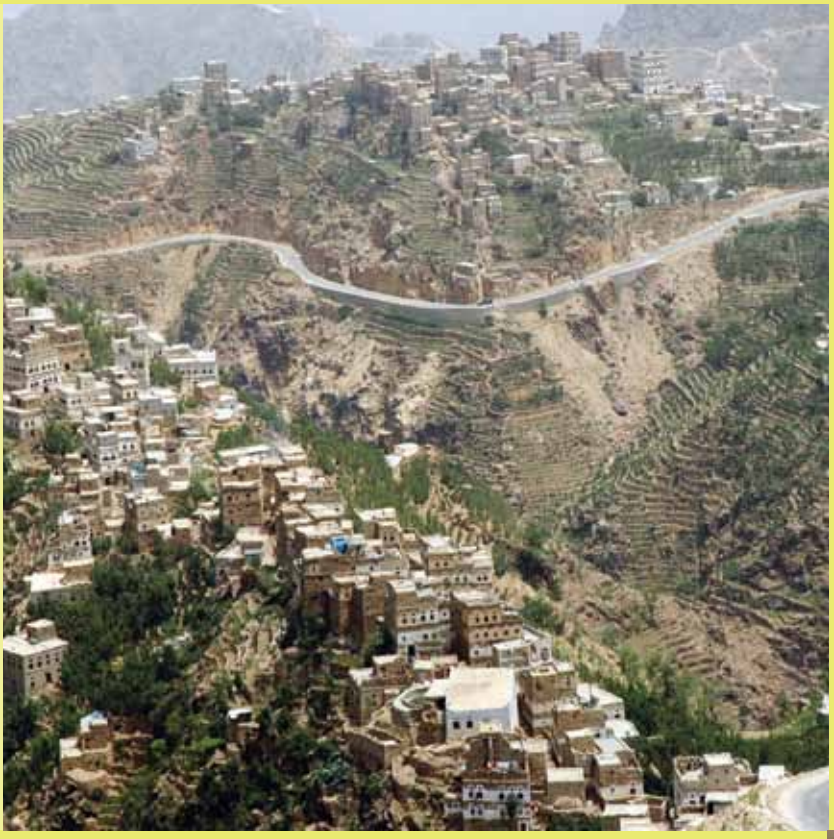

Preface: UN Department of Political Affairs

It gives me great pleasure to present this publication and collective effort by the World Bank, United Nations, the European Commission, and the Islamic Development Bank to support Yemen to overcome daunting development challenges.

Yemen is emerging from a year of significant unrest and turmoil. The wave of popular uprisings that swept across the region in 2011 erupted in clashes in Yemen, contributing to a protracted political stalemate and compounding the already longstanding challenges faced. Yemen's history is characterized by a high degree of fragility as a result of longstanding disputes, grievances, and lack of development. Several conflicts have been running concurrently, including a Houthi insurgency in the North, a separatist movement in the South, as well as a serious threat posed by groups associated with Al Qaeda.

With a view to fostering a peaceful resolution of the situation in Yemen, UN Secretary-General Ban Ki-moon engaged his good offices in 2011. With a small team, I have visited Yemen regularly since March 2011 in the exercise of the Secretary-General's good offices, holding regular in-depth consultations with all sides in Yemen with a view to moving the political process forward. In October, the Security Council spoke with one voice in adopting Security Council resolution 2014 (2011) which called for a political settlement in order to achieve a peaceful political transition of power. In November, the government and opposition requested that I facilitate face-to-face negotiations. This mediation effort resulted in a Yemeni-led process of mediation and the signing of the Transition Agreement (The Gulf Cooperation Council Initiative and Implementation Mechanism) in Riyadh on November 23, 2011 through which a peaceful transfer of power from the President to the Vice-President was secured as part of a two-year transition period.

I am pleased to note that Yemenis have taken important steps to move the transition forward. A Government of National Unity was sworn-in in December 2011, and on February 25, 2012, Vice-President Hadi was sworn in as the new President of Yemen by an overwhelming majority. The elections marked the successful completion of the first phase of Yemen's transition.

The ***Joint Social Economic Assessment*** comes at a serious juncture in the transition and serves as an important initiative from the international community in support of the Government's path toward stability and development. It underscores both the challenges and also the opportunity to help address the political, security, and economic challenges. By grounding the assessment in a detailed analysis and careful projections, the assessment is able to identify critical priority areas for support and offers a framework for more coherent international assistance. The JSEA, thus, provides an invaluable platform for the Government and its partners to address the grave challenges and lead the country toward greater stability, security, and development.

Jamal Benomar Special Adviser
to the Secretary-General on Yemen

Background of the Joint Social and Economic Assessment

The Origin of and Approach to the Joint Social Economic Assessment

This assessment of Yemen's social and economic situation was conducted in response to a request received by the World Bank from the Ministry of Planning and International Cooperation (MoPIC) on December 20, 2011. The request asked for the performance of a social and economic assessment of the situation in Yemen after the signing of the Transition Agreement of November 23, 2011, and the forming of a Government of National Unity on December 7, 2011. The World Bank informed its partners—the United Nations, and the European Union, and the Islamic Development Bank—consistent with the Joint UN/EC/WB Joint Declaration on Post Conflict Needs Assessments.[1] A joint team met in Yemen, Sana'a, with the Yemeni authorities from February 2–16, 2012 to discuss the approach and the division of the work. All participants agreed on general terms of references which gave the Bank the responsibility for the overall coordination and the topics "Context Review," "Socio-Economic Development," and "Services and Institutional Infrastructure." The UN covered the topic "Human & Institutional Capacity," and the EU the topic "Livelihoods."

The teams of all three institutions were present in Sana'a, Yemen from early March to late April, 2012, at various intervals and in various compositions. The teams or sub-teams exchanged views and progress reports with the authorities from a range of Ministries (see also the Acknowledgements), stakeholders, and representatives from civil society organizations. The team members are grateful for the open and frank exchange on the impact of the 2011 crisis, interpretations of its meanings, the explanation of current policies and plans, foremost the Transition Plan, and last, but not least, for the support received from the Yemen Government, stakeholders, and representatives from civil society organizations when conducting this assessment. The teams operated within a fluid security situation and were generally subjected to the still fragile overall security situation, which prevented visits outside of Sana'a.

While there is no agreed methodological approach toward such a joint assessment, the joint team adopted a pragmatic approach. Generally, the team was guided by the need to establish a quantitative and/or qualitative baseline of the situation in Yemen prior to the crisis of 2011 to be able to measure the impact of 2011 political crisis. The Joint Social and Economic Assessment (JSEA) was meant to take stock of the current situation in terms of economic activity and outlook; state of essential services delivery; institutional and service infrastructure; livelihoods, with a focus on vulnerable groups including youth; grievance mechanisms; and justice and issues of equity. The JSEA was also guided by the opportunity—going forward—to build a more nuanced, strategic, and coherent approach for deploying external and domestic resources more effectively, in furtherance of stability, social cohesion, and transition.

Furthermore, the JSEA drew on data and information gained from reports produced by the Government, civil society, and multilateral institutions and bilateral development partners, as well as information gathered through direct consultations in Yemen with both

[1] See also the web-page of the World Bank (http://web.worldbank.org) and search for "UN/EC/WB Joint Declaration on Post Conflict Needs Assessments".

Government and non-Government stakeholders. Field visits, as mentioned above, could not be undertaken. However, to the extent feasible, concerted efforts were made to interact with Yemeni citizens from geographically diverse origins, especially with regard to the topics covered by the Livelihood themes.

The overall guidance and strategic oversight of the JSEA was ensured through a joint steering committee comprising MOPIC, the UN Resident Coordinator, the World Bank Country Manager, and the Head of the EU Delegation as well as the representative of the Islamic Development Bank. The Steering Committee met twice during this process. The teams also interacted intensively with the Government team elaborating the Economic Transition Plan.

Given the JSEA's prime purpose to take stock and inform the transition process, through the first half of 2014, the focus of the JSEA is selective by nature. Although a longer time horizon is ever present in terms of planning, in terms of prioritization or recommendations, the shorter horizon is at the forefront. The selectivity is further underlined by the very short time frame under which the joint JSEA team had to operate—essentially two months closely following the signing of the Transition Agreement—and the limited accessibility of many locations in Yemen. However, the team relied on many sources and was granted broad assistance from within the Government from its own institutional networks, and the wider donor and non-governmental institutions community, which helped mitigate these limitations.

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This Joint Social Economic Assessment (JSEA) was prepared by a team from the World Bank, the United Nations, the European Commission, and the Islamic Development Bank. The team of the United Nations was led by Blerta Aliko, UNICEF; the leader for the European Commission team was Sarah Gray, and the Islamic Development Bank was represented by Mr. Ahmed M. Elsadig (Country Manager). The World Bank team was led by Wilfried Engelke (MNSED). The overall lead role was with the World Bank, Wilfried Engelke. However many more helped and contributed to this assessment.

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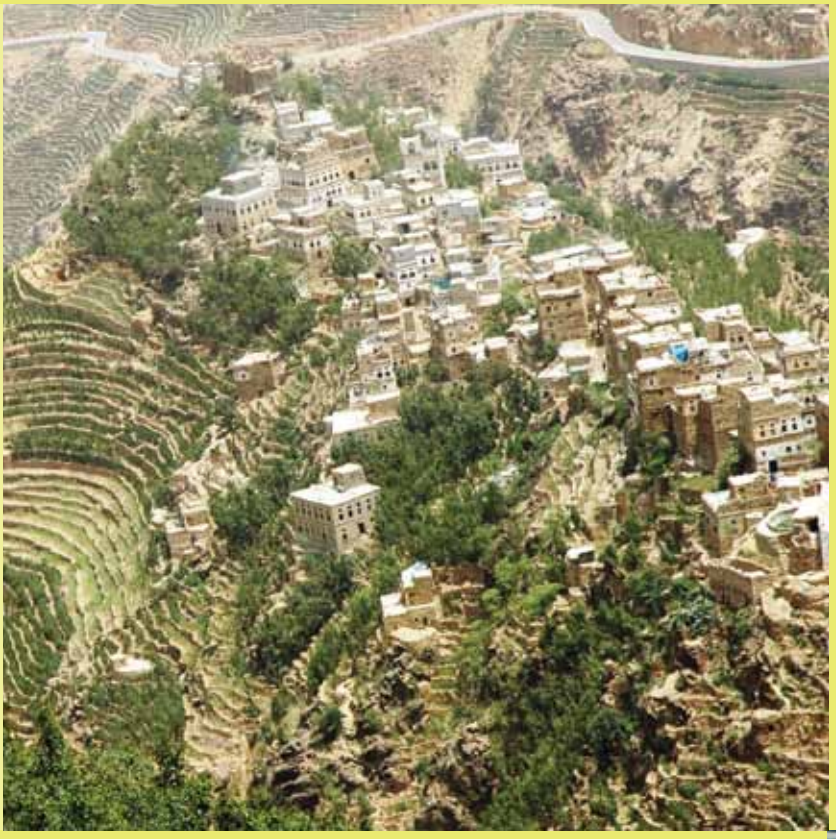

Executive Summary

Introduction

In the wake of the Arab Awakening movement in Yemen, after almost a year of security, political, and economic crisis the country has embarked on a political transition, including preparations for an inclusive, participatory, and transparent national dialogue process, based on the Gulf Cooperation Council (GCC) Initiative and the Agreement on the Implementation Mechanism for the transition process in Yemen, in accordance with the initiative of the GCC (called the "Transition Agreement") signed in Riyadh on November23, 2011. A Government of National Unity was formed and confirmed by the Parliament in early December 2011. Presidential elections were held on February 21, 2012 and President Abd Rabbuh Mansur Al-Hadi was sworn in soon after. The second phase of the transition period is anticipated to continue over a two-year period, during which time: all parties and stakeholders are expected to participate in a National Dialogue; a new constitution will be drafted; and the army and security establishments are to undergo a reform. The transition will end with the holding of general elections—to be held under the new constitution—and the inauguration of a new President of the Republic of Yemen.

While the implementation of the Transition Agreement is largely on track, the gains achieved so far are fragile and significant challenges remain ahead.

This Joint Social and Economic Assessment (JSEA) has been prepared in response to a request from the Ministry of Planning and International Cooperation (MoPIC), and was undertaken jointly by the World Bank, the United Nations, the European Union, and the Islamic Development Bank. The JSEA's main purpose is to assess the social and economic impact of the crisis in Yemen, and to identify challenges and key priorities for early interventions, primarily for the transition period, which is expected to stretch into the first half of 2014.

Yemen's Socio Economic Situation Prior to the 2011 Crisis

Yemen is one of the poorest countries in the Arab region with a per capita GDP of US$1,160, and faces a wide range of developmental challenges. The Human Development Index (UNDP, 2011) ranks the country 154th out of 184 countries assessed. The country has one of the highest population growth rates globally, at three percent. This increases the demand for educational and health services, drinking water, and employment opportunities. Yemen faces a severe water shortage, with available ground water being depleted at an alarming rate. Its oil production and reserves are declining, with severe fiscal consequences. The Yemeni economy is caught in a jobless slow growth cycle leading to stagnant per capita incomes and rising levels of unemployment, particularly among the youth. Social development indicators, such as child malnutrition, maternal mortality, and educational attainment remain discouraging. The population living below the national poverty line was 35 percent in 2005/2006, with poverty more widespread and persistent in rural areas; since then the rate is estimated to have increased to 42.4 percent in 2009 (MOPIC, 2011). There are large gender disparities, with significant gaps in women's access to economic, social and political opportunities. As indicated by its first and second MDG Reports, Yemen was not

expected to meet any of the MDGs. The weaknesses in governance exacerbated the development challenges.

The mass protests and armed conflict that marked the country in 2011 represented the culmination of simultaneous political, social, and economic crises situated within an overall difficult regional environment. Reaction to these crises from different groups of actors, including the politically aligned and non-aligned opposition in both the north and the south, prompted diverse alliances with different interests and divergent political aims. Militants from Al-Qaeda in the Arabian Peninsula (AQAP) and armed tribesmen took control of broad areas in the south. The mass unrest and revolts against the Government during this period emerged from, and were catalyzed by, conditions of acute societal fragility stemming from sectarian, tribal, and regional divisions which have been building up over the past few decades and were exacerbated by deepening poverty, lack of gainful employment opportunities (particularly for the youth), and by loss of faith in a State that was increasingly seen as not being capable meeting the pressing social and economic needs.

The Impact of the 2011 Crisis

The 2011 mass protests in Yemen demanded better governance, voice, and economic opportunities, and culminated in a simultaneous political, social, and economic crisis exacerbating an overall difficult country environment. Although the causes underlying the Arab Awakening are complex and multi-faceted, economic and governance factors are particularly salient. While the protests were initially led by students and young Yemenis giving voice to their grievances and demands for a better Yemen, they turned quickly into a mass movement including many parts of a complex Yemeni society. The immediate impact has stressed the fragile stability of the country and caused a still unfolding humanitarian emergency.

The deepened conflict situation caused significant disruptions in the supply and production chains, causing economic activity to contract by almost 11 percent, leading to higher unemployment. The reduction in fuel availability, particularly diesel, further aggravated shortages in electricity and water supplies. The repeated sabotaging of the pipelines in the Mareb and Ras Issa areas and continued road insecurity led to a sharp decrease in crude oil production by about 25 percent in 2011. The agricultural, service, and industrial sectors faced significant cost increases for inputs such as irrigation, transportation, and marketing, which ultimately reduced production and exports. Production processes were disrupted, leading to the closing of businesses and dismissal of workers. The fiscal deficit increased to around US$1.4 billion, while foreign exchange earnings from tourism, development aid, and foreign direct investment all declined.

Poverty, already rising at the time the crisis broke out, is estimated to have further increased from 42 percent of the population in 2009 to 54.5 percent at the end of 2011.[2] This has been accompanied by an increase in the number of female-headed households. According to the U.N. World Food Program (WFP), approximately 45 percent of the population (10 million people) was food insecure in March 2012, a significant increase from the nearly 32 percent of food insecurity in 2009.[3] Nearly one million children under age five are acutely malnourished. According to the UNHCR, an estimated 806,600 people are now considered most vulnerable due to current and previous conflicts, including children who have been directly involved in or affected by the infighting and violence, as well as 213,000 vulnerable returnees and war-affected persons in the north, 203,900 refugees and asylum seekers,[4] and approximately 150,000 displaced people in the South.[5] At the same time, social

[2] Some of the increase in poverty might well be due to structural causes which were possibly aggravated by the crisis.

[3] U.N. World Food Program (WFP) released preliminary findings of the recently completed Yemen Comprehensive Food Security Survey (CFSS) on March 14, 2012.

[4] "2011 UNHCR Country Operations Profile–Yemen." UNHCR Global Appeal 2011 Update.

[5] Escalated fighting in Abyan Governorate, southern Yemen, displaced approximately 1,800 people in March 2012, according to the U.N. Office for the Coordination of Humanitarian Affairs (OCHA).

service delivery has been dramatically affected across Yemen, including health, education services, and the functioning of social safety nets, leaving the vulnerability of a large part of the population non-addressed, and contributing to loss of livelihoods. The dramatic and immediate negative impact of the 2011 crisis on individuals' health and wellbeing can be directly traced to Yemen's chronic under-development, particularly of basic social services.

The impact of the 2011 crisis manifested itself in multiple ways across different sectors. The events of 2011 led to a cut in power supplies by half, and further weakened a financially weak energy sector. Transmission lines were damaged many times and the lack of fuel in 2011 seriously disrupted the operations of most power plants. Long-term power outages across broad swaths of the country interrupted health service provision, including the vaccination cold chain. The conflict caused significant delays in the implementation of on-going and planned power generation, transmission and distribution projects, which will further worsen the already acute power supply situation in coming years. Similarly in the water sector, public programs and services suffered widespread disruptions, with an immediate impact on the availability of water supply, sanitation, irrigation, or extension services for agriculture. In addition, health and education, schools, and health centers were temporarily closed and sector infrastructure was damaged, severely impacting basic social service delivery. In addition, urban centers, primarily Sana'a and Ta'iz, endured direct damage to public property and suffered significant losses due to foregone municipal revenues.

The Agenda Ahead

Reigniting economic growth, generating employment, providing tangible improvements in livelihoods, improving equitable access to social services, building effective public infrastructure, and considerably strengthening institutional capacity at the local and central level are thus essential prerequisites for a successful transition in Yemen. The current state of peace in the country remains, however, tentative and the opportunity towards a transition must be viewed against longstanding challenges that Yemen continues to face on the security, political, and economic fronts. Looking forward, the key policy agenda identified by the JSEA is as follows:

Economic Growth

Restoring and accelerating economic growth in Yemen will be critical in the short term, and is a prerequisite for human development in the long term. Yemen needs to overcome its sluggish growth record of four percent during the last decade to meet the demand for gainful employment that played a major role in the uprisings, especially among the youth, but also to address exclusion, inequalities, and high levels of poverty. Creating employment and income opportunities for underemployed Yemenis, including more than 45 percent of the young adult population, will be key during the transition and its aftermath. Reforms will have to focus on measures that open up economic opportunities, promote competitiveness, and facilitate productive investment. Gradually ending the policy of untargeted energy subsidies will eliminate pervasive economic distortion that are obstacles for growth, and will free public resources for productive public investment. While accelerated growth takes time to set in and produce results, the required reforms should be easier to carry out if they are backed by substantial resources and support in the short term.

Beyond peace and security, a sustainable growth strategy requires accelerating private sector development. Improving the business and investment climate through a review of the regulatory framework and other means, particularly with regard to services, would be critical entry points. The anticipated entry of Yemen into the WTO would be a good step in this direction. The process has helped to improve transborder transactions and alignment with WTO established norms. Determined policy reforms are also needed to make Yemen's private sector more competitive

and less dependent on the state and its resources. Last but not least, offering the many small- and medium-sized informal enterprises better operating conditions and access to finance would improve the livelihood of many Yemenis. Efforts in this regard will not be effective if the conflict situation in Yemen cannot be addressed.

The Government should carefully gauge the possibility for public private partnerships in larger public infrastructure investments. Yemen's public resources will remain limited for the foreseeable future, and the capacity of the Government's services will take time to improve. Both constraints are arguments to make best use of public sector financing ability and technical capacity where appropriate and feasible. The possible form and range of mutual engagement should be creatively explored.

Reforms to improve the public financial management system are critical to support growth and for absorbing the available resources more effectively. Enforcement of tax laws, substantial strengthening of the revenue and custom authorities, transparent budget execution free of discretionary interventions, and instituting effective internal control mechanisms are key areas of focus. Procurement mechanisms have improved but need further attention as corruption remains pervasive. Although achieving results in this policy area takes time, aiming for results today sends the right signal.

Improving governance and implementing effective transparency and accountability mechanisms (e.g., the recently adopted access to information legislation) is also critical. Governance and public sector weaknesses are a key constraint for Yemen to realize its development and growth goals, as underlined by the 2011 protests. A significant overhaul of the governance system is needed to enable the Yemen civil service to effectively perform core functions and deliver services. In addition efforts need to be undertaken to generate greater diversity in governance structures. This includes targeted policies and measures to increase the number of women in decision-making and governance positions. This requires the Government to strengthen key public sector institutions, policies, procedures, and capacity at the district, governorate, and central level. The best plan would be to begin at the local level with practical steps toward improving service delivery, and ensure more participation and voice of concerned Yemeni citizens in local governance. Options for strengthening decentralization based on the Local Authority Law of 2000 to improve governance and service delivery could usefully be discussed within the upcoming national dialogue.

Livelihoods

Creating employment and sustainable livelihoods is critical to address acute grievances and to avert a humanitarian emergency. Key issues to address in this regard include improving food security, addressing vulnerable groups, as well as urgent actions for a rapid and equitable increase in jobs. Reducing the dependence on the agricultural sector for low productivity employment and income in favor of creating more productive opportunities, including in the industrial and services sector, would be imperative in this regard.

Yemen is experiencing a very high level of food insecurity, with increasing food prices. The agricultural sector is producing a fraction of the country's needs and would not be able to produce enough to reduce the country's dependence on food imports. The food import regime in Yemen should be reviewed with regard to its competition and efficiency (given the high retail margin compared to other countries) and corrective measures taken to improve access to food. Ultimately food security will be mainly advanced through an increase in jobs and an improved social safety net.

Investing in women's employment and capacities is a fundamental cross-cutting issue for transitional development in Yemen, and is crucial to address issues of food security and nutrition. Promoting education and building skills among rural women are key to improving agricultural and non-farm productivity, hygiene practices, and food security including nutrition,

particularly at a subsistence household level. Women's employment rates remain low in Yemen, while global data shows that increases in the labor participation of women in conflict-affected areas are associated with increases in overall household and community welfare, measured in terms of higher per capita consumption.[6]

The Social Fund for Development (SFD) and Public Works Programs (PWP), along with the Social Welfare Fund (SWF) are effective tools in the short term to deliver basic services and create jobs and income, and are key pillars of the social safety net for the medium and long term. These institutions assist the livelihoods of the most vulnerable throughout Yemen, in particular female-headed households, and should be supported and scaled up further. While the the institutional capacity of SFD, PWP, and SWF should be strengthened (in support of effective cash transfer schemes, improved targeting mechanisms and better monitoring and evaluation systems) the these institutions are considered good instruments, which could absorb increased levels of donor funding (although the issue of future sustainability should not be ignored).

In recent decades Qat production and consumption has become an important element of livelihood and social life, while the negative impact of Qat remains to be addressed. In 2009, there were over 600,000 small-scale Qat farmers in Yemen, which accounted for more than half of all small-scale farmers. Most of the Qat, however, is produced on large scale farms using irrigation. In total Qat provides employment to one in seven working Yemenis. Qat production, however, taxes scarce water, using around 40 percent of available resources, and benefits from the energy subsidy, whenever irrigation is involved. Qat consumption has social and health implications. By diverting resources away from food production, the steady rise of Qat production adversely affects also food security, both at the national and the household level. Although the production and consumption of Qat is a fact of life in Yemen, the negative social, health, and economic externalities, and especially the indirect subsidization, should be addressed at the national level. The international experience in dealing with tobacco consumption offers lessons which could inspire the dialogue on Qat in Yemen.

Expanding Social Service Delivery

Access to social services—already poor prior to the crisis—has further deteriorated, leading to widespread and acute vulnerabilities. This could have a significant impact on social cohesion and livelihoods. While the social challenges are vast, the Government's capacity to deliver and meet social aspirations is low. Low capacity, moreover, is met by low governance standards. The transition period must yield a roadmap for how the resources and the human capacity available in the country could be better aligned, on the national, regional, and local level in order to deliver better services to the Yemeni population.

Poverty and the cycle of conflicts exposed children in Yemen to heightened risks and vulnerabilities throughout the crisis. Prior to 2011, one third of Yemen's 12 million children were considered vulnerable.[7] The crisis Yemen went through during 2011 has made the situation of the most vulnerable children even more precarious, exposing them to various forms of violence, abuse, and exploitation, including child labor, child marriage, child trafficking, irregular cross border movements, and smuggling.[8] As the root causes are directly linked to poverty, measures alleviating poverty are of prime importance. Consideration should also be given to strengthening the legal norms in favor of protecting children's well being.

During 2011, the number of refugees that entered Yemen reached the highest level ever recorded, while at the same time, the total number of IDPs increased

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[6] Women reinvest 90 percent of their income in their families and communities, compared to men who reinvest only 30 percent to 40 percent of their income. Phil Borges. 2007. Women Empowered: Inspiring Change in the Emerging World. New York

[7] Yemen Social Protection Strategy, 2008, page 45.

[8] Secondary data review for Yemen. OCHA, page 35, September 1–15.

in both Sa'ada and Aden. In 2011, over 103,000 people arrived in Yemen, mostly from the Horn of Africa; the highest annual rate since UNHCR started gathering statistics in 2006. A total of 215,707 were registered by December 2011. In addition, there is a total of 463,452 Internally Displaced Person (IDP) registered, a number which doubled in 2011. The refugees and the IDPs challenge the fragile service delivery capacity in Yemen further. Providing access to livelihood assets is essential. While solutions are offered it is important that livelihood considerations and development of the hosting communities are fully integrated in the policy approach. Support of the Government and building policy capacity, in particular for the IDP administrative units, to implement the policy will also will be essential.

Civil Society Organizations (CSOs) are important in complementing service delivery, providing social protection services, opening opportunities for jobs, and creating demand for better governance. CSOs and their networks should be strengthened and encouraged to play such roles wherever possible, in support of government efforts and effectiveness.

Expanding Basic Service Delivery

Yemen is seriously undersupplied with health services and health service workers. Increasing access to health services by developing and deploying human capacity, especially female health workers, and undertaking rigorous health workforce planning, must take priority over building physical capacity in the period ahead**.**

Malnutrition is pervasive and needs multisectoral interventions. A staggering 58 percent of children under age five are chronically malnourished and at high risk of cognitive impairment and death from treatable diseases, such as acute watery diarrhea and measles. Even more starkly, 966,000 children are affected by acute malnutrition. The National Nutrition Strategy[9] provides for a set of actions—including nutrition for emergency situations, improved water, sanitation and hygiene, school nutrition, control of child and maternal under-nutrition, and control of low birth weight—which should be taken up as high priority areas.

While access to education has been successfully advanced in the past decades, there are serious qualitative shortfalls, and girls' access to education remains a serious challenge. Yemen maintains a fragmented administrative system for education with major disconnects between strategies and associated investments at different levels. A national vision that articulates the education and skill needs of the economy and the society, and the choices that must be made to provide these skills, is urgently needed. In the immediate future, schemes to encourage teachers to work in remote areas, facilitate school feeding programs, improve school water and sanitation facilities, and conditional cash or in-kind incentive programs within the framework of social welfare strategies must be implemented to encourage the most vulnerable families to send their children to school. While schools are being restored where needed, children from displaced families should be supported to have access to existing schools in their host communities. Similarly to the health sector, training of more female teachers is urgently required. Close attention should be paid to equity in access to services, particularly gender disparities. Despite progress over the last years, in 2008, gender parity in education remained low (0.66 for basic, 0.45 for secondary) and youth female literacy (ages 15–24) stands at only 70 percent (as compared to 95 percent for males).

Water sector governance is very weak and contributed to the rapid decline of water resources, which are expected to run dry within one to two decades in the densely populated highlands. Traditional collective institutions have largely been overtaken by individual appropriations of the groundwater resources, and modern laws and regulations are proving highly ineffective in the face of weak enforcement of legislation. As a result, after thirty years of apparent abundance, water availability is declining rapidly

[9] National Nutrition Strategy for Yemen (draft); Family Health Directorate, Primary Health Care Sector, MOPHP.

and non-renewable resources are expected to run out within one to two decades in the densely populated highlands.[10]

Working with the local communities is most promising, linking investment with improved governance. In rural areas, the *Demand-Responsive Approach* (DRA), driven by working with communities, has been successfully introduced over the last decade and expansion of coverage is being achieved. Attention is needed to ensure efficiency, quality, and sustainability. Concerning water management in rural areas in agriculture, the challenge is to do better in supporting farmers in (i) more efficient use of groundwater for irrigation; including through investment in modern infrastructure; (ii) adapting cropping patterns; (iii) integrating the water resource management from the local to the central level; and (iv) developing flexible support mechanisms for poorer rainfed and livestock areas. Concerning the urban areas, the problem of sourcing and managing of water reserves requires an engaged and integrated approach, including (i) working with communities to establish water rights; (ii) strengthening the possibility of transfering water from agriculture to municipal and industrial use; (iii) working on supply management; (iv) prioritizing solutions for the greatest problem areas: Sana'a and Ta'iz; and (v) working on demand management to contain demand. The Government should implement regulations governing access to groundwater, and aim to close the wide gap in water and sanitation services between urban and rural population, including with the above.

Investment in the water sector can only be effective if the institutional capacity of the sector is continuously enhanced. Low-cost investments in behavior change initiatives related to improved sanitation and hygiene will offer rapid and high-impact returns.

Improving local governance and addressing poor urban service delivery should accompany infrastructure and financial support. Supporting greater empowerment and accountability as well as transparency in local governance, improving coordination across institutions responsible for local services, and addressing fragmentation of urban service delivery institutions would be first steps towards improving such services and thereby build examples of better governance. Urban centers like Ta'iz could serve to establish a reference case.

Improved access to regular power supply is imperative for any growth scenario. Although the conflict created a serious power crisis in 2011, the poor performance of the electric power sector is not a product of the crisis. Over the last decade, the electric power sector in Yemen has been characterized by complex governance systems, poorly performing state-owned institutions, inadequate capacity, lack of investment, and weak financial management. Direct and indirect subsidies to the power sector hurt the poor most, diverting scarce fiscal resources away from other critical growth and poverty alleviation areas.

Even as subsidies are scaled back, substantial new investment in the power sector would be needed to satisfy continued rapid demand in the next two decades.[11] However investments will not yield results unless a major reform of the governance of the sector is undertaken, with a view to shrinking the role of the Government and unbundling the sector to provide better opportunities for private sector involvement. Other areas of focus include creating an institutional framework with effective checks and balances, reducing power system losses, increasing the efficiency and availability of existing generation capacity, developing renewable capacity, increasing the bill collection rate, updating the rural electrification strategy facilitating finance for expansion in the electricity sector, and least-cost-generation expansion.

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[10] For example, Sana'a water utility has to drill about six new deep wells every year to replace drying wells.

[11] The latest Power Development Plan (2009-2020) forecasts a total capacity demand of 3,102 MW, at an annual growth rate of 10 percent over the next decade. New capacity of 3,538 MW will need to be added to the grid by 2020 to replace the retiring units and accommodate this growing demand with sufficient capacity margin. The total investment required for building the needed generation capacity and the associated transmission and distribution facilities is estimated to be over US$5 billion. Demand projections are based on an average GDP growth rate of 6.5 percent up to 2020.

The Transitional Program for Stabilization and Development, 2012–2014

In late June 2012, the Government of National Unity of the Republic of Yemen launched the 'Transitional Program for Stabilization and Development (TPSD)" for 2012–2014. The TPSD describes the challenging security environment, the precarious social and humanitarian situation in Yemen, the fragile financial position the Government faces, and calls for an emergency response and support by the international donor community (see also chapter 6). The TPSD proposes parallel implementation of an Emergency Response (Pillar 1: short-term priorities), and the initiation of a medium-term Economic Recovery Program (Pillar 2: medium-term priorities). Given the challenging condition for success, both the Government and the donors need to prioritize measures, programs, and operations that help toward conflict abatement, improve economic conditions, provide rapid relief to the Yemeni people, and assist in alleviating budgetary pressures during the period 2012–14. Donors should review their programs to also allow for quickly disbursing aid to support political, humanitarian, and economic recovery and contribute quickly to improving Livelihood conditions. When supporting TPSD implementation, it is vital to reduce the risk of strategic failure arising from improper sequencing of aid and aid flows, and from the dispersion of donors in multiple activities, either singularly or jointly.

Outlook and Financing Requirements

Given the challenges, *business-as-usual* will not address Yemen's long-term development and poverty reduction goals. Yemen's economy grew on average at a rate of four percent annually over the last decade. This was not enough to prevent poverty from rising from 36 percent of the population in 2006 to an estimated 42 percent in 2009. Recent developments may have brought that level up to 54 percent. If growth should recover only to pre-crisis levels under a slow transition scenario, the poverty rate may remain at about 50 percent of the population by 2020. In such a scenario, US$3 billion in external financing would still be required in total from 2013 to 2016. This is an amount equivalent to what the country has typically received in recent years in form of external financing, 80 percent of which was from official aid sources.

Effective and timely implementation of the reform policies and recovery agenda outlined above would allow broad based growth to accelerate to 6.7 percent annually for the immediate transition period (2013 to 2016) and reach eight percent for the period 2017 to 2020. Under this high case scenario (accelerated transition), poverty could retreat to 31 percent of the population by 2020. Even with decisive progress in the ability of the Yemeni Government to mobilize public resources as well as target and manage spending efficiently, additional external resources-both private and public-would be required to finance the ensuing domestic investment. This external financing would amount to about US$1.9 billion annually[12] (2013 to 2016), with that level declining to US$1.6 billion annually for the later period (2017–2020). The mix between private and public would evolve over time as the country develops an enabling environment for private capital inflows. Initially, the sources are likely to be mostly of public origin.

Given the constraints and uncertainties under which the transition is taking place, one cannot exclude that policy progress could be more uneven. In such a scenario, growth would be slower and more narrowly based, reaching possibly 5.6 percent annually for the immediate transition period (2013 to 2016) and 6.3 percent thereafter (service sector–led transition). In such a case, poverty reduction would fall back to the estimated level prevailing

[12] This does not include financing for reconstruction costs (short term priorities) as suggested by the Transitional Program for Stabilization and Development. The calculations focus on the dynamic relationship between investment and growth over time, but not on the growth impact of a short term capital influx (reconstruction).

before the crisis only by 2020. External public financing to the amount of about US$1-1.2 billion would initially be required annually to sustain such a scenario from 2013 to 2016. This financing requirement would decline thereafter.

Conclusion

Putting Yemen on a path of recovery to prosperity will not only require a strong commitment and ownership from the Government and People of Yemen, but also coordinated support and significant financial resources from all partners and friends of Yemen. While the JSEA provides analysis of Yemen's most pressing needs, it is the Government's Transition Plan that will offer the roadmap by which Yemen can emerge from crisis stronger and better able to ensure equitable and sustainable development for its people. The implementation of the Transition Plan and donor support should balance humanitarian assistance, early recovery, reconciliation, and peace-building efforts in the short run, with support to decisive policy actions and reforms that would underpin sustainable and inclusive development, improved governance, and social protection in the medium to long term.

1 Context Review

1.1 The Yemeni Political and Socio-Economic Context

At unification of North and South Yemen in 1990, the state-society relationship in North Yemen had evolved very differently from the one in South Yemen. This distinction built upon a society that was already structured differently due to contrasting resource endowments. The fertile land in parts of the south led to social relationships based on settled land ownership, while the aridity in the North made it unsuitable for agriculture and forced tribes to organize themselves around strong tribal confederations based on military superiority to survive. Therefore, at unification, the North had very strong tribal structures operating independently from the state while the South had an ideologically oriented strong state, controlled by one party with the tribes playing a subdued role. It did not take long for these differences to come to the surface after unification as each side tried to impose their influence on the other. As a result, the South attempted to secede in May 1994, which led to a brief Civil War that ended in July 1994 with a military victory of the Northern forces.

The oil rent facilitated in the unified Yemen the "politics of patronage," the financing of development, and contributed to relative stability. As the central state became the main pillar of modernization in Yemen, the political powers in place practiced politics of patronage using the oil rent to support, limit, or undermine the voice of various political and social forces in Yemen (tribes, clans, regional, political, and religious groups), fracturing social cohesion in Yemen. The income from oil resources compensated for the fiscal shortfall of an underperforming economy, which for employment and income mostly relied on informal services, marginal agricultural activities, and migrant work and remittances for a large part of the population, which is up to 70 percent rural. However, oil production has declined considerably since its peak in 2001. Nonetheless, rising and high international oil prices since the mid 2000s helped to counteract most of the reduced oil production (except for 2009), keeping the state financially afloat, albeit subjected to the volatility of international oil prices. While the strategy of the former regime helped to extend and consolidate power, it was at the expense of building the foundations for future economic opportunities, sustainable and inclusive growth and equity, and viable institutions.

At the same time, the political and economic record of the former government was long considered broadly successful. It balanced the inherited political, social, Arab, and Islamic traditions and realities in Yemen with a set of modernization strategies for building a modern central state, which provided for a unified army and security services, offered some enhanced access to education and health services, and developed the nucleus of a modern private sector from a large informal and atomistic economy and a few quasi-monopoly arrangements organized around critical imports (food, energy, defense equipment, etc.). While the modernization on the political and social front advanced (by forming a set of modern institutions and especially through progress in access to education), development of the economy and a competitive private sector to match the demand for employment fell victim to the overall emerging political culture. By balancing the various political actors and interests in Yemen with a web of patronage, creating alliances and solutions mainly for the short term, and favoring

compensation through financial flows instead of supporting a framework for the creation of public wealth and broad based growth, the former regime stifled opportunities for equitable and sustainable growth.

The mixed outcome of Yemen's development strategy, leading to weak institutional structures and poor governance results, became increasingly apparent after 2000 and translated into rising social and political tensions and fragmentation of identities and allegiances. These contributed to a series of conflicts with the Al-Houthies in the north, demand for more autonomy or even independence by forces active in the former South Yemen, and the emergence of Al-Qaeda-linked activities in Yemen. Increasing tensions and the inability of central state institutions or the patronage system to address the causes of the fragmentations and rising associated conflicts brought into question the stability of the state. While oil production declined since early 2000, the non-oil economy largely underperformed, remaining at an annual growth rate barely above the population growth rate. In essence, as the context for conflict expanded, the resource base continued to shrink.

1.2 The 2011 Crisis and its Resolution

The mass protests, violent clashes, and armed conflict that marked the country in 2011 represented the culmination of simultaneous political, social, and economic crises situated within an overall difficult regional environment. Reaction to these crises from different groups of actors, including the politically aligned and non-aligned opposition in both the north and the south, and a renewed Al-Houthi rebellion in the north, prompted diverse alliances with different interests and divergent political aims. Militants from Al-Queda in the Arabian Peninsula (AQAP) and armed tribesmen took control of broad areas in the south. The mass unrest and revolts against the Government during this period emerged from, and were catalyzed by, conditions of acute societal fragility stemming from sectarian, tribal, and regional divisions had have been building up over the past few decades and were exacerbated by deepening poverty, lack of gainful employment opportunities, particularly for the youth, and by loss of faith in a State that was increasingly seen as not being capable meeting the pressing social and economic needs.

The United Nations and the Gulf Cooperation Council have helped to bring about a peaceful transition in Yemen. Backed by member-states and based on an initiative of the Gulf Cooperation Council (GCC), negotiations between the Government and opposition groups, facilitated by the good offices of the Secretary-General, culminated in the signing of a Transition Agreement[13] on November 23, 2011. The signatory parties agreed on a cessation of hostilities and the start of a two-year transition process. The first phase of this transition period (December 2011–February 2012) was marked by the formation of a Government of National Unity in early December, and the departure of President Saleh on February 23, 2012.

The peace process has been initiated but has not yet been achieved. Despite these milestones, the complete end of armed conflict, removal of roadblocks, and the return of all armed forces to barracks have yet to be achieved. Nonetheless, urgent economic stabilization measures were taken and the organization of Presidential elections in late February 2012 was concluded with the inauguration of Abed Rabbo Mansour Hadi as the newly elected President of Yemen.[14]

The transition is envisaged to take two years and will end with general elections. The second phase of the transition period is anticipated to continue over a two-year period, during which time: the State is expected to host a National Dialogue; a new constitution is being drafted; and the army and security establishments will undergo reforms. The transition will end with the holding of legislative and presidential elections—to be

[13] The Transition Agreement's legal title is: GCC Initiative and the Agreement on the Implementation Mechanism for the Transition Process in Yemen, in accordance with the Initiative of the Gulf Cooperation Council (called the "Transition Agreement").

[14] The Presidential elections were conducted in a largely peaceful environment with unexpectedly high levels of voter participation (around 60 percent), particularly from the youth.

held under the new constitution—and the inauguration of a new President of the Republic of Yemen.

At this point in time stability in the country remains fragile, and the transition must be viewed against longstanding challenges that Yemen continues to face on the security, political, social, and economic fronts. These challenges are intertwined; addressing the social and economic factors underlying the broader security and political crisis are critical for (1) stabilizing the country in the near term and supporting the reconciliation process enshrined in the Transition Agreement, (2) contributing to the development of a new governance system for Yemen, and (3) laying the foundations for long-term equitable development.

1.3 Assessing the Social and Economic Priorities of the Yemeni Transition: The JSEA Approach

The transition provides an opportunity to take steps toward correcting Yemen's development path. The events of 2011 and the transition period in Yemen require a re-assessment of development priorities for the transition period and beyond, for the Government as much as for its development partners. Rather than pursuing a traditional development agenda, the transition provides an opportunity to take steps toward correcting Yemen's development path and begin to address the institutional deficiencies that contributed to the crisis.

The JSEA incorporates lessons from the 2011 World Development Report on Conflict, Security and Development (WDR 2011, see also Annex 1). In the context of Yemen, immediate progress in the area of jobs and livelihoods is critical in order to address highly politicized social grievances and prevent an escalation of humanitarian emergencies. At the same time, foundations for restoring economic growth and expanding fiscal revenues will be essential for enabling a range of political and governance reforms, improving legitimacy of state institutions, and providing capacities to achieve other key transition milestones.

The JSEA also considers social and economic requirements during the transition period in relation to other political, security and governance priorities. Measures supporting livelihoods and gainful income are important for early confidence-building and "signal" commitment that demonstrates that Government intentions are backed-up by concrete actions. Accompanying these measures with transformation of key institutions could help create a virtuous cycle that would move Yemen away from violence and fragility, and help engender both security and prosperity. Equally, efforts to begin addressing gender inequalities could help to build confidence.

Finally, the JSEA acknowledges the importance of governance issues and institutional capacity development as key cross-cutting considerations. As reflected in the WDR 2011, building capable institutions is essential for preventing future sources of conflict, and managing tensions and other stresses. In the case of Yemen, reducing corruption and improving accountability and transparency, while at the same time dealing with the pluralistic nature of Yemeni society in an equitable fashion, will be critical in addressing some of the issues that exacerbated tensions and shaped the nature of the 2011 crisis.

The subsequent chapters in this document provide a more detailed analysis of the impact of the 2011 crisis, with a focus on assessing and identifying priority areas for policy action within the framework of the Government's Economic Transition Plan. The chapters are organized around the following key themes:

- **Economic growth.** Restoring and accelerating economic growth in Yemen will be critical in the short term, and as a prerequisite for human and institutional development in the long-term. Key issues assessed in this regard are the required levels of investment to restore and accelerate growth, sectoral priorities for growth, and priority measures to ensure efficient use of resources and enhance sustainability, inclusivity, and responsiveness to urgent short-term needs;
- **Jobs and Livelihoods.** Rapidly increasing employment and sustainable livelihoods is

critical to address acute grievances and inequities, and avert a humanitarian emergency. Key issues assessed in this regard include priorities for improving food security, addressing vulnerable groups (in particular the unemployed, youth, female-headed households, women, children and victims of state actions), as well as priorities for rapid and equitable increase in jobs;

- **Expanding social service delivery.** The impact of the crisis on access to social services (which were already low and of poor quality prior to the crisis) has led to widespread and acute vulnerabilities, which significantly impacts social cohesion and livelihoods. Key issues assessed include priorities for improving equitable access to services, and measures to strengthen capacities of providers; and
- **Expanding basic service delivery**. Significant material damages to key services (including key public services such as health, education, urban services, water, and electricity) and institutional weaknesses constitute an impediment to economic growth, and improved livelihoods, and the provision of basic services. Key issues assessed include institutional conditions, investment priorities, and the modalities to ensure equitable distribution and rapid resumption of services.

Macroeconomic and Social Impact Analysis of the 2011 Crisis in Yemen and Alternative Transition Scenarios

2

2.1 Introduction

The Arab Awakening has initiated political and economic transition processes in several countries, including Tunisia, Egypt, Libya, and Yemen. The citizens of these countries have demanded a change in the political leadership in the quest for more freedom, dignity and justice. Economic factors also played a role in the uprisings, including growing unemployment, especially among the youth, rising inequalities and high levels of poverty. While many people took to the streets in the hope for jobs and better lives, the short-term impact of the transition have led to even higher unemployment and possibly an increase in poverty as is the case in Yemen. This is because the uprisings have in their first round led to slower economic growth or even to a contracting economy. Fiscal deficits have increased, limiting the policy options, and foreign exchange earnings from tourism, development aid, and foreign direct investment have all declined.

Past international experience shows that the economic and social costs of conflict are high. Collier (2007) calculates that one year of conflict reduces a country's growth rate by 2.2 percent at a global average. For Arab countries the average cost may be even higher. One year of conflict is estimated to cost 3.5 percent of per capita GDP and between five to ten years in their social development, including life expectancy, immunization rate, and human development (ESCWA 2010). Conflict negatively affects food security through a decline in agricultural production, trade, and income (Deininger and Castagnini 2006; FAO 2000), and vulnerable groups in society often bear a disproportionate burden of these developmental costs, especially children, women, and the poor. Armed conflict can increase death rates of children up to 24 times through malnutrition, disease and displacement, and one additional month of war exposure significantly decreases children's nutritional status compared to non-exposed children (ESCWA 2010; Bundervoet et al. 2009). Equally, armed conflict is associated with elevated levels of violence against women.

The short-term socio-economic impact of the 2011 crisis poses a huge challenge to Yemen. Throughout 2011, conflicts in various parts of the country have led to disruptions in the supply of production chain and higher prices have affected all economic sectors. The reduction in fuel availability, particularly for diesel, has further aggravated shortages in electricity and water supplies. Power cuts became so frequent that in some areas of Yemen the power was only available four hours per day (MoPIC 2012), if at all. The repeated sabotaging of the pipelines in the Mareb and Ras Issa areas and continued road insecurities have led to a sharp decrease in crude oil production by about 25 percent in 2011 and altered transportation costs (MoPIC 2012). These disruptions had far reaching repercussions throughout the economy. The agricultural, industry, and service sectors faced significant cost increases for inputs such as irrigation, transportation, and marketing, ultimately reducing production and exports. Production processes were disrupted leading to the closing of businesses and dismissal of workers in both the public and the private sectors. Public goods and service delivery has been affected across Yemen, including health, education, and social safety nets.

Transition in Yemen requires action and vision from the government and participation from all

stakeholders. While transition in Yemen will be a challenge, it provides also for new opportunities that need to be seized in the coming years. This assessment presents alternative transition pathways to support policy makers, civil society, and international partners in their quest and support for growth, employment, poverty reduction, and food security in Yemen. More specifically, this analysis first reviews the existing evidence on the economic performance and social impact before and during 2011. It then uses an economy-wide Dynamic Computable General Equilibrium (DCGE) model with poverty and nutrition micro simulation modules to develop and quantify the short and medium growth and poverty reduction scenarios for Yemen. The last section highlights areas where policy reforms are needed to support the realization of these scenarios.

2.2 Yemen before and during 2011: Evidence from Existing Data

2.2.1 Economic Baseline and Initial Trends

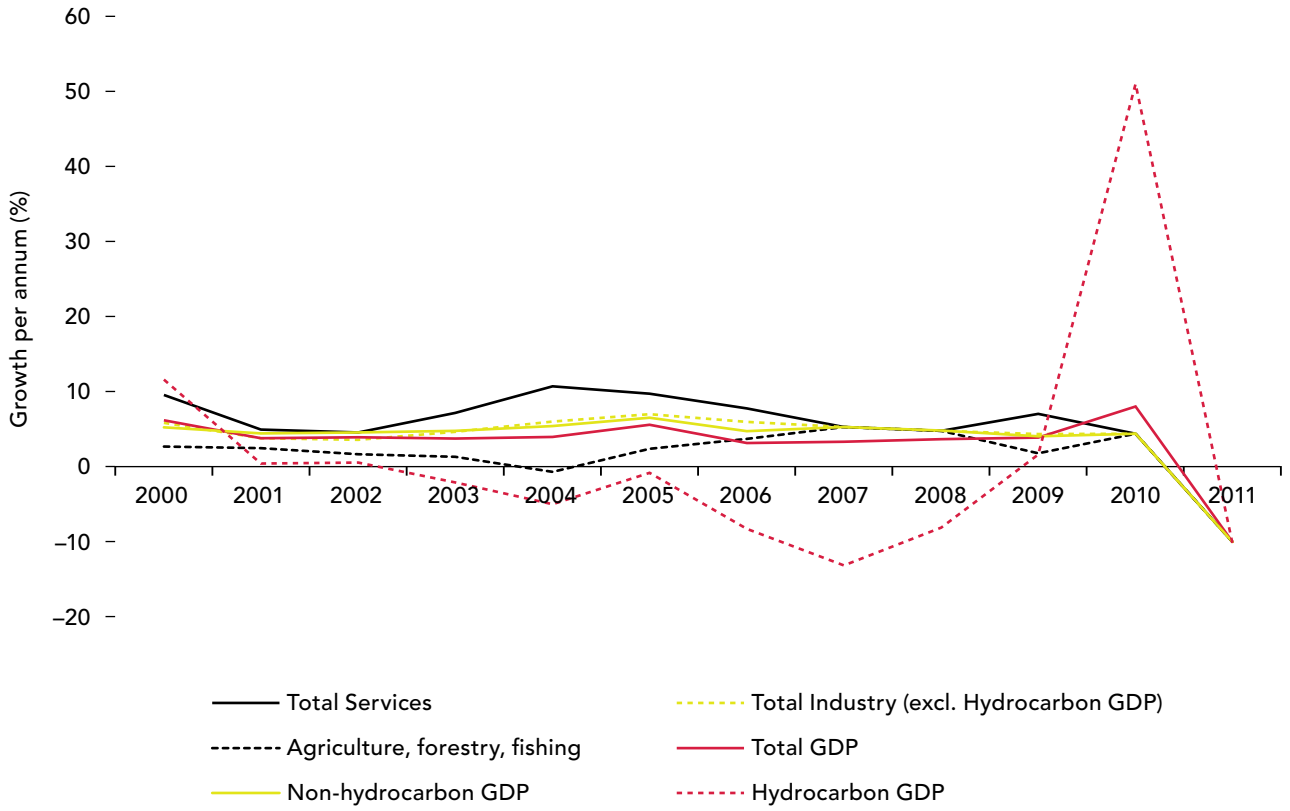
The services and the oil sector are the dominant economic sectors in Yemen. Table 1 provides an overview of the structure of the economy before the 2011 crisis. Agriculture made up 11 percent of Yemeni GDP, the industry sector contributed 43 percent, with the oil sector share contributing 19 percent. The services sector contributed close to 46 percent of GDP, and trade and transport together made up 20 percent of GDP. The oil sector remains substantial and contributes almost one fifth of the country's GDP. Both the agricultural and industry sectors are import reliant, with import intensities of 45 and 39 percent, respectively.

Table 1: Structure of the Yemeni Economy by Sector

	GDP share	Private consumption share	Export share	Export intensity	Import share	Import intensity
Agriculture	11.1	22.8	5.4	10.1	28.5	44.9
Cereals	0.8	10.1	0.1	1.6	19.5	88.3
Cash crops	3.6	7.6	1.1	7.6	6.4	36.4
Qat	3.5	5.1	—	—	—	—
Livestock	2.2	—	0.4	3.4	2.6	22.6
Fishery	1	—	3.8	59.3	0.1	2.8
Industry	43.2	45.4	94.4	36.6	71.6	38.9
Oil and gas	19.4	1	79.1	92.3	—	—
Food processing	3.5	27.3	2	5	28.5	52.5
Other industry	12.7	15.6	13.3	15.7	43.1	46.7
Electricity and water	1.2	1.5	—	—	—	—
Construction	6.4	—	—	—	—	—
Services	45.8	31.7	—	—	—	—
Trade and transport	20	12.5	—	—	—	—
Other private services	11.3	13.3	—	—	—	—
Education and health	5.8	5.9	—	—	—	—
Other public services	8.7	—	—	—	—	—
Total	100	100	100	17.2	100	23.1

Source: Yemen DCGE Model.
Note: GDP shares are for 2009. Import intensities are calculated as shares of total domestic consumption (final and intermediate). Export intensities are the ratios of exports to domestic production.

Figure 1. Growth Trends, 2000–2011



Source: IMF estimates and Author's calculations.

Industry makes up close to 72 percent of the import bill with food processing alone using up 28.5 percent of Yemen's import value.

Aggregate consumption is reliant on imported food and oil exports finance these imports. Aggregate consumption is heavily reliant on food and agricultural products while hydrocarbon exports are the prime source for foreign exchange. Yemen is heavily food import dependent. Fifty-seven percent of all imports are food and agricultural products. Close to a fifth of total imports are imports of cereals, thus making Yemen very susceptible to global food price volatilities, especially with a diminishing oil supply and overall diminished foreign exchange earning potential. The oil and gas sector provided the bulk (about 70 to 80 percent) of foreign exchange earnings for Yemen over the last decade, followed closely by agriculture's share of exports of just under six percent of the total. About 50 percent of Yemen's total private consumption is on food (including agricultural and food processing). Losing the foreign exchange revenue potential of the oil sector would put into question the ability to import the required quantities of food products.

Providing services is the main economic activity besides the oil sector. Before the political crisis in 2011, Yemen maintained a stable, albeit modest, growth pattern throughout the 2000s (Figure 1). Growth spikes are mainly triggered by the changes of the international price of oil and as in 2010, by the initiation of production at a large liquefied natural gas investment (Yemen LNG). Figure 1 shows that growth in the agricultural sector has been declining and growth in the industrial sectors (excluding oil) and the non-hydrocarbon sectors as a whole has been almost non-changing. The

only sector that appears to be growing mildly but relatively more than the other non-oil sectors is the services sector.

The political crisis in 2011 led to a sharp drop in economic growth in 2011 of about 11 percent. The countries capacity to mobilize resources domestically remains limited in the short term.

The fiscal balance in Yemen is heavily reliant on the hydrocarbon sector. By 2011, the fiscal deficit in Yemen reached 4.3 percent of GDP. (Table 2) Revenues from the hydrocarbon sector declined despite the increase in the global price of crude oil. Export revenues from oil decreased in 2011 relative to GDP (Table 2) and Yemen faced shortages in crude oil production and the production of cooking gas due to security deterioration that led to the disruption of the major pipeline Mareb-Hodeidah, decreasing the oil production, supply, and revenue earning potential for the government (IMF 2012). All other fiscal revenue generating components suffered, too, as the result of the conflict. Tax evasion exacerbated the shortfall in non-hydrocarbon taxes, and a significant reduction in foreign grants and loans by close to 60 percent and 70 percent, respectively, added to the government's dwindling revenues (MOPIC 2012). On the expenditure side, even though total expenditure and net lending fell in 2011 over 2010, nonetheless, public wages and salaries rose by close to 20 percent in 2011 (MOPIC 2012).[15] The significant reductions in external aid and the need to contain government spending led to a substantial reduction in public investment, helping to control the fiscal deficit, at the expense, however, of development objectives.

The current account deficit fell from 10.2 percent of GDP in 2009 to 3 percent in 2011. The decline is mainly attributable to an increase in the export earnings of the hydrocarbon sector and to a decrease in imports, reflecting the depressed demand. Exports of non-hydrocarbon goods fell from 5.7 percent of GDP in 2009 to 2.4 percent in 2011 (Table 2), which reflects the impact of the conflict situation on the overall economic activity. Non-hydrocarbon exports are expected to marginally increase in 2012, however, still well beneath their 2010 level. Whereas exports of hydrocarbon products have continued throughout most of 2011, they are expected to decrease in 2012 due to lower production and lower international prices (IMF 2012; EIA 2012), negatively impacting also Yemen's fiscal balance. The current account deficit is expected to reach 3.3 percent of GDP in 2012.

The economic disruptions of 2011 will also impact price outcomes in 2012. The CPI rose from 12.5 percent in 2010 to 23.2 percent 2011, indicating a sharp increase in the overall price levels. Food prices rose significantly primarily as the result to reduced domestic supply and reduced imports that were further exacerbated by transport and distribution disruptions due to the conflict situation in Yemen and the deficient physical infrastructure, both factors that adversely affected the overall supply chain. Rising fuel costs led to countless production disruptions as well as steep increases in transport costs, sometimes reaching as much as 100 percent in urban areas and by twice as much in rural areas (MoPIC 2012). Temporarily, domestic gas prices rose to three times their 2010 levels, gasoline prices by 600 percent, and diesel prices rose up to by 800 percent during 2011 (MoPIC 2012). The current price level is largely determined by the current lack of a normal and efficient distribution network, respective of the widespread smuggling of hydrocarbon products, especially for diesel.

2.2.2 Impact of the 2011 Economic Contraction on Poverty and Malnutrition

The 2011 economic contraction (Figure 2) led to an estimated increase in poverty to 54.4 percent (Figure 3), affecting urban households relatively more than rural households. The conflict has sharply driven down household income through higher

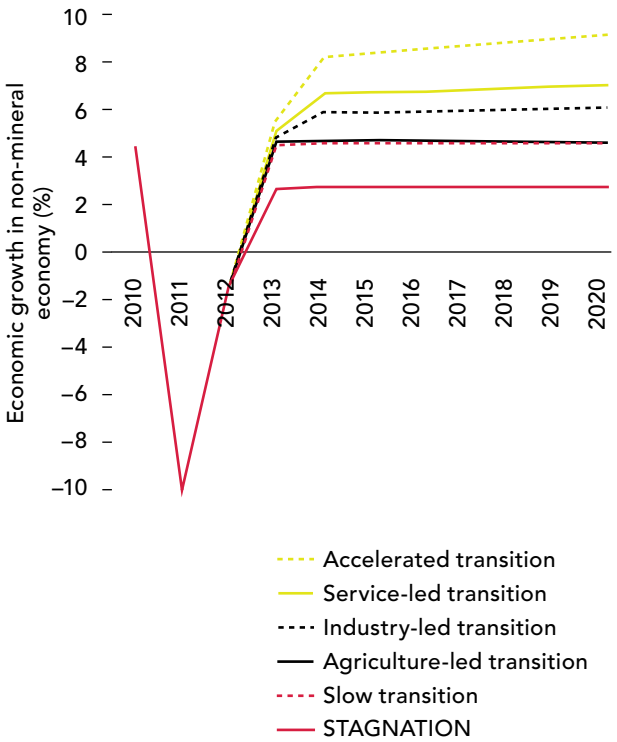
[15] Only 20 percent of the increase in wages and salaries was the regular annual increase, the rest were increases that were given public sector employees for public appeasement at the onset of the conflict, a policy that was implemented throughout the Arab World in 2011 (Breisinger et al. 2011).

Table2: Main Macro-Economic Indicators, 2009–2012

	2009	2010	2011	2012
		(Annual percentage change)		
Real GDP	3.9	7.7	–10.5	–0.9
Non-oil real GDP	4.1	4.4	–10.0	–1.6
Consumer prices (end of period) 1/	8.8	12.5	22.7	16.1
Consumer prices (period average) 1/	3.7	11.2	17.6	17.1
		(In percent of GDP)		
Investment and savings				
Gross capital formation	13.5	11.6	5.5	11.1
Of which: nongovernment	7.0	7.0	3.5	7
Gross national savings	3.3	7.9	2.0	10.1
Of which: nongovernment	7.0	7.3	4.4	11.0
		(In percent of GDP)		
Public finances				
Total revenue and grants	25.0	26.0	24.6	29.7
Hydrocarbon revenue	14.6	16.4	16.1	16.1
Non hydrocarbon revenue	8.4	8.4	7.4	9.5
Tax revenues	8.0	6.6	5.2	6.5
Grants	0.4	1.2	1.2	4.0
Total expenditure and net lending	34.6	30.1	29.0	34.7
Subsidies and transfers	10.9	10.8	9.9	12.1
Subsidies	8.2	8.7	7.9	8.5
Petroleum product subsidies	7.7	8.2	7.4	7.9
Transfers	2.6	2.1	2.0	3.6
Capital expenditure	6.5	4.6	1.9	4.1
Fiscal deficit	10.2	4.0	4.4	5.0
		(Annual percentage change, unless otherwise indicated)		
Monetary sector				
Credit to private sector	–4.8	8.2	–16.9	7.0
		(In percent of GDP, unless otherwise indicated)		
External sector				
Exports of goods	23.3	25.2	26.3	23.1
Hydrocarbon exports	17.6	20.8	24.3	20.6
Non hydrocarbon exports	5.7	4.4	1.9	2.5
Imports of goods	31.3	28.0	24.7	24.4
Hydrocarbon imports	7.8	7.1	9.0	7.0
Services, net	–3.6	–2.3	–2.2	–2.5
Workers' remittances, net	4.4	4.8	4.0	4.1
Current account balance	10.2	3.7	3.5	1.0
Overall external balance	4.5	3.6	4.1	0.3
Exchange rate (YR/US$)	202.9	219.6	213.8	—

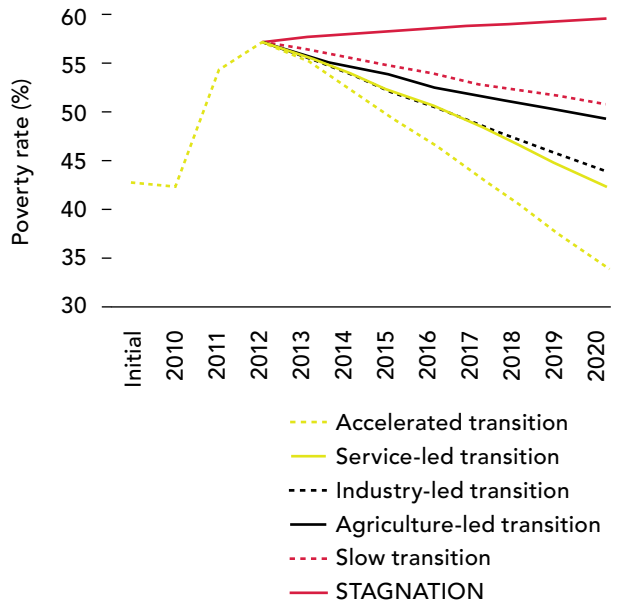
Source: IMF, and authors' calculations

Figure 2: Economic Growth under Stagnation, Slow and Rapid Transition



Source: Yemen DCGE Model, 2012.

Figure 3: Poverty Changes under Stagnation, Slow and Rapid Transition



Source: Yemen DCGE Model, 2012.
Note: Estimate. For a discussion of the scenarios see Section 2.5.

unemployment and/or falling wages for public and private sector wages at all skill levels. In addition, prices for major goods and services such as food and fuel have risen, as a consequence of lower and irregular supplies, thus reducing households' real income. Household expenditure, on which poverty is calculated, has also sharply declined. Overall household expenditures declined by 16.8 percent in 2011. Urban households suffered even higher losses (18.7 percent) compared to rural households (13.8 percent). In terms of poverty impact, urban households are relatively and absolutely more affected than rural households. Urban poverty rose sharply by 13.3 percentage points from 29.9 percent in 2009 to 42.4 in 2011, which may reflect the fact that much of the uprisings took place in urban areas while many rural areas may have been affected only indirectly. It may also reflect the partial breakdown of normal supply chains due to the conflict. Rural poverty rises from its very high pre-crisis level of 47.6 percent further to 59.0 percent in 2011.

Child malnutrition has increased, too, although it is less responsive to economic shocks than poverty. According to the model-based calculations summarized in Table 6, the prevalence rate of child stunting increased by more than two percentage points between 2009 and 2013 (or around 0.7 percentage points per annum) from an already very high level of 59.4 percent in 2009 (MOPIC 2010). In general, the rate of child stunting is much less sensitive to economic shocks than the poverty rate, primarily because of the relevance of non-income factors for nutrition outcomes and the long-run nature of the nutrition indicator that was used. A recent survey by the World Food Program estimates that at the end of 2011, 44 percent of the Yemen population suffered from food insecurity, up from 32 percent in 2009.

Table 3: Prevalence of Child Stunting and Annual Changes under Different Growth Scenarios, 2009–2020

	Prevalence Rate (percent of children under 5)				Annual Change (percentage points)
	2009 Baseline	2011[1]	2013[1]	2020[1]	2013–20201
Baseline	59.4	59.2	58.9	58.0	–0.13
Stagnation	59.4	61.0	61.7	61.8	0.02
Slow transition	59.4	61.0	61.5	60.4	–0.16
Agriculture-led transition	59.4	61.0	61.4	60.4	–0.14
Industry-led transition	59.4	61.0	61.4	59.4	–0.30
Service-led transition	59.4	61.0	61.4	58.4	–0.43
Accelerated transition	59.4	61.0	61.3	57.0	–0.63

Source: Yemen DCGE model and micro simulation models (2012).
[1] Estimate. For a discussion of the scenarios see Section 2.5.

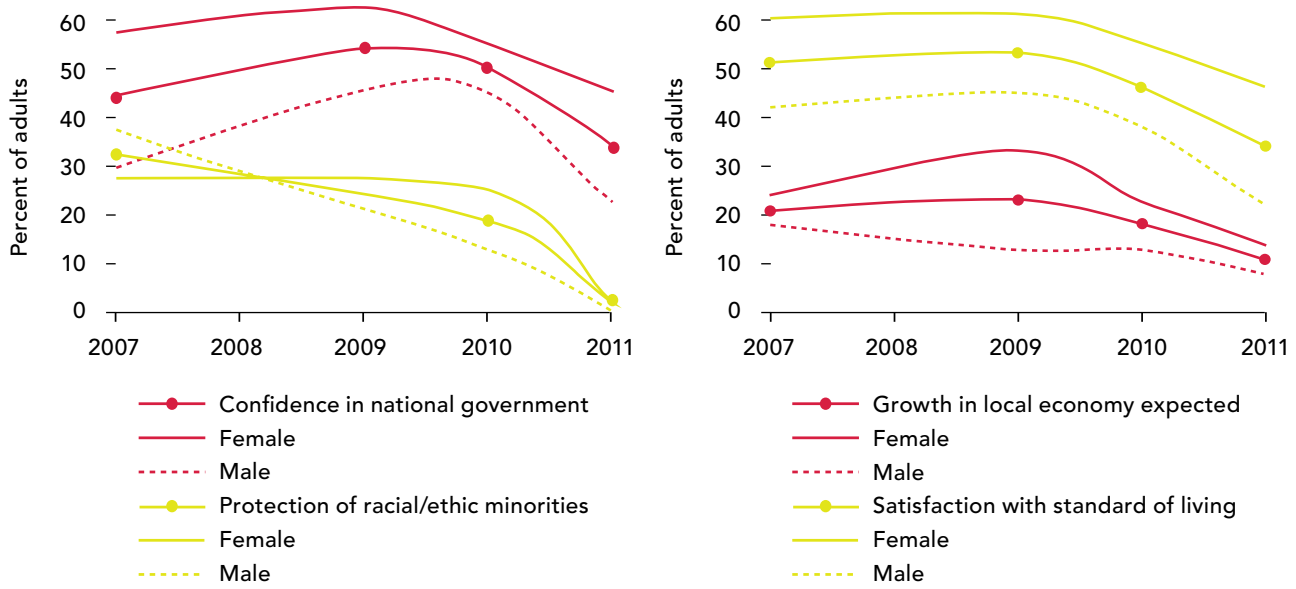
2.2.3 Perceptions of Yemenis: Evidence from Gallup World Poll

The Gallup World Poll provides rich information on perception held by Yemenis about the political and economic situation between 2007–2011. It does not measure government performance, economic conditions, household welfare, etc. directly but rather interviews people about their perceptions regarding these factors. Hence, it also adds an important dimension to the analysis by capturing people's sentiments that appear to be particularly relevant in the context of analyzing conflict impacts.

The data show that Yemen's political and economic conditions had been deteriorating prior to 2011. While confidence in the national government grew slightly during and after the global food and fuel crisis, it plummeted in the course of the recent uprisings (Figure 4).[16, 17] In 2011, less than 40 percent of the adult population had confidence in the national government. Another indication of increasing government failure in providing security, fostering inclusiveness, and facilitating social equity is the degree of protection of minorities. Only 12 percent of the Yemeni adult population considered their city or area as a good place to live for racial and ethnic minorities in 2011. This share has dropped by two-thirds since 2007 (Figure 4). Since the first Gallup survey in 2007, confidence in most state and state-controlled institutions is at a record low in 2011, while it was already at very low levels even before the recent political crisis. In 2011, around 40 percent or less of the adult population had confidence in the local police, financial institutions, and the media, and even less than 30 percent in the judicial system, healthcare system, and the honesty of elections (Table 4). The vast majority of people seem to only trust religious institutions and—at least until mid-2011—the military. Compared to 2009, confidence in all state and state-controlled institutions has declined significantly with the exceptions of the media and, perhaps surprisingly, the judicial system. Strikingly, people lost most confidence in the national government and its ability to conduct fair elections, whereas religious institutions

[16] See Breisinger et al. (2010) for more information on the growth and poverty effects of the 2007-08 global crisis.
[17] The 2011 observations in Figure 4 are averaged from two survey administrations in February–March and June–July (that is after the outbreak of the recent uprisings). The data therefore captures parts of the impact of the revolution.

Figure 4: Trends in Perceptions on Political and Economic Conditions in Yemen



Source: Based on Gallup Worldview (2012).
Note: The presented indicators are based on the following questions and answers:
Confidence in national government: "In this country, do you have confidence in each of the following, or not? How about national government?"–"Yes".
Protection of racial/ethnic minorities: "Is the city or area where you live a good place or not a good place to live for racial and ethnic minorities?"–"Good place".
Growth in local economy expected: "Right now, do you think that economic conditions in the city or area where you live, as a whole, are getting better or getting worse?"–"Getting better". Satisfaction with standard of living: "Are you satisfied or dissatisfied with your standard of living, all the things you can buy and do?"–"Satisfied". The surveys were conducted in face-to-face interviews with men and women aged 15 years or older. The data are representative at the national level and for both gender. See Gallup (2011) for more information.

gained confidence. Overall, the Gallup survey data consistently suggest a strong trend of governance erosion.

The Gallup World Poll further suggests that governance and economic conditions are closely correlated in Yemen. A vast and, since 2009, rapidly growing majority of adults expect a worsening of the national and local economy. Down from 23 percent in 2009, only 11 percent of the adult population in 2011 foresaw improving economic conditions in the city or area where they lived (Figure 4). When interviewed about the conditions of the national economy, the responses yielded absolutely identical levels in 2009 and 2011, and judged by the 2009 and 2010 Gallup perception data, a negative economic trend for the national economy was anticipated. Accordingly, satisfaction with the standard of living in Yemen has been shrinking drastically.

Pessimism about the economic conditions and, even more so, standards of living has not only been widespread but rapidly increasing in recent years. As noted above, this pessimism has unfortunately been borne out by facts. People's satisfaction with their living standards fell continuously after 2009. While more than half of the adult population (53 percent) was satisfied with their standard of living in 2009, only one-third (34 percent) was satisfied in 2011. When asked about their standard of living in the future, most people expected worsening of their situation compared to the present status. This trend is consistent over the period 2007-2011, and the largest drop appeared in 2009 in view of the rising recession. In general, women have been continuously more optimistic than men with respect to most of all analyzed factors. However, it is not evident from the Gallup data that younger Yemenis have been consistently less confident in state institutions, less satisfied about their standard of living, and therefore less optimistic about the future then elders.

Table 4: Confidence in State, State-Controlled, and Religious Institutions (Percent of Adults)

	2011	Change from 2009
National government	39	–16
Honesty of elections	29	–14
Judicial system	29	6
Financial institutions	38	–4
Healthcare	29	
Local police	39	–8
Military	65	–3
Religious organizations	88	5
Media	41*	8

Source: Based on Gallup Worldview (2012).
Note: *2010 estimate.
The presented estimates are based on the following question and answer: "*In* this country, do you have confidence in each of the following, or not? How about …?"–"Yes".

2.2.4 Evidence from UNICEF's Social Protection Monitoring Survey

To investigate the dynamics between conflict and food security in 2011, this section consults data from a very recent, small-scale Social Protection Monitoring (SPM) panel survey carried out by UNICEF (2012) at the local level and which was repeated in short intervals (biweekly), allowing for a high frequency monitoring of the well being of a particular household over time and thus for analyzing household responses to shocks at a point in time.[18] The following analysis makes use of 14 rounds of the SPM survey that were conducted between July 1, 2011, and January 1, 2012 (calendar week 26-52), and hence cover the second half of 2011, when conflicts intensified and spread over the country.[19] Survey sites include urban areas in Sana'a Governorate, urban areas in Al-Hodeidah Governorate, and rural areas in Amran Governorate.

As expected, conflict and food security are correlated for the total sample as well as for each governorate subsample.[20] The correlation is highest in the sample from urban Al-Hodeidah and lowest from rural Amran. Graphical presentations of the trends suggest a close co-movement of the prevalence of food insecure households and the prevalence of households affected by conflict, particularly in urban areas (Figure 5). Furthermore, when dividing the total sample into households affected by conflict and non-affected households and showing the trends in food insecurity of the two household groups separately, the graph reveals that the food situation among affected households is much more volatile.

The food security situation appears to have drastically deteriorated also in areas that are not directly subjected to violent clashes. Indirect transmission mechanisms are the influx of internally displaced people (IDPs), conflict generated price surges, and severe fuel shortages (OCHA & ACAPS 2012). Econometric estimation[21] results suggest that expanding conflict clearly increases food insecurity, while the general risk of conflict in the neighborhood seem to matter more for the individual household than the direct exposure to conflict (Table-2 Annex Chapter 2). In addition, the household food security level seems to respond instantaneously for the most part, as insignificant or relatively weak coefficients of the lagged variables imply.

The percentages of households with children afraid of playing outside and with a hungry family member are

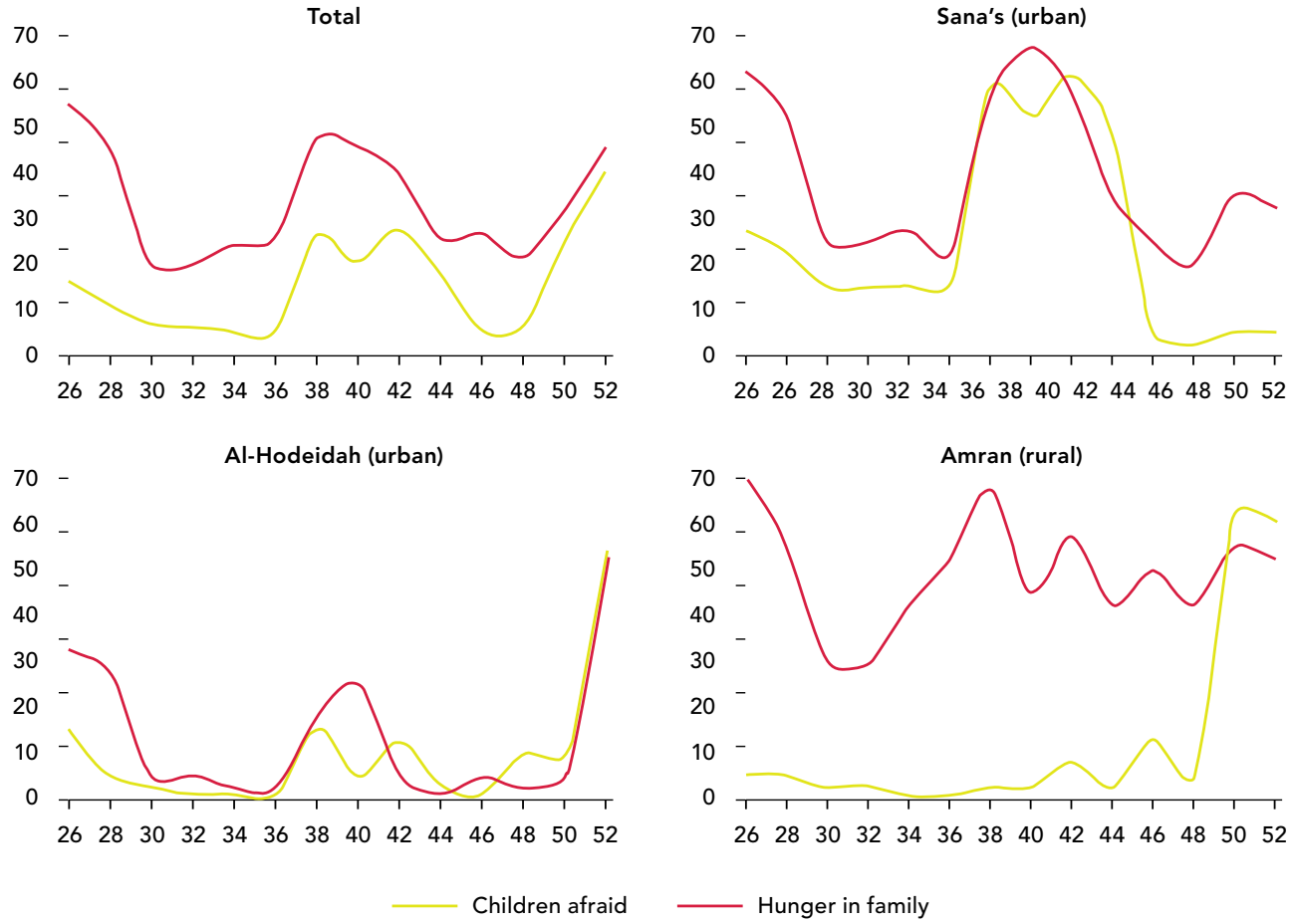
[18] The answer to the question of whether children in the household are afraid of playing outside serves as proxy variable for direct exposure to conflict and the answer to the question of whether anybody in the household experienced hunger serves as variable to assess household food insecurity. Both questions were addressed to the person in charge of childcare and meal preparation, who were female in all cases.

[19] In each round, 120 households were interviewed with 40 households from each survey site. The total sample (including all 14 rounds) contains 1,680 observations for the food insecurity variable and 1,621 observations for the conflict variable. At the time of the surveys, no children were present in 59 households.

[20] See Table 1 (Annex Chapter 2).

[21] To detect causality in the data, a simple fixed-effects logit model is applied. Food insecurity is modeled as a function of conflict, controlling for fixed effects (between locations and over time) and a uniform trend in the data. Several specifications are tested, considering time lags in household food security response to conflict and spillover effects of conflict appearing in the neighborhood.

Figure 5: Conflict and Food Insecurity in Selected Areas during the Second Half of 2011 (Percent of Sampled Households)



Source: Based on UNICEF (2012).
Note: The calendar week is assigned along the x-axis.

based on the following questions (addressed to the children's care taker):

"During the past two weeks have you or any family member experienced going to bed hungry due to lack of food?"–"Yes". "During the past two weeks has any child become afraid of playing outside?"–"Yes".

2.3 Short- and Medium-Term Impact of Selective Transition Scenarios (2011–2020)

For the assessment of the short and medium-term impact of transition, a dynamic computable general equilibrium (DCGE) model for Yemen is used. The model links the Yemen's macroeconomic parameters, economic sectors and households via factor and commodity markets and runs from 2009 to 2020. The DCGE model also links to a microeconomic simulation matrix to assess the impact on poverty and nutrition (welfare factors). It is thus a useful and informative tool for evaluating alternative future economic scenarios which essentially tries to capture the central conditions for economic growth, poverty reduction, and reduction in child malnutrition. The model is described in detail in Annex Chapter 2, while the following section describes the scenarios.

2.3.1 Description of Scenarios

Economic Impact of the 2011 Uprising and the Formulation of Scenarios

The macroeconomic impact of the uprisings during 2011 on growth, poverty, and food security is captured in the IMF's assessment for 2011,[22] which concludes a contraction of the economy with –10.5 percent, reduced government spending (at a rate of 12.2 percent, as well as transfers to households with –23.4 percent, and reduced remittances of –9.5 percent in 2011 (see also Figure 1 and Table 2). To impose a –10.5 percent reduction in economic output on the DCGE model, total factor productivity is shocked uniformly across all sectors in the model by –12 percent. For 2012, the IMF's projections are matched (re-modeled). They project a growth rate of 1.6 percent for non-hydrocarbon growth (see also Figure 1). To impose this aggregate growth rate on the model, Total Factor Productivity (TFP) growth is allowed to recover slowly across all sectors in 2012 with recovery to reach baseline levels from 2013 on. For the slow transition scenario it is assumed that no additional external assistance is provided in addition to a level observed over the last decade, and the capacity for reform remains limited, thereby limiting the growth prospects.

Baseline Scenario – The Comparator Scenario

The baseline mirrors a calculated trend, along which Yemen may have developed as if there was no 2011 crisis moment and therefore no transition period but *normal* average development as prior to 2011. This baseline (business-as-usual) serves to calibrate the basic parameters in the model and follows Yemen average annual growth rate of four percent over the last decade (Figure 1). It is assumed that this growth is driven by gains in total factor productivity (TFP) in the non-agricultural sectors by two percent annually. Population and the labor force are assumed to grow at three percent, annually. Government consumption spending, transfers to households, and remittances are all presumed to grow at the economy-wide growth level of four percent per annum.

Slow Transition Scenario

For the slow transition scenario it is assumed that no additional external assistance is provided in addition to the annual level observed over the last decade. Furthermore, it is assumed that the government's capacity to reform remains limited and therefore TFP growth remains slow. Both factors limit the growth prospects.

Accelerated Transition Scenarios

All transition scenarios are the same until end 2012 (see above). From 2013 onward, four different transition scenarios are developed to assess the impact of possible transition paths:

- For the agriculture-led transition scenario we assume an increase in TFP growth across all agricultural activities by one percent annually from 2013 to 2020 to reflect early gains from recovery and additional investments in the sector. Agricultural TFP growth thus remains slower than in other sectors, given the limits of agricultural potential in Yemen. The underlying rationale of this scenario is that there is still unexploited agricultural potential and that this potential can be realized by additional investments and factor combination, especially by increasing water productivity and structural policy changes within the sector.
- Industry-led growth scenarios project TFP growth in electricity, water, construction, mining (excluding oil and gas), food processing, and other manufacturing sectors of four percent annually from 2013 to 2020 (in addition to the two percent in the baseline). The underlying

[22] IMF Press Release No. 12/121, April 4, 2012: IMF Executive Board Approves US$93.75 Million Disbursement under the Rapid Credit Facility for the Republic of Yemen.

assumption is that public spending on electricity, water, roads, and other infrastructure accelerates growth in construction and other industrial sectors directly and indirectly.[23]

- The service-led growth scenario also assumes four percent annual TFP growth rates from 2013-2020 (in addition to the two percent in the baseline) in trade, transportation, other private services and social services. This reflects the large potential for improving trade (e.g., upcoming WTO membership) and transport systems and related gains from promising sectors such as tourism. In addition, given the low levels of major health and educational outcomes for Yemen, there is huge scope for expanding the related public services for improving social outcomes.

The "accelerated transition scenario" combines the assumptions of all three sector-led scenarios to assess their joint impact. It thus reflects an optimistic scenario, in which Yemen reaches a growth level of 8–9 percent annually from 2014 to 2020 (high growth scenario).

Costing of Growth Acceleration

Accelerating growth requires significant amounts of additional investments in addition to the baseline scenario. To assess the size of additional investment spending required, an elasticity-based three step approach is applied.[24] In the first step, public spending patterns in Yemen are calculated by sector for the three-year period from 2008 to 2010 inclusive, based on MOPIC data (2010) (Table 5). In the absence of Yemen specific data that would allow for the calculation of elasticities of overall growth to sector-investment growth, the data produced by Fan et al. 2012, and Breisinger et al. 2012 are used and which may best reflect Yemen's specific conditions (Table 5). As suggested by Breisinger et al. 2011, there seems to be no positive relationship between investments in agriculture and growth in the Arab world. Taking a more positive perspective, it is assumed that a positive relationship exists for Yemen; to remain conservative it is then assumed that the elasticity for investments in agriculture and growth is as low as the lowest found elsewhere in the world which is the regional estimate for Latin America (Fan et al. 2012), amounting to 0.006, compared to 0.082 globally. For the industry sector, the global investment-to growth relationship is used and adjusted for the size of the industrial sector in Yemen (Table 5). For the service sector, the elasticity used is that which was estimated by Breisinger et al. 2012 for whole of the Arab world. This approach yields a investment spending to growth elasticity for industry-led growth of 0.207 and for service-led growth of 0.309. Furthermore, for all three cases it is assumed that the calculated averages reflect an optimistic scenario or a *high efficiency of public spending* (high spending efficiency). To consider a more pessimistic scenario, the assumption is that the above mentioned elasticities are only half, which, by definition, would then translate into the need for additional public spending to generate the same growth level as mentioned in the above mentioned case of more optimistic sector-growth-elasticities, or the investment amount would need to be doubled to achieve the same level of growth under the *high efficiency of public spending* hypothesis.

To relate the changes in overall growth projected by the DCGE model to the additional level of public spending required to achieve the targeted growth, we divide the additional non-oil growth under the transition scenario relative to the slow transition scenario

[23] Infrastructure spending obviously also benefits agriculture and service sectors and these linkage effects are captured in the DCGE model.

[24] It is important to note that the approach taken makes several assumptions. First, it assumes that investment sectors can be matched to economic sectors. However, in reality that is more difficult: for example investments in hospitals and schools would fall under the health and education budget, but the construction activity would contribute to growth in construction (or industry). Second, it assumes that most growth in one investment sector benefits the respective economic sector, while especially in the longer run, for example investments in services also benefit other sectors, an effect that is only partially captured by the CGE model.

Table 5: Public Spending and Elasticities

	Public investment			Elasticity of overall growth to sector investment growth	
	2009	2010	Total spending (in million US$)		
Sector	(in percent of total public investment)			Optimistic	Pessimistic
Agriculture and fisheries	3.5	1.8	584	0.006	0.003
Agriculture	3.2	1.5			
Fisheries	0.3	0.3			
Industry	54.4	68.8	5,394	0.207	0.103
Electricity and water	18.5	46.4			
Public works, roads and housing	23.8	16.1			
Other	12.1	6.3			
Services	42.1	29.5	3,706	0.309	0.154
Transport and communication	4.2	4.3			
Education and health	10.4	7.5			
Social safety net	9.9	3.7			
Other	17.7	13.9			
Total	100.0	100.0	9,683		

Source: Authors' calculations based on MOPIC 2010. Total spending by sector is estimated based on the average public investment shares by sector from MOPIC for the years 2008–2010 and which are matched with aggregate figure for public spending for these years as published by the IMF.

by the elasticity of nonoil growth to sector investment growth:

$$\frac{\left\{\left[\dfrac{(1+\text{ growth of nonoil GDP}_{\text{Transition Scenario},t}/100)}{(1+\text{ growth of nonoil GDP}_{\text{slow transition},t}/100)}\right]\right\}}{\text{elasticity of nonoil growth to sector investment growth}}$$

Results show that public investment spending on agriculture will need to increase between 7.4–14.9 percent annually, public investment spending on roads, electricity, water, and other infrastructure by 5.7–11.4 percent annually, and public investment spending on transportation, communication, health, education and social transfers by 6.3–12.5 percent annually, on average.[25] As discussed previously, the assumption for the baseline scenario is that public spending grows consistently with the average annual GDP growth rate at four percent per annum. Results are reported in Table 7.

2.3.2 Alternative Development Scenarios from 2013–2020

This section presents four scenarios to project potential future outcomes for Yemen in terms of economic growth paths, poverty, and malnutrition.

The economic contraction in 2011 heavily affects medium- and long-term growth in Yemen under all scenarios (Table 6). Except for the accelerated transition scenario, average growth in private consumption, exports, and imports between 2013 and 2020 is lower than it would have been without the downturn in 2011. Average annual growth for all sub-scenarios is 0.3 and 1.6 percentage points lower than in the baseline scenario. Only under the *Accelerated Transition*

[25] To calculate the absolute amounts of additional spending required per year, the sector baseline investment amounts are augmented with the resulting amount calculated applying the required growth rates in investment spending in each year.

Table 6: Changes in Macro Aggregates over the Medium- to Long-Term

	Average Annual Change 2010–2020, (in percentage points)							
	Initial	Base[1]	Stagnation	Slow transition	Agric-led transition	Industry-led transition	Service-led transition	Accelerated transition
GDP (C + I + G + E – M)	100.0	3.9	1.4	2.3	2.3	2.9	3.6	4.5
Private consumption (C)	84.3	3.9	1.0	2.2	2.4	3.0	3.3	4.3
Investment (I)	13.7	1.8	4.3	3.1	1.6	2.3	5.5	5.6
Government consumption (G)	14.9	4.0	–0.9	2.0	2.1	2.1	2.1	2.1
Exports (E)	28.6	3.0	2.3	2.0	2.0	2.2	2.8	3.2
Imports (M)	41.5	2.7	1.7	1.9	1.9	2.0	2.5	2.8

Source: Yemen DCGE model, 2012.
Note: 1"Base"(-line) is a calculated scenario for comparison and which assumes (1) continuation of the previously observed average growth rate (four percent) business-as-usual, and (2) no economic contraction in 2011 (no 2011 crisis event).

scenario, is average annual growth higher than in the baseline scenario, implying that only if the conditions for the accelerated transition scenario are assembled, Yemen can catch up to and rise above the level that may have been achieved in the absence of the conflict related economic contraction in 2011.

Table 7 summarizes the growth outcomes under the different possible scenarios. If no action is taken and political instability continues (stagnation), Yemen is likely to suffer from low growth for years to come. If stagnation continues, then the economy-wide growth rate is projected to drop to 1.4 percent annually, well below the population growth rate of three percent. All sectors would perform below their baseline levels, where agriculture is the most resilient sector with projected growth of 0.1–0.3 percentage points below the slow transition scenario, compared to 1.3–1.6 percentage points and 2.3–2.5 percentage points for industry and service sectors, respectively.

Even if the economy bounces back to pre-crisis level growth rates from 2013 onward (equal to slow transition; business-as-usual but conflict situation has ended), it will take at least up to the year 2015 until Yemen reaches its pre-crisis GDP level of 2010. Thus, the 2011 crisis throws Yemen back by five years in terms of economic development.

Growth acceleration is urgently needed to make up for the lost half decade, yet it is not clear which growth path the country will take from 2013 onward. Figure 2 shows how the non-hydrocarbon growth rate is expected to perform under alternative transition scenarios.[26]

Agriculture-led growth accelerates economy-wide growth throughout the whole transition, albeit at modest levels. Model results suggest that the agricultural sector in such a scenario will grow between 2.0–2.3 percentage points above the slow transition scenario, in which no additional investment (other than the usual level observed in the past) in the sector is undertaken. However, agriculture-led growth is less effective in accelerating economy-wide growth than industry- and service sector led growth (Table 7). The main reason is that the relatively low share in GDP (around 11 percent) of the agricultural sector limits its contribution to overall growth. Also, given the severe water constraints in the country, initial gains in agricultural growth can most likely not be sustained over time, and agricultural growth recedes from 2015 onward, but will stay above the *slow transition* scenario level.

Growth led by industry, which is driven by construction (excluding oil and gas), food processing,

[26] The description focuses on the non-oil growth rate since estimates about the future of oil growth are highly uncertain. Most analysts agree that oil resources are depleting, yet some argue that there are substantial gas reserves that may be able to at least partly offset the losses from oil.

Table 7: Projected Growth Rates by Sector

		Initial	2010	2011	2012	2013–16	2017–2020
Stagnation	Growth	100.0	3.9	–10.0	–1.3	2.8	2.9
(no transition)	Agriculture	11.0	2.8	–10.3	–1.3	2.5	2.6
	Industry	43.3	5.0	–3.5	–0.5	3.8	3.6
	Services	45.7	4.5	–13.3	–2.0	2.1	2.2
	Oil	19.4	2.1	–10.4	–0.9	3.0	3.4
	Non-oil	80.6	4.4	–10.0	–1.4	2.7	2.7
Baseline – Slow transition	Growth	100.0	3.9	–10.0	–1.3	4.0	4.0
	Agriculture	11.0	2.8	–10.3	–1.3	2.8	2.7
	Industry	43.3	5.0	–3.5	–0.5	5.1	5.2
	Services	45.7	4.5	–13.3	–2.0	4.6	4.6
	Oil	19.4	2.1	–10.4	–0.9	2.6	2.2
	Non-oil	80.6	4.4	–10.0	–1.4	4.5	4.6
Agriculture-led transition	Growth	100.0	3.9	–10.0	–1.3	4.2	4.0
	Agriculture	11.0	2.8	–10.3	–1.3	4.8	5.1
	Industry	43.3	5.0	–3.5	–0.5	4.3	4.5
	Services	45.7	4.5	–13.3	–2.0	4.7	4.5
	Oil	19.4	2.1	–10.4	–0.9	2.2	1.3
	Non-oil	80.6	4.4	–10.0	–1.4	4.6	4.6
Industry-led transition	Growth	100.0	3.9	–10.0	–1.3	5.0	5.2
	Agriculture	11.0	2.8	–10.3	–1.3	2.4	1.6
	Industry	43.3	5.0	–3.5	–0.5	6.9	8.0
	Services	45.7	4.5	–13.3	–2.0	5.6	5.6
	Oil	19.4	2.1	–10.4	–0.9	2.2	1.4
	Non-oil	80.6	4.4	–10.0	–1.4	5.6	6.0
Service-led transition	Growth	100.0	3.9	–10.0	–1.3	5.6	6.3
	Agriculture	11.0	2.8	–10.3	–1.3	3.6	2.5
	Industry	43.3	5.0	–3.5	–0.5	6.8	7.8
	Services	45.7	4.5	–13.3	–2.0	6.6	7.3
	Oil	19.4	2.1	–10.4	–0.9	2.7	3.4
	Non-oil	80.6	4.4	–10.0	–1.4	6.3	6.9
Accelerated transition	Growth	100.0	3.9	–10.0	–1.3	6.7	8.0
	Agriculture	11.0	2.8	–10.3	–1.3	3.9	2.4
	Industry	43.3	5.0	–3.5	–0.5	9.0	10.9
	Services	45.7	4.5	–13.3	–2.0	7.7	8.8
	Oil	19.4	2.1	–10.4	–0.9	2.5	2.8
	Non-oil	80.6	4.4	–10.0	–1.4	7.6	8.9

Source: Yemen DCGE model 2012.

other manufacturing, and electricity, water, and mining, accelerates over time and substantially pushes the non-oil growth rate to six percent in 2020, 1.4 percentage points higher compared to the *slow transition* scenario (Table 7). The industry sector itself accelerates its growth between 1.8 percentage points above the *slow transition* levels from 2013 to 2016 to 2.8 percentage points, during the period of 2017–2020. Industry-led growth also has positive spill-over effects to other sectors, especially the service sector. The service sector, particularly trade and transport sectors, also strongly benefits from industry led growth and expands about by over one percentage point faster annually compared to the *slow transition* scenario,.

Under the service-led scenario, non-oil growth by 2020 is even higher, reaching 3.6 to 4.2 percentage points above growth under the *slow transition* levels (Table 7). This is because the service sector is the largest sector in the economy whose share of GDP reaches 46 percent and has strong backward and forward linkages to other sectors. Higher productivity in trade, transport, communication and social services lowers costs and accelerates growth in agriculture by 0.8 percentage points between 2013–16, and industrial growth by 1.7 percentage points compared to the *slow transition* scenario.

Combining the growth acceleration in agriculture, industry and service sectors would bring Yemen quickly back to pre-crisis levels and put it on an accelerated growth path. Under this scenario, non-oil annual growth rates reach 7.6 percent on average in the first phase (2013–2016) and then 8.9 percent in the second phase of the recovery (Table 7). The simultaneous investment (and policy) push in all non-hydrocarbon economic sectors would generate synergistic effects that translate into a higher growth level compared to the other scenarios.

Poverty outcomes of alternative transition scenarios range between a national poverty rate of 59.6 percent in the worst case and 33.6 percent in the best case scenario by 2020. If no immediate action is taken, poverty is bound to continuously increase after 2011 and may reach close to 60 percent in 2020. Under this scenario, both rural and urban poverty would continue to increase by 7.9 and 11.3 percentage points respectively by 2020 compared to the *slow transition* scenario (see Table 3 Annex Chapter 2). All three sector-led growth scenarios (agriculture, industry, and service sectors) substantially reduce national poverty by 1.5, 6.9, and 8.5 percentage points by 2020 respectively compared to the *slow transition* scenario. Under the accelerated scenario, a combination of growth in all sectors and thus the most optimistic scenario, national poverty can be reduced to under 31 percent in 2020. In this case poverty levels would reach their 2009 levels in the year 2015. Urban and rural poverty reduction rates are the same under the accelerated scenario, primarily because industry growth has a substantial spillover effect on the rest of the economy, and both the urban and rural poor benefit from such growth. In the *slow transition* scenario, poverty is estimated to reach 51 percent by 2020, with urban and rural poverty rates being at 38 and 56 percent respectively.

Industry and service sector-led growth has the strongest poverty reduction effect in Yemen. Comparing the poverty/growth elasticities (Table 8) shows that among the sector-led growth scenarios, the industry-led and service-led growth scenarios have the strongest poverty reducing effect. One percent of industry- or agricultural-led growth reduces poverty by 0.6 percentage points, compared to a 0.52 under service-led growth. This can mainly be explained by higher returns to production factors owned by the poor, especially unskilled labor (agriculture, construction, transport, manual work).

Child stunting reduction is much less responsive to growth than poverty reduction, and accelerated growth in combination with special programs[27] is needed to decrease child stunting. Assuming a constant child stunting-growth semi-elasticity of 0.139,[28] the reduction in the prevalence of child stunting is

[27] See also the section on nutrition interventions.

[28] For the estimation of the elasticity, see Annex Chapter II, section B 2.

Table 8: Poverty and Nutrition Elasticities

	Annual cchange (percentage points)		Non–oil GDP average per capita growth (percent)	Arc semi–elasticities	
	2013–2020		2013–2020	2013–2020	2013–2020
	Poverty	Child stunting		Poverty non–oil growth	Child stunting non–oil growth
Baseline	–0.61	–0.13	1.44	–0.43	–0.09
Slow transition	–0.82	–0.16	1.51	–0.54	–0.10
Agriculture-led transition	–0.92	–0.14	1.55	–0.60	–0.09
Industry-led transition	–1.70	–0.30	2.83	–0.60	–0.10
Service-led transition	–1.93	–0.43	3.70	–0.52	–0.12
Accelerated transition	–3.09	–0.63	5.47	–0.56	–0.11

Source: Yemen DCGE and Nutrition Models 2012.

driven by the rate of growth generated under the different scenarios. Accordingly, the highest reduction in child stunting is achieved under the *Accelerated Transition* scenario. From 2013 to 2020, the rate falls by around 4.3 percentage points to 57.0 percent in 2020, or 0.63 percentage points per annum (Table 8). In other words, accelerated growth is needed to bring down the child stunting rate to the 2005 level, a rate which has risen since then as a result of the 2007/08 global food, fuel, and financial crisis, and the 2011 uprisings. Given the low child stunting-growth elasticity, nutrition-beneficial investments and target nutrition programs are needed in addition to strong economic growth, to significantly reduce child malnutrition.

2.3.3 Costing Growth Acceleration, Poverty Reduction and Improving Food Security

Achieving these ambitious growth targets will require public investment spending[29] of US$12.3 to 17.6 billion over the next eight years, depending on the public spending efficiency (Table 9).[30] Yemen's past experience in translating public spending into growth outcomes and its low ranking in the governance indicators may suggest that assuming the less optimistic spending efficiency may be more realistic, certainly for the next four years. Under the low efficiency scenario, an additional US$798 million (7.1 percent) would have to be allocated to agriculture, US$6.0 billion (53.2 percent) to industry and US$4.5 billion (40.1 percent) to services.[31] The results make a strong case for improving efficiency and effectiveness of the public sector, which could reap considerable gains in terms of achieving more with less resources or achieving the same growth outcomes with less resources (see Section 2.3.4).

To stabilize the economy and bring growth and poverty levels back to pre-2011 levels, by 2015 additional financial resources of between US$5.4 to US$7.8 billion are needed between 2013 and 2016. Assuming that public spending efficiency may not significantly improve in the short-term and applying the higher bound estimate, about US$691 million would have to be allocated to the agricultural sector, US$2.4 billion for investments in roads, electricity, water, and other infrastructures, and US$1.7 billion in transportation, communication, health, education, and social transfers. Both the high and low efficiency scenarios suggest that about seven percent of the total should be

[29] In addition to the projected US$6.3 billion external resources that would be invested in Yemen between 2013 and 2020 in the business-as-usual case.

[30] See also Annex Chapter 2, Table 10, for an estimate of total investment.

[31] In addition to the investment required for baseline case.

Table 9: Foreign Aid and Public Spending Efficiency (Baseline and additional growth enhancing spending)

	2013–2016	2017–2020	Total	Percent of total additional spending	Growth (in percent) 2013 to 2016	Growth (in percent) 2017 to 2020
Baseline scenario (1)	2,978	3,365	6,343	—	4.0	4.0
Agriculture-led (2)					4.2	4.0
Low efficiency	691	107	798	7.1		
High efficiency	345	53	399	7.5		
Industry (electricity, water, roads etc.) (3)					5.0	5.2
Low efficiency	2,351	3,645	5,996	53		
High efficiency	1,176	1,822	2,998	56		
Services (communication, transport, social) (4)					5.6	6.3
Low efficiency	1,738	2,776	4,514	39.9		
High efficiency	837	1,116	1,953	36.5		
Accelerated growth scenario (2) + (3) + (4)					6.7	8.0
Low efficiency	4,780	6,528	11,308	—		
High efficiency	2,358	2,992	5,350	—		
Total foreign aid low efficiency (1) + (2) + (3) + (4)	7,758	9,893	17,651	100	6.7	8.0
Total foreign aid high efficiency	5,336	6,356	11,692	100	6.7	8.0

Source: Staff calculations.

invested in agriculture, 54 percent for roads, electricity, water, and other infrastructures and 39 percent for transportation, communication, health, education, and social transfers.

While providing support to Yemen until 2016 clearly takes priority, it is also important to note the longer term need for additional investments. Sustaining and further accelerating growth and poverty reduction beyond 2016 to 2020 will require substantial additional investments of US$3.0–6.5 billion. Given this longer time horizon and assuming significant improvements in Yemen's governance, it may be realistic to assume an improved spending efficiency for this case, which would mean under the *higher spending efficiency* hypothesis that an additional investment of about US$1.8 billion for infrastructure and US$1.1 billion for services are required. Apart from improved governance, Yemen should also strive for improving the tax collection system in order to be able to increase domestic sources of funding. Not only would this make Yemen more independent from foreign assistance, it would also help avoiding the "aid curse" that could undermine the incentives for institutional reform and structural change. Continuous high level of aid inflows bear the risk of an appreciation of the exchange rate (Dutch disease), export oriented sectors like agriculture can suffer, and thus the full growth potential remains underexploited because of distorted incentives.

2.3.4 Costing of Selected Investments and Programs

To help translate the aggregate sector-level cost estimates into projects, Table 10 presents a selection of cost estimates for investments in the agriculture, trade and transportation, and health and education sectors. These investments specifically tackle issues of lacking water storage capacities for irrigation; poor physical access to local markets, health facilities, and other required

Box 1: Petroleum Subsidy Reform in Yemen

Petroleum subsidies strain public finances, distort markets, and provide only a blunt tool in the fight against poverty. Subsidy induced distortions lead to misguided price information and ensuing investment decisions and are likely to slow adaptation of new energy/water saving technologies. On the consumer side, it is usually the better-off households that disproportionally benefit most from petroleum subsidies, thus undermining social equity. Therefore, many countries such as Chile, China, Ghana and Iran have successfully reformed their subsidy schemes over the past years.

Yemen had also started to reduce its petroleum subsidies before the political crisis in 2010 due to a combination of declining oil revenues and the high fiscal costs of sustaining the subsidy. Before the political crisis, petroleum subsidies in Yemen made up more than 20 percent of the government budget, more than total spending on education, health and social transfers combined. The rising cost of the fuel subsidy also had an adverse impact on the public investment program in infrastructure, including for transportation and telecommunication. Investment for development was largely externally financed (about two to four percent of GDP). In 2011, spending on petroleum subsidies remained high at about US$3 billion and is likely to remain at these levels at given prices.

The results of a dynamic computable general equilibrium model support a comprehensive petroleum subsidy reform in Yemen. Yet, reforms must be well designed, because phasing out subsidies without complementary measures may lead to an initial drop in growth and a spike in poverty. Reform would create the much-needed fiscal space for the government to finance growth-enhancing measures, such as investments in utilities, transport, trade, and construction sectors. Such investments combined with efficiency gains are projected to accelerate economic growth between 0.1 and 0.8 percentage points annually. Faster phasing out of subsidies leads to higher growth gains. In addition to investment, targeted social transfers will need to be scaled-up to compensate the poorest and the most food insecure from the short-term real income losses.

Accompanying measures compensating the poor for the loss of income resulting from the energy subsidy reduction can avoid an increase in poverty. But the reform will also broaden options for pro-poor growth in Yemen. Thus, for the short and medium term, petroleum subsidy reform offers great opportunities to scale up social transfers and to create the platform for a restructuring of productive, industrial, and service value chains, which could be exploited by enabling domestic and foreign private investment.

Source: Breisinger, Engelke and Ecker 2011.

services typically available in urban centers; water scarcity and poor hygiene from inappropriate sanitation conditions; lacking electrification and power shortages; insufficient and inadequately equipped health facilities for targeted nutrition-relevant service provision; and insufficient schools. All listed costs account for present costs of separate investments, while a concerted approach towards building infrastructure, covering several sectors simultaneously, is likely to reduce the overall unit costs due to synergistic effects.

Table 10: Investment Costs for Basic Infrastructure

Basic infrastructure	Costs (US$)
Agriculture	
Irrigation scheme[1]	
Water harvesting reservoir (including open cisterns, closed tanks, spring protection works, fencing, protection walls, sedimentation basins, conveyance canals, water drawing pipes), average cost per unit	33,700
Trade and transportation	
Road network[1]	
Asphalt main road, per km	70,100
Feeder unpaved road, per km	37,800
Health and education	
Water and sanitation	
Non-mechanized community spring water system, per capita[1]	50
Piped drinking water connection in the house through drinking water network, per capita[2]	6
Piped sewage water connection in the house through sewage network, per capita[2]	19
Combined drinking water and sewage water connection in the house through networks (full coverage, gradual), per capita[2]	21.5
Electricity[1]	
Community electricity scheme with generator, per capita	37
Health facilities[3]	
Construction (new), per unit	
Health unit	40,000
Health center	180,000
Rural hospital	860,000
Governorate hospital	3,225,000
Referral hospital	4,000,000
Upgrade and equipping, per unit	
Health unit	27,000
Health center	77,000
Rural hospital	450,000
Governorate hospital	900,000
Referral hospital	2,500,00
Maintenance (annual), per unit	
Health unit	3,350
Health center	12,850
Rural hospital	65,500

Table 10: Investment Costs for Basic Infrastructure

Basic infrastructure	Costs (US$)
Governorate hospital	330,000
Referral hospital	464,000
School	
Construction of classroom, per unit	16,000

Sources: (1) Own calculation based on IFAD (2010), specific for Yemen; (2) Hutton and Bartam (2008), for selected MENA countries; (3) Compernolle (2005), specific for Yemen; (4) Ogawa (2004), specific for Yemen.
Note: Costs are reported as estimated for the year of the study.

2.4 Policy and Institutional Reform to Generate Growth, and Reduce Poverty

Investing in growth acceleration will be the key for Yemen to overcome the deep economic crisis and reduce poverty and food insecurity. However, scaling-up public spending as discussed above will have to be complemented with significant institutional and policy reforms. Policy reforms are urgently needed to (a) create fiscal space so that more can be spent on enhancing productivity (infrastructure, education) and generating employment, including through employment programs that add to infrastructure building. (Construction); (b) improve the quality of public spending and the implementation capacity, including through more reliance from the private sector, and by offering more participation in implementation to targeted groups, local communities, and civil society; and (c) attract private investment to support private sector-led growth.

Reform petroleum subsidies: The Government of Yemen made a first step toward reforming petroleum subsidies by increasing fuel prices in 2010. However, simply phasing out the petroleum subsidy would increase food insecurity because higher fuel prices affect farmers and the urban food insecure most. To address this social concern during the reform period, the ample budgetary savings from such a reform should be used to finance a combination of direct transfers and productivity-enhancing investments, targeting vulnerable households and in particular, female-headed

households. Transfer payments alone only curb the rise in food insecurity in the short run, but the addition of public investments in infrastructure (related to utilities, transport, trade, and construction) fosters food security and sustainable economic growth. The combination of direct transfers and investment is a promising strategy for joining the subsidy reform with the promotion of sustainable development. Transfers, investments, and resulting long-term productivity gains complement each other and lead to reduced food insecurity and poverty (see Box 1).

Improve the investment climate. Improving the investment climate often involves political commitment to reform rather than receiving financial resources, which makes it an attractive low-cost option for accelerating growth, reducing poverty and enhancing employment. Table 11 shows there is room for improving the investment climate. Yemen currently ranks 99 out of 183 countries in creating a favorable investment climate, yet several key indicators are significantly below the international average. While Yemen ranks high in its favorability for starting a business and dealing with construction permits, improvement is needed in the areas of access to credit, investor protection, and tax requirements in order to to unleash private sector-driven growth, especially in promising sectors (see also Annex Chapter 2, Private Sector in Yemen). It is important to note that to achieve pro-poor growth in the long run, such growth needs to be both socially and environmentally sustainable. Socially sustainable means that benefits from growth need to be shared widely among the population. Environmental sustainability is especially important for Yemen given its fragile natural resource base, especially water and land resources.[32]

Table 11: Yemen Investment Climate Indicators (Ranking among 183 Countries), 2012

Ease of doing business	99
Starting a business	66
Dealing with construction permits	35
Getting electricity	52
Registering property	55
Getting credit	159
Protecting investors	133
Paying taxes	116
Trading across borders	118
Enforcing contracts	38
Resolving insolvency	114

Source: World Bank 2012.

Tax Qat production and consumption. A tax on Qat could yield triple benefit, including additional tax revenues, water savings for non-Qat agricultural growth, and health benefits to the people. Agriculture, which can make an important contribution to rural development and food security, is constrained by the lack of water; water scarcity and contamination threaten the health of many households. And in all of this, Qat emerges as the major culprit, consuming more than 40 percent of Yemen's water supply. Thus, sharply reducing Qat consumption is vital for avoiding drought, achieving non-Qat agricultural growth, and meeting Yemen's food security goals. However, measures to reduce Qat consumption may meet sharp resistance among Yemen's population. Policy measures will require a communication campaign to provide comprehensive information on their necessity and urgency. The benefits of a Qat tax will outweigh the difficulties of implementation. The additional tax revenues should be invested in agriculture and water infrastructure and used for the promotion of alternatives to Qat production, such as cereals and coffee production, and processing of agricultural products.

Improve food security risk management. Yemen is very vulnerable to global food price shocks and disasters, so the country must develop appropriate risk management mechanisms. First, the cereal import market must be made more competitive. Currently, the market is dominated by a small number of importers, which increases local cereals prices even in relatively

[32] The paragraphs on investment climate, public spending efficiency and oil subsidies are based on the National Food Security Strategy (NFSS). See the 7-Point action plan here: http://www.ifpri.org/sites/default/files/publications/yemennote1en.pdf.

stable economic circumstances. Appropriate laws and regulations that increase competitiveness will make an important contribution to improving food security and lower food prices in Yemen. Second, the government should hedge against extreme price fluctuations caused by emergency situations such as the 2007–08 global food crisis. This can be achieved through national grain reserves, regional grain reserves, or hedging in international markets. For any type of risk management, an effective market-price-monitoring system will be critical for effective decision making. Third, the government should recognize the role of social transfers in building economic resilience among vulnerable communities. Social transfers can include direct transfers, cash-for-work programs, community asset building through public works, assistance in starting microenterprises, and nutrition and health programs. The government should use the political opportunities that arise from food-price crises and disasters to incorporate risk management into the overall economic development planning framework. Strong collaboration among governmental agencies, the private sector, and Yemen's international partners is absolutely essential for success.

Implement a national water sector strategy (see also Section 5.15 on water). Water tables are quickly falling and water quality and accessibility are substandard. Water-sector reform is crucial for achieving the country's food security goals and sustaining accelerated development. Yemen's future food security depends heavily on reducing overall groundwater use and redistributing water used for agriculture to more promising economic activities and human consumption. Important steps toward efficient and sustainable water management are (1) strengthening capacity for and implementation of integrated water resources management, including groundwater monitoring and control and improved water quality; (2) managing environmental impacts, including promoting environmental protection and building partnerships with the private sector on effluent and waste water; (3) developing water-resource and water-use efficiency by protecting user rights; (4) delivering efficient, low-cost projects on a demand-driven basis by enhancing the efficiency of project implementation, improving coordination, and decentralizing; (5) strengthening institutions to allow them to play their role in promoting efficient water use; and (6) enhancing resource sustainability and quality through improved watershed management.

Target public investment and improve service provision. In recent years, Yemen has under-spent on infrastructure, agriculture, and health. From a spatial perspective, public spending across governorates does not seem to be aligned with poverty and food security levels, indicating a lack of efficiency and targeting. A comprehensive public investment review should be conducted to better align public investment with Yemen's development objectives in general and its poverty reduction strategy in particular across sectors and governorates. Once the right amount of money is being directed to the places that need it most, the government must focus on how the money is being used. Often, physical infrastructure exists but the services provided are not satisfactory. Evaluation and monitoring of service provision quality and investment efficiency in all sectors will thus be needed for better outcomes. Monitoring should chart issues of access associated with regional dwelling, gender, and so on ensure that services respond to, and can be accessed by, all Yemenis. However, additional investment is also required, particularly to upgrade the rural drinking water supply and rural roads. Key services to target include programs related to education, nutrition, and family planning.

3 Employment and Livelihoods

Rapidly increasing employment and sustainable livelihoods are critical to address acute grievances and inequities, and avert a humanitarian emergency. Key issues assessed in this regard include priorities for improving food security, addressing vulnerable groups (in particular the unemployed, youth, women, children, and victims of state actions), as well as priorities for rapid and equitable increase in jobs.

3.1 Employment and Labor

3.1.1 Introduction

This section looks at employment and labor from the point of view of both the public and private sectors and both formal and informal working arrangements. Informality characterizes the majority of employment opportunities, which leaves workers vulnerable to unfair treatment and also deprives the state of potential tax revenue. During the 2011 crisis there is anecdotal evidence that factory workers with formal contracts of employment suffered loss of income due to temporary lay-offs or reduced working hours; whereas informal sector workers, particularly those in the construction industry, lost income on a longer-term basis as building projects were halted due to the unrest. This impact is still being experienced in 2012 due to rising costs of building materials, which is further depressing the construction sector. It is understood that the on-going influx of migrants from Africa lowers unskilled/informal wages by undercutting locally established rates; this issue is covered in Section 7 of this report.

The growth of small and medium sized enterprises will also be considered since they represent a major source of potential new jobs for the growing population of youth in Yemen. The support available to such businesses from the developing financial services industry in Yemen and how this industry was affected by the crisis is presented. Mention is also made to the expanding commercial poultry sector and the impact of the crisis on large-scale companies.

Most Yemenis remain dependent on agriculture as their dominant livelihood strategy. Agricultural is diverse, but is now dominated by production and marketing of Qat. Although cultivated by most farmers, vast quantities are produced by well-off farmers with unfettered access to ground water for irrigation and subsidized diesel. Alongside Qat other cash crops, such as coffee and high value fruits are being supported. But as productivity in the agricultural sector improves, it is unlikely to absorb a rapidly expanding population. There has been a small but progressive shift away from agriculture into industry and services, as discussed subsequently.

Finally, this section considers the potential for expansion of renewable energy sources, which can provide a real opportunity for new jobs in manufacturing, construction and maintenance of the required infrastructure, as well as providing long term, sustainable energy supplies for the growth of micro, small, medium, and large scale enterprises.

3.1.2 Baseline Data

For the purposes of analysis, this assessment differentiates between employment in the public and private sectors. A commonality that should be stressed here is that incomes were not indexed to the high levels of inflation experienced during the crisis. The

Pre 2011 Context (Baseline)

The last national labor market survey was carried out in 1999; therefore most of the baseline data on employment and labor comes from the HBS 2006 and the 2004 census. Key employment sectors are agriculture, poultry farms, construction, retail, and the public sector. Informal levels of employment are estimated to be the highest in the MENA region, with the entire region reported to have high rates. The civil service has formal contracts of employment including contributory health insurance and pension schemes, but this is rare in the private sector.

Key Facts

- Total labor force in 2004 = 4.2 million of which 3.7 million were male and 0.5 million were female (Census 2004)
- Total labor force in 2010 = 5.6 million (estimate – 2010 Statistics Book)
- Unemployment rate in 2009 = 14.6 percent (2010 Statistics Book)
- 33.1 percent of the labor force employed in agriculture, 35.6 percent female (HBS 2005/2006)
- 15.7 percent of the labor force employed in wholesale and retail, 3 percent female. (HBS 2005/2006)
- 11.7 percent of the labor force employed in construction, 0.3 percent female. (HBS 2005/2006)
- 10.9 percent of the labor force employed in public administration and defense, 5.2 percent female (HBS 2005/2006).

percentage of unemployed, according to the 2010 CSO statistics book, dropped from 16.2 percent to 14.6 percent between 2004 and 2009. There are no statistics for 2012, but anecdotally unemployment appears to have increased significantly during 2011.

3.1.3 Informality of Employment

Informality is a fundamental characteristic of underdevelopment. Higher levels of informality are associated with lower levels of economic growth. Widespread informality implies that a large number of workers and economic activities operate outside the legal-institutional framework.

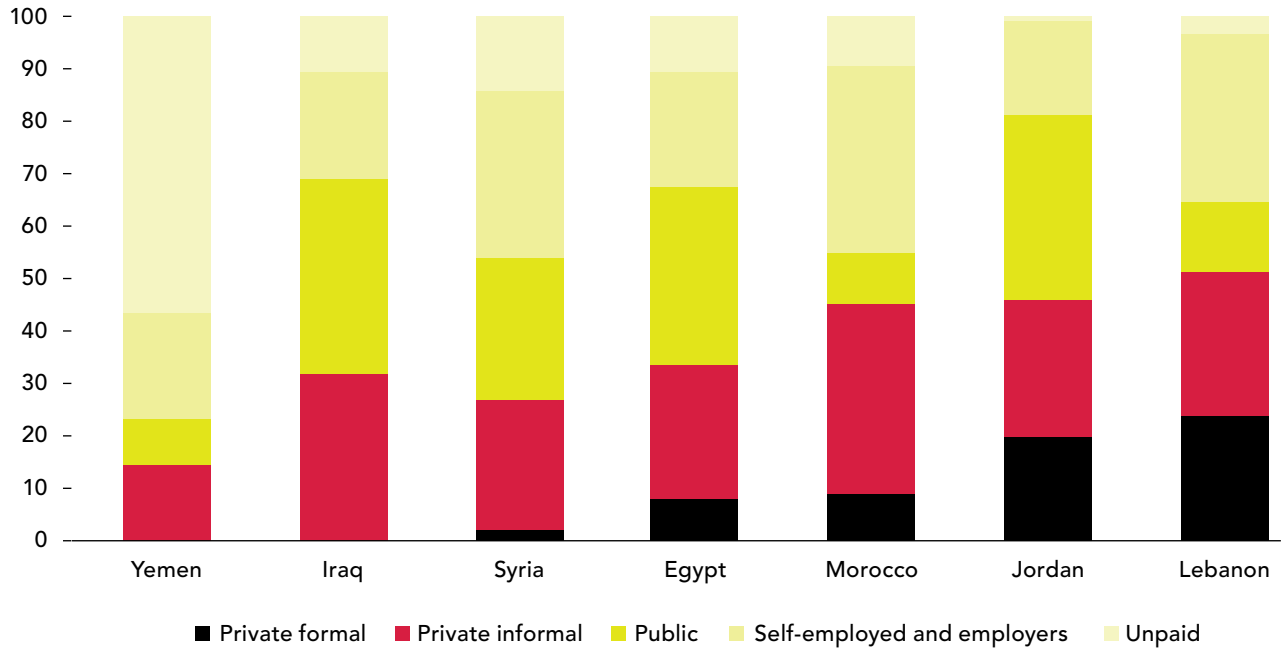
At 91.4 percent in 2011, Yemen has the highest rate of informality in the MENA region. It is said that 90 percent of the labor force does not contribute to, but has access to, publically provided services such as health and education. The level of informality in Yemen is so high that the standard assumption that informality is a phenomenon of the poor is not valid here. In Yemen more than two-thirds of all workers who belong to the richest households work in the informal sector (World Bank informal labor markets 2011). Yemen's private sector is small and largely unwaged; at a glance, compared to others in the region, Yemen's private formal sector is very weak.

Youth and informality are strongly linked: 21.9 percent of employed people are between the ages of 15 and 24, and 97.2 percent of them work in the informal sector.[33] Young people are exposed to higher levels of vulnerability than older workers. Despite this, it can be argued that the informal sector may be an important transitory mechanism for youth, providing basic work experience, which may open up future opportunities.

Interestingly, informality rates in the MENA region are higher among men than among women, apart from in Yemen where female informality rates are higher. This is likely to be a result of the high proportion of women who work in the agriculture sector, a sector characterized for its propensity to informality.

[33] Striving for Better Jobs: The Challenge of Informality in the Middle East and North Africa, World Bank, June 2011.

Figure 6: Size of Private Salaried Formal Sector versus other Sectors (Percent of total employment)



Source: World Bank.

3.1.4 Public Sector

Unlike the private sector, no public sector jobs were lost during the crisis. But public sector employees experienced the following:

- Delayed payment of salaries;
- Physical displacement of staff from governorates where acute conflict prevailed; and
- Decrease in real salaries due to very high inflation.

In response to the crisis, the government has created 50,000 additional civil service posts for fresh graduates, as a measure to reduce unemployment and political tension (MoLA interview 2012), further reinforcing the already existing tendency of considering the civil service as an alternative social safety net.

Charitable foundations reported a steep rise in appeals for alms from this section of society in 2011, particularly during Ramadan. There appears now to be a large degree of consensus that civil servants are underpaid and that this needs to be addressed as part of a comprehensive civil service reform package; which would aim at providing a more effective public administration. Large donors (WB, UK, and EU in particular) have been involved in Public Administration Reforms for the last 10 years, with little impact to date.

There were major disruptions to the operational capacity of public institutions working in areas heavily affected by the conflict, such as Abyan. MoAI, along with other ministries, is now working remotely from Aden having been evacuated from Abyan.

3.1.5 Private Sector

Sources in the private sector estimated their losses from December 2010 to August 2011 as ranging from US$8–17 billion. Domestic production fell by an estimated 14 percent (CoC 2012). Particularly severe impact was felt among those private sector companies that were

Key findings on impact of crisis on employment and labor – SFD rapid qualitative survey November 2011

Significant increase in unemployment especially in urban areas. Due to closure/slow production in the private sector, majority of employees of all categories—skilled, semi-skilled, and unskilled—have been made redundant.

Unskilled labor *has been further hit by the stagnation of the construction industry.* Stagnation of government development projects, local authorities sub-sector projects. Rural households depending on remittances have been severely affected by lack of income.

Urban centers have been hit the hardest by the crisis due to concentration of the disputes, fuel and electricity shortages, leading to *closure of large numbers of private sector enterprises*, hence increasing unemployment especially among semi-skilled and unskilled labor.

"Although accurate figures are currently not available, unemployment levels could have at least doubled." (SFD 2012 Response Document).

contracted to implement government works, and it is said that companies are having difficulty in recovering dues from government, leading to bankruptcy in some cases (Chamber of Commerce Document).

SMEs[34] make up 97 percent of the private sector (Al Amal Bank 2012). In an interview with the Chamber of Commerce, the following were reported among private sector employees and workers during the crisis, although these figures cannot be verified:

- Large numbers of employees/informal workers lost their jobs, estimates are 30–45 percent of factory workers and 15 percent of all private sector workers;
- Employees were given unpaid leave for extended periods of time (up to six months);
- Salary reductions (around 20 percent on average); and
- Bonuses were cut.

It is too soon to assess how well the private sector has recovered in 2012, but an increased number of active borrowers in micro-finance institutions have been reported for the first three months.

3.1.6 Small and Medium Sized Enterprises (SMEs)

SMEs provide crucial employment to millions of poor people in Yemen, while being very vulnerable to shocks. During the crisis a considerable number of SMEs were forced to close down due to a range of challenges such as insecurity, lack of electricity, increased input prices, transport challenges, and reduced access to credit (mainly informal credit). Some SMEs suspended operations until the situation improved, though it is unclear how many of those that suspended their operations have been able to restore their business. In urban areas the impact of the crisis on SMEs was severe, for example, in *the two main demonstration areas in Sana'a City over 500 small businesses closed down. Rural areas faced different challenges, such as Abyan, where many SMEs closed due to the insurgency.* Looting from small commercial stores was also reported during the crisis (CoC 2012).

The Small and Medium Enterprise Promotion Agency (SMEPs), a subsidiary of SFD, carried out a study of 100 SMEs in the summer of 2011. The main objective for the study was to assess whether demand for business development services was present among SMEs, and if so, what were the main reasons enterprises were not accessing these services. The following findings relevant to this assessment emerged from this limited study:

[34] According to the Federation of Chamber of Commerce in Sana'a, the classification for large companies are those with over 500 employees, medium-size enterprises have over 100 employees, and small enterprises have less than 100 employees.

- Only three of the enterprises had been established in 2011.
- 2010 was the best year for SME establishment (between 2008 and 2010, 30 percent of the enterprises had been established).
- Although lack of electricity was a major constraint during the crisis, all the enterprises complained about structural issues such as unfair taxation and weak governance.

3.1.7 Support to SME Growth through Micro-Finance Institutions

Information of overall bank lending to small- and medium-sized enterprises (SMEs) is not available therefore this assessment looks at lending by micro-finance institutions (MFIs) (most of these MFIs are donor supported and therefore have obligations to report results in a more transparent manner). Growth in this sector has been extremely rapid over recent years, and it is unlikely that conventional bank lending to businesses will have grown to any degree at the same rate. There are 13 MFIs now registered in a micro-finance network, however it needs to be recognized that micro finance is primarily targeted at micro/individual rather than small and medium enterprises, (with the exception of the Small Enterprise Development Fund, which targets SMEs), loans are small, and are more likely to assist individual income generation rather than promoting employment.

The majority of MFI programs are present in urban areas and this indicates that the target businesses are likely to be small or micro enterprises involved in retail, manufacturing, and food processing. Regional coverage is patchy and some governorates and many districts are not served by formal MFIs. According to the Social Fund for Development the 13 MFIs they support had the following results at the end of 2010 and 2011:

The above figures indicate a reduction in lending during 2011 and a very significant increase in portfolios at risk. It was reported that as of March 2012, the PAR is beginning to diminish. The number of individuals actively saving has increased significantly but the total amounts saved were not available.

3.1.8 Large Enterprises

As individual entities, large enterprises are more resilient to changes in the business environment than small and micro enterprises; they have greater access to collateral and therefore financial support, and have more political status and clout, especially in the context of Yemen. However, job security of employees and laborers engaged with large companies is much less certain, particularly during times of crisis.

As a case study for this assessment, the Resident Director of the Thabet Group of Companies was interviewed. Thabet Group of Companies is the second largest group of companies in Yemen and employs over 7,000 full-time employees, with thousands of part-time, informal, and sub-contracted workers. The Thabet Group of Companies operates in a wide range of sectors from oil, shipping, cargo, and food to packaging. Of its 7,000 full-time employees none lost their jobs as a result of the crisis, however many of them were given unpaid leave for a short period (around two months on average). But the impact of

Table 12: Key Micro-Finance Institution Data

Organizations interviewed	December 2010	December 2011	Comments
Number of Active Borrowers	66,419	63,618	More than 50 percent female
Total Portfolio Outstanding	YR 4,413,000,000	YR 4,030,000,000	
Portfolios at Risk (PAR)	0.03 percent–5.1 percent	1.4 percent–28.6 percent	Range between 13 MFIs (lowesthighest)
Number of Active Savers	59,087	87,277	

Source: Social Fund for Development.

Box 2: Al Amal Microfinance Bank Statistics pre-2011 and 2012

- Growth in overall disbursements slowed significantly during crisis—growth from 2009–2010 was 17,565 loans, whereas from 2010–2011 it was only 12,506 loans.
- Growth of loans disbursed to youth fell from around 6500 per year to 3700 during the crisis.
- The number of savers between 2010 and 2011 increased by over 10,000 savers.
- Repayment rates fell from 100 percent to 98.5 percent
- Lost 35 percent of their operational coverage during the crisis due to insecurity.

	2009	2010	2011	2012 (up to February)
Number of loans disbursed, cumulative	5,858	23,423	35,929	39,549
Amount of disbursed loans, cumulative	1,384,322	5,522,201	8,492,627	9,338,178
Number of disbursed youth loans, cumulative	2,636	9,128	12,863	13,976
Number of savers	4,758	18,512	33,047	33,746

the crisis on informal workers was more difficult to ascertain, for example, the Thabet Group hires many unskilled workers for labor intensive operations such as loading and transport of goods. It can be assumed that during the crisis these informal workers received significantly less income due to the widely reported transport delays.

3.2 Related Employment and Labor Markets Issues

This sub-section will explore several key employment markets in greater depth and any impacts the crisis has had on them. The justification for selecting the following employment and labor markets is based on high numbers of people working in each sector, a high incidence of poverty among workers in each sector, and sectors which show promising pro-poor job creation and growth prospects.

3.2.1 Poultry Farming

The commercial poultry sector in Yemen has seen a huge expansion in production since its beginnings in the 1990s. It was reported by a representative of Marshall Breeders Pvt. Ltd., a company that imports day old breeder chicks from India, that the impact of the 2011 crisis on this sector was very marginal: normal delivery dates for chicks were delayed by a few weeks. Broiler producers did however incur increased costs due to delays in sending live chicken to market, along with increased transport costs for eggs and meat. Ministry of Agriculture and Irrigation estimated in 2008 that 400,000 people (almost entirely men) were employed

in the poultry industry. This figure must be significantly higher for 2012. A major strength of this industry is its very competitive nature, with many producers based around Ta'iz and Sana'a. It is also reported that local investors are very well informed, innovative, and dynamic, with the result that new genetic breeds are being raised with exceptionally good results. This sector is said to be expanding faster in Yemen than other countries in the region, but the market is still below saturation point. Yemen is a big meat eating country and chicken meat, being significantly cheaper than other meats, is extremely popular. The industry is however vulnerable to currency fluctuations and international prices since almost all its inputs are imported. Along with breeder chicks from India, it imports soya beans from South America, feed concentrates from Europe, and specialized medicines from manufacturers within the region.

3.2.2 Fisheries

The fisheries sector is a key livelihood source for many poor communities in Yemen, but also many people working in boat building/maintenance workshops, auctioneers, processers, transporters, wholesalers and exporters. According to the household budget survey in 2005/2006, fisheries accounted for 0.8 percent of the employed labor force. Continuous growth has been experienced in fisheries, for example, in 2000 there were only 32,182 fishermen in Yemen, but in 2010 it was reported that there were almost 75,000 (Fisheries Report 2012). In total, the fisheries sector is said to provide financial support to around 750,000 people and 94,000 households. It is estimated that the 2011 crises had significant effects on livelihoods in the fisheries sector, besides the negative effect on resources, and overall limited sector productivity and performance. The main factors contributing to this were (i) increased diesel/fuel/food prices; (ii) limited access to resources and low utilization; and (iii) electricity supply.

The country's fisheries sector consists of two main sub-sectors, namely, *marine fisheries* and *aquaculture* (mainly shrimp farming). While artisanal fisheries dominate the marine sub-sector, accounting for almost 98 percent of total fish production, the development of aquaculture is very much confined. The country's long coastline of 2,250 km (552,669km^2 Exclusive Economic Zone (EEZ) area), is endowed with diverse coastal habitats that include some of the richest marine resources in the world.[35] Therefore, Yemen has significant potential for expanding its marine fisheries. During the past decades, in line with the broad national development goals, policy has centered on institutional and infrastructure development, and efficient management and maintenance of fish landing sites. Policies have also encouraged (particularly in the private sector) the increase of fish production and the development of the fishing industry and fish products to meet increased domestic demand, as well as, to bolster fish exports.

After oil, fisheries constitute a main source of export revenue and contribute up to three percent of the country's GDP (Fisheries Report 2012). While many improvements can still be made, the export market demonstrates significant potential for further job creation and growth, whereas from a food security perspective, the domestic market provides a vital and affordable source of protein.

During the crisis, the supply and price of key inputs required at different stages of value chain were extremely unreliable in most areas. Operational costs for fishermen increased by 15 to 25 percent, largely attributed to the increased cost of fuel for fishing boats. In order to cope, it is believed that fishermen spent longer at sea in an attempt to harvest more catch and get a better return on their fuel investments. At the same time, there was a clear absence of Monitoring Control and Surveillance (MCS) (regulation usually undertaken by

[35] A variety of important ecosystems such as coral reefs and mangroves, including around 185 offshore islands, support about 65 commercially important species including invertebrates (shrimp, lobsters, cuttlefish, sea cucumbers), pelagic (Yellowfin and longtail tuna, kingfish, queenfish, Indian mackerel, Indian oil sardines) and demersal species (groupers, emperors, jacks, bream).

government) so data on key indicators such as production is patchy and should be interpreted with caution. The poor supply of electricity meant that 40 processing plants with cold storage and refrigeration facilities had to close during the crisis. Current reports from the Ministry of Fish Wealth (MFW) indicate that now only three processing plants are functioning in Yemen, with the consequent loss of over 1500 direct processing jobs, of which 45 percent are said to be held by females.

Interestingly, according to MFW data, total fish exports increased in 2011 by over 2,500 metric tons and US$18 million in revenue. It appears that the export of frozen crabs and lobster increased most dramatically during the crisis, 80 percent and 150 percent respectively. Given the significant blockages associated with fuel and electricity, this increase in fish exports may seem out of context and therefore requires an understanding of the domestic fish market. During the crisis, the supply of fish to the domestic market is estimated to have decreased by up to 40 percent due to reduced margins of the transporters and domestic traders and security issues associated with transport. This is said to have increased the domestic price in urban centers by almost five times and as a result, some retail outlets had to close down. Therefore, fishermen and auctioneers decided to sell more fish to regional export markets.

Some areas were more severely affected due to conflict and displacement than others. For example, the crisis saw nearly 3000 boats put out of action across Yemen, of which 1,865 were in Abyan and 1,000 in Shabwa (Fisheries Report 2012). The MFW believe that this decline in operations has left 9,500 people jobless. In areas where fishermen were operational during the crisis, those in rural areas faced significant challenges with the maintenance of their equipment and supply of gear. It is reported that many boat and gear workshops were not functioning due to limited supply of material for repair services. Typically, it is believed that the poorer fishermen were most affected by this, as they tended to have older and more unreliable equipment (Fisheries Report 2012).

In line with the National Transition Plan (2012–2014), the key needs to be addressed are to (i) improve support to fisher communities for livelihood development and increased access to economic opportunities such as fostering SMEs, including aquaculture development, and (ii) enhance domestic/export market supply and value chains.

3.2.3 The Qat Market

In recent decades Qat production has become central to agricultural livelihoods in Yemen, and it is now estimated to provide employment to millions of workers. It accounts for six percent of overall GDP and 33 percent of agricultural GDP. In 2009, research indicated that there were over 600,000 small-scale Qat farmers in Yemen, which accounts for more than half all small-scale farmers. *In total Qat provides employment to one in seven working Yemenis (World Bank Qat' report).* There are numerous factors which incentivize the production, most notably the continuous growth in demand with the majority of value remaining with the farmer. It can be harvested almost year round and there is a quick return on investment, as sales can be made regularly with short payback periods for producers. It is cultivated through either rainfed or irrigated farming systems but high levels of irrigation using subsidized fuel for pumping the water has proved highly profitable. Poorer farmers use a combination of both techniques and the poorest small-scale farmers depend on rainfed production. About 25 percent of all rural households produce and sell Qat. While Qat is produced by households in all income categories more households in the richest quintile sell Qat (31 percent of the households in that quintile versus 18 percent in the poorest quintile). Qat contributes a much higher share of the richest household monetary income than is the case for the poorer income quintile (50 percent of the rich agricultural income comes from Qat, versus 36 percent for the poorest).[36] Within the agricultural sector, food production and

[36] World Bank, Republic of Yemen, Rural/Local Development Strategy, Implementing the Poverty Reduction Strategy in Rural Areas, Updated June 30, 2004.

non-food cash crops (mainly Qat) compete over water and fruitful land.

The percentage of household income spent on Qat increased during the crisis: As part of the household budget survey in 2006, 72 percent of males and 33 percent of females reported that they regularly chew Qat. Most Yemenis are habitual users; more than half of those who chew did so each day of the week. In 2010, the share of expenditure on Qat by food-insecure households was 7.1 percent, which was almost as high as expenditure on health (7.3 percent). In 2011, severely food insecure households apparently spent eight percent of their income on Qat, and moderately food insecure households spent 10 percent. Their expenditure on health and education combined is 11 percent (five percent and six percent respectively). In Sana'a Governorate, expenditure on Qat increased from 12.6 percent to 16 percent (WFP 2010 and 2012). Qat is reported to suppress hunger and is therefore likely to have severe nutritional consequences. In urban centers during the crisis, it is widely reported that political parties incentivized people to support their party with offers of free Qat, food, and water. This indicates that demand increased during the crisis, therefore, controversially, the Qat market actually provided a reasonably secure source of income and employment for those engaged in the sector.

High consumption has social and health implications, which should be addressed at the national level. At the same time more effort is needed to diversify agricultural production. High value, less water intensive cash crops such as coffee, or innovative crops such as Aloe Vera for medicinal and beauty treatments, need to be more vigorously promoted.

3.2.4 The Coffee Market

In July 2009 the World Bank funded a value chain report and this provides a detailed analysis of the Yemeni coffee market. *In 2008, there were over 100,000 coffee farmers in Yemen*, in addition to which, there are thousands of workers involved in collecting, processing, retailing, and exporting. Recovering from a decline in early 2000s, the coffee sector now shows promise, as it reached a production peak in 2008 with a record farm output, production area, number of farmers, and yields. In sharp contrast with production, exports have recently gone down, and more and more coffee does not even enter formal market channels. Farmers get the highest share of the retail value and there are considerable opportunities for vertical integration, allowing farmers to maintain even more value (such as peeling, washing, drying, roasting, and even packaging). Collectors, processors, and exporters are highly specialized in coffee, while farmers maintain more diversified incomes. Credit flows among chain actors are limited, as well as flows of information. Unfortunately, detailed impact of the crisis on the coffee market is unknown; however it is clear that the sector still demonstrates promising signs for job creation and growth. IFAD has recently begun implementing a new agricultural program, which intends to strengthen the entire coffee value chain.

There is an overly complicated system for quality grading, largely depending on origin, and regulation is inconsistent. Hence, the quality grading system does not have the desired effect and is ineffective. Yemen could use examples from other countries to design a more effective quality grading system. For example, Colombian coffee is renowned as high quality coffee and is competitive at a global scale. However, Colombian coffee has a very simple nationwide quality system, essentially grading quality on the size of the bean, rather than the type of tree. Along with this grading method, farmers wishing to sell the highest level coffee and capture all the associated value turn to contracting farming arrangements with globally known coffee shops and supermarkets. Coffee farms in Yemen are small; depending on the region they have an average of 225 to 250 trees. Higher up the value chain, interventions to improve market linkages between domestic and international actors and branding of Yemeni coffee should be considered.

3.2.5 High Value Fruits

Fruit farms provide an important source of employment and labor in Yemen. For example, the governorate

of Abyan has a long tradition of high value fruit production such as mangos, bananas and pomegranates. Many commercial fruit farms just grow produce and outsource harvesting and transportation to traders, meaning that seasonal labor opportunities were available pre-crisis, often for landless rural populations. Conflict was, and still is, present in Abyan, which has resulted in large-scale internal displacement. Though clear evidence is not available, it is highly plausible that many commercial fruit farms were deserted during the crisis, and consequently production and farmer incomes decreased.

Despite the likely impact on fruit farms in Abyan during 2011, high value fruit markets in more secure areas of Yemen still present significant opportunities for export-led growth. A recently constructed asphalt road along the entire Yemeni coastline (where most fruit farms are located) will remove previous transportation constraints, opening up new markets to many fruit farms. Efforts should be made to improve market information and linkages especially to more remote fruit farms, perhaps through the establishment or strengthening of marketing associations. Availability of quality inputs is another constraint that should be addressed, with particular focus on supporting the development of a competitive private sector. To tackle the issue of water shortage more support needs to be provided to ensure that the most effective and efficient irrigation systems are used.

3.2.6 The Construction Market

According to the HBS in 2005/2006, 11.7 percent of the working population was employed in construction and building, amounting to 485,000 people. This represents one of the largest employment sectors in Yemen, particularly among the urban poor and rural migrants. Construction employs workers with varying levels of skills, but for the purposes of this report the focus is on semi-skilled and un-skilled laborers, many of whom are 15–24 years old.

Several key informants interviewed by the JSEA team indicated that huge losses were incurred in this sector during the crisis.

Foreign investors discontinued investment in construction works during the crisis. For example, an investor from the Gulf had planned an US$800 million investment (with significant construction components) but this was halted due to the crisis.

3.2.7 Publicly Funded Construction Works

Currently there are believed to be over 1,000 government funded construction projects contracted-out by the Ministry of Public Works and Highways (MoPWH). During the crisis, it is reported that most of these projects were suspended, and to date many of them have still not been resumed. Contractors themselves suspended the projects due to increases in prices. MoPWH had a total of YR 85,659 million (US$390 million) allocated for disbursement in 2011. Actually disbursed was only YR 37,907 million (US$172 million), for works that had already been implemented. There is a further YR 25,000 million (US$114 million) committed to contractors, out of which to date only YR 9000 million (US$41 million) has been paid (MOPIC 2012).

Disbursement from publicly funded works schemes appear to be low. In an interview with the Director of the Public Works Project (PWP), it emerged that out of a targeted disbursement of US$80 million for 2011, only US$42 million was disbursed. Out of all PWP disbursements 30 percent is budgeted for labor. Rough calculations would therefore indicate that during 2011, PWP's expenditure on labor decreased from US$24 million to US$12.6 million. At an average wage of US$7 per day, this decrease in expenditure translates into a loss of around 1.6 million working days.

3.2.8 Privately Funded Construction Works

Privately funded construction work was also impacted by the crisis. Private investment dried up abruptly and thousands of informal laborers lost their jobs. Real estate sales came to a virtual halt during the crisis. Currently, there are many daily laborers waiting from early morning at collection points in Sana'a City. It may also be the case that more semi-skilled and

Interviews with construction labourers from queues around Sana'a (الحراج)

Mohammad Ameen is from rural Ibb. He left his village, his wife, a daughter and his parents in search of work. He said "the daily labourer is in crisis"; since 2009 the market has been stagnant but in 2011 it got worse, so there were very few opportunities, sometimes we used to get one or two days per week and sometimes not; but after the presidential election in February, the market started to move and actually I worked continuously for two weeks but then the cement prices increased, from YR1400 to YR2500 and the market went back to being slow. Now we hardly get an opportunity".

Nabeel Kasim is from the Hubaish district in Ibb, he finished seventh grade and he came to Sana'a for an opportunity in construction jobs. He works as unskilled labourer in construction and has four children back in his home village; he also sends money to his parents. Just like others interviewed he thinks that the situation is hard and often works just a few days a week (if not a month).

An elderly man, **Shaiba Bagash** who works as a wire knitter for reinforcing concrete was there with his son Mohammad who is in fifth grade, he said "there was no school today since teachers did not come because of the rain so they asked the children to go back home and I brought my son with me to start learning this skill, but there is no opportunity today and it looks like this most days".

unskilled construction laborers have recently migrated from rural areas to Sana'a City. Laborers reported that immediately after the transitional government came to power more work was available, but that the market has now slowed down again. The increased cost of building materials is cited as a major reason for this slowdown.

3.2.9 Supply and Service Markets Supporting Construction

Yemen imports most of its construction materials. Overall, imports of materials declined during the crisis, resulting in a shortage in supply and increases in prices. For example, during the crisis metal bars used in reinforced concrete rose from YR 160,000 per ton (US$750) to YR 200,000 (US$930), which was higher than the international price. Production of domestically produced cement stopped during the crisis due to the cost of fuel and shortage of electricity. It is also alleged that the monopolistic domestic cement market (three out of five domestic factories are owned by the Government) was being starved of supplies in order to manipulate the price upwards.

Despite the magnitude of impact on the construction sector during the crisis, there are promising indications of renewed activity as raw material supplies increase. In response to several local cement factories temporarily closing, cement is being imported in larger quantities from Saudi Arabia although imported cement prices are higher which represents a business risk for local building contractors. At YR 2,300 per 50kg sack, Saudi cement is almost double the cost of Yemeni cement (Yemen Times April 2, 2012). For construction laborers like Mohammad

Ameen (see his story previously), the increase in the price of cement means that he no longer has a reliable source of income.

3.2.10 Retail and Wholesalers

Retail and wholesale is the second biggest employer in Yemen, after agriculture, employing over 650,000 people, which accounts for 15.7 percent of all employed Yemenis. Most retail outlets in Yemen are small-scale and family-run; therefore employment records rarely exist. Although quantification of impact is not possible, it is clear to see that retail was hit hard during the crisis. For example, in the two major demonstration areas in Sana'a City (Tahrir/Al Dairi), over 500 small businesses closed down (CoC document).

Shops that did stay open faced significant challenges. For example, thefts (some armed) from stores increased during the crisis. Pressure from customers for credit was another major challenge. *In 2010, 18.6 percent of food was purchased on credit, whereas in 2011 this figure rose to 25 percent (WFP 2010 & 2012).* This statistic is also backed up by the SFD labor intensive baseline survey carried out in 2010, which found that 65 percent of households reported food shortages. However, only 20 percent reported that this shortage affected household food consumption, as nearly 90 percent of affected households said they purchased food on credit. It seems that as the crisis progressed, retailers and wholesalers became more averse to providing credit. Retailers resorted to only giving credit to those that they knew well and trusted.

Small Grocer in Al-Khafji (a poor, mainly immigrant community in Sana'a City)

Ali Al-Kholany has owned and run his shop on 16th street in Al-Khafji for 40 years. He also owns another shop in "Taiz Street" which is managed by his son. He said: "2011 was a difficult year for everyone, I was careful and I stopped selling on credit except to home owners or people I have known for years and can trust. I stopped giving credit for two reasons; I am not able to get any more credit from my wholesaler, and people in the neighborhood particularly those who are working in the private sector lost their jobs and were unable to repay. Those who do not own their homes can relocate overnight and I would not be able trace them for repayment."

He indicated that the grocery market had improved this year; food prices such as wheat flour came down from YR 6000+ in 2011 to YR 5300, and the same trend occurred with rice and vegetable oil. However, since 2011 not all types of food are available. For example, the price of a branded carton of dried milk (400 grams) increased in 2011 from YR 700 to YR 1000 and it remains very expensive today. He described his customer's use of credit by explaining that most pay off their balance at the beginning of each month, when they get paid, and immediately start to borrow again.

3.2.11 Greening the Yemen Economy

In 2008 it was estimated that only 39 percent of the population had access to grid-supplied electricity. In a World Bank commissioned report, *Yemen Renewable Energy Development Strategy* it is stated that: "Yemen is not only endowed with crude oil and natural gas resources but also with renewable energy resources such as wind, solar, geothermal, hydropower, and biomass energies. The development of renewable energies in Yemen could play an important role in achieving the government's long term sustainable power sector development goals of meeting the rapidly growing electricity needs necessary for the country's economic development."[37]

The expansion of access to electricity in rural areas of the country is a necessary prerequisite for increased

[37] World Bank, Yemen Renewable Energy Development Strategy, forthcoming.

JSEA NGO Workshop – Al-Br and Al-Takaful Association in Mareb

Abdulhakeem, a participant from the JSEA NGO workshop, indicated that Mareb suffers from poverty while high quantities of oil and electricity are generated in his governorate. He suggested that an initiative in one of the districts to find those who have destroyed oil pipes and other public services should be implemented. He also said that an entrepreneur from his area is now supplying his village with expensive electricity (from a diesel fuel generator) when the electricity is off. In response to this, his organization has called for the use of solar energy.

agricultural productivity, job creation, income generation, and general economic development. Businesses and residential consumers often rely on expensive private diesel generators for electricity during typical "brownouts" or on low energy value/high cost traditional energy sources, such as kerosene. Expanding supply will result in significant cost savings.

Opportunities for electricity extension to rural areas are waiting to be exploited. During 2004–2008, a US$1 million Global Environment Fund project was implemented by the World Bank, which conducted a renewable energy resource assessment and then produced a renewable energy plan development, and rural electrification plan through both grid extension and off-grid renewable energy development. In 2009 the Bank approved a grant for a rural energy access project, mainly through grid extension, and a small component of off-grid solar photovoltaic for isolated areas. However, there has been no progress on the project due to delays, slow preparation, and then the political crisis. Meanwhile, MENA region countries such as Morocco, Algeria, and Egypt are all developing ambitious wind and solar programs. The Yemeni parliament, in April 2012 approved a US$65 million loan from the Arab Fund to invest in a government-owned wind farm, with the Kuwaiti Government agreeing to a grant of US$6 million. The details have yet to be clarified.

3.2.12 Recommendations

Yemen needs to hasten the shift of employment away from a relatively high dependence on the agricultural sector towards creating more opportunities in the industrial and service sectors. For this to happen agricultural productivity must be increased (as stated also in other sections of this assessment, including the one on food security) so that more food can be produced with less labor thereby making food production a more economically attractive undertaking. This also implies the need for an economic incentive-driven shift away from the production and sale of Qat. This should be combined with anti-Qat consumption campaigns, similar to the anti-tobacco campaigns that have reaped some success in other countries. Co-opting influential national and community leaders is a very first step toward establishing impact in Qat reduction.

Pilot interventions that seek to incentivize private sector enterprises involved in production and manufacturing or service industries are required. (For example in the fish sector: support services such as maintenance, rehabilitation, and supply of modern and effective gear, motors, and tools need to be strengthened). Supporting new private sector players and thereby enhancing competitiveness through improved access to financial services, including micro-credit, bank loans, and insurance, as well as the provision of reliable and cost effective energy sources for cold storage and food and fish processing are a must.

Interventions to increase women's engagement in employment and livelihoods are also required. The rural women in Yemen have very low levels of involvement in decision-making concerning their families (SFD Survey 2011). However, in studies on coping strategies it has been shown that women-headed households tend to use a more diversified set of strategies that those headed by men. By increasing the number of its coping strategies, a household is attempting to reduce its exposure to risk.

Work needs to become more productive and more formal. Levels of informal employment in Yemen are

the highest in the MENA region. This has a tendency to distort or reduce the growth and operation of companies by keeping them outside the national legal framework. In addition, unregistered workers have little or no protection, which makes them extremely vulnerable to economic and social shocks, such as the political crisis of 2011. They also have no access to health insurance or pensions. Access to finance and commercial loans for supporting MSMEs (Micro, Small and Medium Enterprises) investments and job-creating efforts is a major constraint and remains extremely limited, even through existing micro-finance networks. These issues need to be addressed in a gradual but systematic way whereby only larger firms (estimated to employ more than 500 workers) are targeted in the initial phase.

Structural changes, as set out above, tend to lead to increased urbanization as workers concentrate around industrial zones and/or areas of high population density where service sector employment can be found. A framework of public policies is required in order to energize this process, which demands the direct engagement of the state in stimulating economic development and transformation. In parallel with policies and programs, which seek to increase agricultural productivity, there must be an equal emphasis on promoting the off-farm sector. This includes the provision of technical and vocational training along with well-targeted apprenticeship schemes for high skilled workers, including jobs in the so-called 'green economy.'

There is rapid growth opportunities in embracing renewable energy sources such as solar, wind (offshore and on-shore), and geothermal. A quick reassessment of the potential for these technologies, in light of technological advances since the World Bank report of 2008, needs to be undertaken at the earliest opportunity so that Yemen does not fall behind in the race to harness these opportunities. There are many alternative strategies regarding the future deployment of this technology. One possibility is to develop a more decentralized and regionally targeted energy and industrial policy, which fully recognizes the comparative advantages of different regions. This could involve a move towards off-grid energy generation in remote areas that are difficult to access via a national grid (thereby creating opportunities for small and micro enterprise development) along with the construction of localized energy grids close to areas identified for industrial growth.

Finally, the central state could consider relocating government ministries and departments (for example those associated with fisheries or shipping) to locations away from the capital and closer to their target clientele. This would promote urbanization in areas where water may be more abundant and lessen the burden of increasing urbanization in Sana'a.

3.3 Employment Schemes and Social Welfare

3.3.1 Introduction

Three main programs of Yemen's Social Safety Net are: the Social Welfare Fund (SWF), the Social Fund for Development (SFD) and the Public Works Project (PWP).

An overview on these three programs is provided in the table below:

Social Welfare Fund (SWF)

Established in 1996, SWF is the largest social cash-assistance program in Yemen: YR 60 billion budget in 2011 (about 0.65 percent of GDP). SWF currently has nearly 1.5 million beneficiary cases; 50 percent can engage in economic activities. The cash transfer ranges from YR 2,000 to YR 4,000 per HH per month, and is transferred on a quarterly basis. SWF offers other benefits to its recipients: fee waivers for health and education services as well as emerging programs of conditional cash transfer for health and education. SWF has multiple programs for beneficiaries' development BDP's including microfinance and training. Also beneficiaries who meet specific criteria can get an advance payment equivalent to their annual entitlement, to purchase income-generating assets.

Box 3: Social Protection Programs in Yemen

	Mandate/Targeting/Challenges	Potential Investments
SWF	Provides cash allowances to poor households: no conditions imposed except having a renewed registration card, piloting CCTs and beneficiary development programs. Challenges include: inadequate allowance, inclusion & exclusion errors.	Increase the institutional support to implement CCTs. Include new target areas of CCT in education and health. Increase the level of stipend. A study to determine the poverty gap is required.
SFD	Provides community Development interventions in addition to Community based cash-for-work for the chronic and transitory poor, increases poor communities' access to basic services, and provides microfinance and capacity building. Challenges including inadequate financial resources and limited outreach of microfinance to rural areas.	Currently SFD-IV (2011–15) has a gap of US$600 million to meet its objectives. Increasing investments through the labor-intensive works programs both through the community-based cash-for-work or through other mechanisms is an option. More funding could be directed to more temporary employment generating activities such as rural roads. Other SFD operations supporting youth, the decentralization process, microfinance and social harmonization could be funded. See below elements of the strategy paper developed to respond to the crisis.
PWP	Creates job opportunities for skilled and unskilled construction workers while promoting small scale contractors. Driven by service needs. Does not target the transitory poor.	Increasing investments in labor intensive works program. More funding could be directed to the upgrading of rural roads.

SWF Beneficiary Development Programs

- The training program benefited about 27,000 beneficiaries (end of 2010) but few beneficiaries found a job due to limited labor market uptake. Training quality may have been a contributing factor;
- The microfinance (MF) program has an estimated 3,800 active clients with successful outcomes;
- To improve the MF program in terms of coverage and performance, SWF is forging agreements with MFIs with good practices to target their beneficiaries.

Social Fund for Development (SFD)

The SFD was established in 1997 and contributes to reducing poverty by increasing the access of poor communities to basic social and economic services, building the capacities of local partners, and empowering communities and local authorities to implement developmental works. The SFD seeks to achieve these goals through four multi-sector programs:

- Community and Local Development;
- Small and Micro Enterprises Development;
- Capacity Building;
- Productive Safety Net Labor-intensive Works Program (LIWP).

In addition to the above programs, in 2006, SFD started a Rainfed Agriculture and Livestock Development Project (RALP) in 23 districts in five governorates to increase productivity and income of rural producing groups.

From 1997 to December 2011, SFD implemented 12,047 projects in all sectors worth US$1.44 billion; more than 70 percent of this amount was disbursed.

In 2012 SFD elaborated its fourth phase (2011–15) Strategy Paper[38] to respond to the crisis/post crisis situation; this states the following:

[38] SFD's response to the Aftermath of 2011, March 2012.

- LIWPs will be diversified and have much wider geographic coverage.
- LIWPs implementation will be accelerated (US$45 million and US$70 million will be disbursed in 2012 and 2013, respectively);
- At least 5 million person/days will be added to the temporary employment output of SFD. (The previous plan targeted the creation of 20 million person/days, which is now increased to 25 million/day. This increase will be achieved by simplifying the type of works undertaken, therefore employing more unskilled workers);
- Nutrition and social harmonization themes will be introduced, fostered, and mainstreamed through SFD's relevant operations and training packages;
- Employment generated will become a cross cutting indicator for various sectors and programs.

Public Works Project (PWP)

The Public Works Project was established in 1996, under the auspices of the Ministry of Planning and International Cooperation (MOPIC) and implements basic infrastructure projects. Its aim is to mitigate the adverse effects of Yemen's structural reforms that started in 1995. The PWP aims to create job opportunities for skilled and unskilled laborers while providing infrastructure service projects for the poor and deprived communities in remote areas. PWP also promotes the development of the local contracting and consulting industry. By the end of 2010 PWP had implemented 3631 projects, with an estimated cost of US$310 million and creating temporary job opportunities of approximately 648,956 person/months.[39]

Main Differences between the SFD and PWP

Both SFD and PWP implement basic infrastructure works: rural roads, street paving, and construction of schools and training centers, health facilities, and water storage schemes. These activities generate employment opportunities with the budgeted labor content above 30 percent. However, there are differences:

- SFD implements a community-based cash-for-work program (with two models: one rural and another urban). The rural model targets poor communities with simple interventions such as land clearance and terrace rehabilitation, etc. The labor content in this Program is more than 60 percent;
- SFD has more diversified programs. For example: SFD supports financial and non-financial services. Currently SFD supports 12 active MFIs and banks that provide services throughout the country. SFD has a subsidiary agency that promotes business development: the Small and Micro Enterprises Promotion Services with three branch offices (Sana'a, Aden and Al-Mukala);
- The SFD budget is almost three times that of PWP. In 2011 SFD disbursed US$132 million, while PWP disbursed US$42 million.

3.3.2 Recommendations

Increase funding to community-based labor intensive works to channel cash into the hands of the poor to help them to cope with the impact of the crises. Such a program could continue even after recovering from the crisis and serve as a productive, social safety net, targeting chronically poor sub-districts and female-headed households.

Given the fragility of the government institutions, both SFD and PWP are effective instruments to assist the livelihoods of most vulnerable persons throughout Yemen. The current government has recognized this in its national unity program delivered to the Parliament on December 24, 2011. It acknowledged both SFD and PWP programs to be important instruments to create labor intensive works opportunities and to deliver basic services to local communities. Both programs are also good instruments to absorb

[39] PWP 2010 Annual Report.

donor funding. However, being heavily dependent on donor funds means the sustainability of their services could be affected.

3.4 Food Security

3.4.1 Introduction

The World Food Summit of 1996 defined food security as existing "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life." Commonly, the concept of food security is defined as including both physical and economic access to food.

- Food security is built on three pillars:
- Food availability: sufficient quantities of food available on a consistent basis;
- Food access: having sufficient resources to obtain appropriate foods for a nutritious diet;
- Food use: appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation.

The first two pillars are addressed in this section, whereas the third is addressed along with health and Water, Sanitation, and Hygiene (WASH) in Chapter 5.

3.4.2 Baseline Data

3.4.3 Current Situation

The issue of food insecurity became even more critical during the 2011 crisis and now requires urgent action. According to the preliminary findings of the WFP's 2012 Comprehensive Food Security Survey (based on data collected at the end of 2011), *there are over 10 million food insecure people in Yemen (44 percent of the population)*. Out of these, *over five million are severely food insecure (22 percent of the population)*, a figure which has almost doubled since 2010.

Spatial inequality remained high during the crisis. In rural areas 51 percent are now food insecure, with 27 percent severely food insecure. Urban populations also became significantly more food insecure during the crisis, jumping from 14.5 percent pre-crisis to 27 percent. As the map below demonstrates, the complexity of inequality does not stop at the rural vs. urban divide. Higher levels of food insecurity are concentrated in the Western Highlands, while the eastern governorates of Hadramout and Al Mahra have less than 20 percent of their population suffering food insecurity.

It is said that during the crisis 90 percent of households were adversely affected by high food prices. Physical access to food markets was also affected by the

Pre 2011 Baseline – Key WFP Facts

In 2010 WFP found (based on data collected at the end of 2009) that 6.8 million (31.5 percent) of Yemenis were food insecure, including 2.5 million (11.8 percent) being severely food insecure.

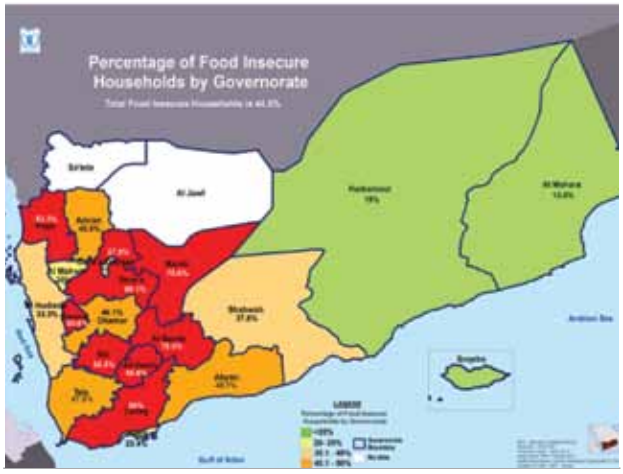
In 2010, Yemen had one of the highest malnutrition rates in world. Spatial inequality of food security was also large: rural areas having twice the number of food-insecure people than urban areas. Out of 21 governorates, five hosted 61 percent of all the food insecure and 66 percent of severely food insecure people.

Alternative studies showed that:

- One of three Yemenis have difficulty accessing sufficient nutritious food–IFPRI 2010.
- 13.2 percent of children between 6 to 59 months were wasted and 55.7 percent stunted – HBS 2005/2006.

Source: Government of Yemen and JSEA Staff

Figure 7: Percentage of Food Insecure Households by Governorate



Source: WFP.

crisis and this fact is likely to have contributed to food insecurity. The two most influential factors governing the rise in food insecurity were extortionate transportation costs and high levels of physical insecurity. In Sana'a City more than half the population is said to have had reduced physical access to food as a result of the protests (WFP 2012).

Rural and urban area were affected in different ways. The infrastructure of many public and private institutions at both central and local levels that play a major role in the provision of services for agricultural development (food producing activities) in rural areas were extensively damaged/destroyed during the crisis resulting in a loss of infrastructure and equipment. In some places (mainly Sana'a city, Sana'a governorate and Abyan, which were affected by direct war, and others that were affected by violence, vandalism, lack of fuel, and other related issues) office buildings, laboratories, irrigation networks, stores, workshops, and so on, were destroyed, burned and/or looted while in other places, vehicles, office furniture and machinery were stolen or destroyed. In some cases, because of of disbursement suspension by some development partners, contractors stopped work due to non-payment resulting in destruction of incomplete works due to floods.[40] Some PWP contracts have come to a complete stop. Total damages to agriculture infrastructure are estimated at about YR 202.64 billion (US$921.07 million equivalent).[41]

3.4.4 Coping Strategies

With an already high incidence of poverty pre-crisis (42.9 percent according to IFPRI 2010), poor and vulnerable people have long been undertaking a range of livelihood strategies. A household's capability to devise an effective coping strategy essentially depends on access to a variety of different assets. Table 13 below illustrates the types of assets that poor households might use. The more diverse the combination of assets a household has, the more resilient their coping strategy is.

Livelihood strategies based on the assets described above are very prevalent in populations within the two poorest wealth quintiles. WFP found that crop and livestock production was practiced by 72.6 percent. However 37 percent of rural households do not have any access to land and 44 percent of households with access have less than half a hectare (World Bank CS

[40] Groundwater and Soil Conservation Project.

[41] Ministry of Agriculture and Irrigation/Agricultural Cooperative Union Report.

Table 13: Livelihood Assets Used for Coping Strategies

Financial capital	Natural capital	Physical capital	Human capital	Social capital
Remittances	Water	Tools/Machinery	Capacity to work	Relationships and Trust
Cash transfers	Land	Technology	Skills development	Social Networks
Donations	—	Seeds	Education	Communication
Credit	—	Electricity/Fuel	—	—
Savings/pensions	—	Livestock	—	—

Source: Government of Yemen data and JSEA staff.

in Rural Yemen 2010). Access to ground sourced irrigation is expensive and often only available to better-off farmers. Access to technology, new tools, and machinery is almost non-existent among poor Yemenis (Agricultural Strategy 2012). Access to other physical capital such as fuel and electricity was a challenge for everybody during the crisis, and 39 percent (World Bank RN energy) of Yemenis are estimated to live in areas not serviced by the national grid. Human capital is also weak, particularly in rural Yemen. Support from family and friends were received from 66.8 percent and in-country remittances from 62.9 percent (WFP CFSS 2009/2010). The rural population has low levels of education and skills; men on average have 5.9 years of schooling and women 1.3 years (World Bank CS in Rural Yemen 2009). Also, 85 percent of rural women do not have access to income generating opportunities. It is estimated that two-thirds of rural households have very limited natural, physical, and human capital (World Bank CS in Rural Yemen 2009). Therefore, most households base their coping strategy on the four assets listed below:

- Remittances – migration of household members either to urban areas or to a foreign country (mainly unskilled labor), so that remittances can be sent home;
- Consumption credit – for example, from shopkeepers or borrowed from family or friends;
- Livestock production – eggs, occasional meat consumption and sale of animals, especially prior to Eid;
- Subsistence agriculture – for those that have access to some land the growing of small amounts of rainfed Qat, cereals, and vegetables. Employing traditional water harvesting and soil conservation techniques (such as terracing);
- During the crisis many people relied more heavily on social networks and a sense of social cohesion within rural villages, in order to cope with the lack of transport and non-availability of essential goods.

International Remittances

International remittances provide a direct lifeline to many households and are one of the most important sources of income, enabling households to better cope with their situation. *The net inflow of international remittances was estimated at US$1.3 billion for 2011, US$80 million more than in 2010 (IFC 2012 and Money Transfer website)*. Initial findings from *an SFD survey in 2011 indicate an increase from nine percent to 14 percent between 2010 and 2011 in households reporting remittances as a source of income.* Between 2009 and 2012, the cost of sending international remittances between Saudi Arabia and Yemen became cheaper and is now the fourth cheapest corridor in the world (IFC 2012). The 2011 increase will have provided additional purchasing power to recipient households.

Domestic Remittances

Households relying on domestic remittances are poorer and more vulnerable than those relying on international remittances. Of households relying on domestic remittances, 62.9 percent fall into the two poorest wealth quintiles (WFP CFSS 2009/2010). According to an SFD survey, more households reported that they were receiving domestic remittances in 2011. Conversely, it is believed that many poor and vulnerable households had to find non-remittance based alternatives to cope with the crisis. A reversal of the usual pattern of rural to urban migration occurred as many urban workers chose to return to their village homes due to unemployment and insecurity in major urban centers (SFD 2011 Rapid Assessment).

The financial services industry reported increased intra-national transfers. These may be due to one or more of the following factors, which have been reported anecdotally:

- Higher levels of insecurity during the crisis meant that migrant workers preferred to send money through formal financial service organizations, such as: Al-Kuraimi and Western

Union, rather than carry cash when traveling home.

- Workers avoided travelling during the crisis, as transportation costs were too high. They therefore used formal cash transfer channels to support their families.
- Due to lack of confidence in domestic banking services during the crisis, it is said that national NGOs and political parties chose to transfer money for their operations through these same remittance channels. Transferring money in this way is quicker and easier, but more expensive, than through a commercial bank.

Consumption Credit

One of the most common coping strategies in Yemen is access to consumption credit. Credit of this nature is common and usually administered through small commercial stores and larger retailers. At the time of the 2011 CFSS, over one third of households interviewed were in food related debt (CFSS 2009/2010). During the crisis, there are conflicting accounts of availability and access to credit to purchase food; such differences simply demonstrate the complexity of impact. On one hand, food retailers that were interviewed in Sana'a as part of the JSEA stated that as the crisis progressed they stopped providing credit as they themselves were unable to access credit from their suppliers. This tightening of food credit is reinforced by an SFD survey, which found that between 2010 and 2011 households able to buy food on credit dropped from 69 percent to 62.5 percent.

On the other hand, the CFSS found that food purchased on credit actually went up slightly between 2010 and 2011, from 22.4 percent to 25 percent (WFP CFSS 2009/2010 and 2012). It is assumed that, although statistically insignificant, this slight increase may reflect the differences between accesses to credit in rural vs. urban areas, as the CFSS had more national coverage than the SFD survey. It is therefore believed that consumption credit in rural areas was easier to access than in urban areas, perhaps due to stronger social capital between consumers and retailers. This would indicate that the urban poor using consumption credit as a coping mechanism were more impacted than rural poor.

Decrease in Food Consumption

Inevitably, some families cope with food insecurity by simply decreasing the amount and frequency of food consumption. An SFD survey found that the number of households in food deficit increased from 61.6 percent to 67 percent during the crisis. Out of these households, the percentage of households that reported missing meals rose from 27 percent in 2010 to 48.5 percent in 2011.

Savings and Credit Groups

Community saving groups, predominantly involving women, have been present across Yemen for many years and allow people to better cope with emergency situations. Each member of a group saves a set sum on a weekly or monthly basis. Members can withdraw their savings when it is either 'their turn,' or they constitute as a 'priority' due to some emergency within their family. This informal method of saving is a coping strategy for the rural poor who motivate each other to maintain the discipline of regular saving and who do not have access to more formal savings accounts. An alternative on this practice is when the group, having accumulated a sufficiently large sum of joint savings, agrees to make loans to individual members for specified purposes: either for income-generating investments or for consumption purposes.

The Post Office reported a change in saving patterns during the crisis (ILO interview 2012). Instead of savings being withdrawn when school and health fees were due; a more sporadic pattern emerged whereby people simply withdrew savings as and when they needed them. This indicates that during the crisis people coped by substituting investment in education and healthcare for more immediate consumption needs, such as food.

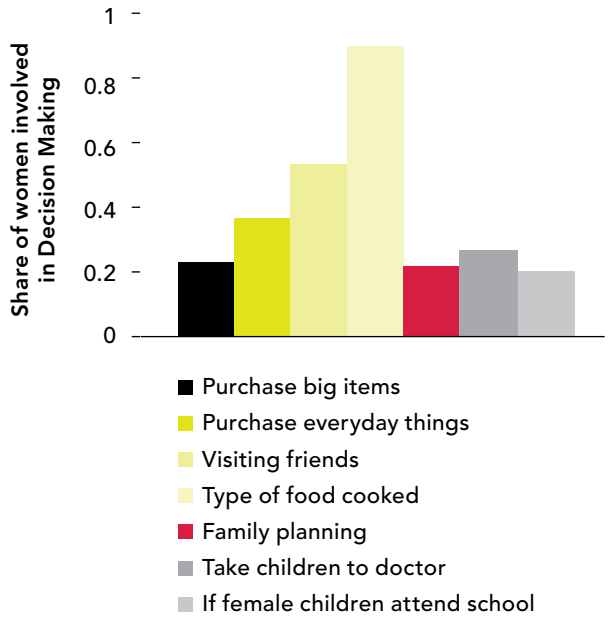
Empowerment of Women through Micro-Finance

Yemen ranks last in the UNDP's gender empowerment index. For example, women have little control over decisions relating to the household management, although women's sole decision-making authority in the household does grow somewhat with age, education, and having paid work or residing in urban areas.[42] The majority of Yemeni women reside in rural areas.

As illustrated in the table below,[43] rural women in Yemen have very low levels of involvement in decision-making concerning their families. However, in studies on coping strategies it has been shown that women-headed households tend to use a more diversified set of strategies that those headed by men (WB Coping Strategies 2009). By increasing the number of its coping strategies, a household is attempting to reduce its exposure to risk.

In countries, such as Bangladesh, where rural micro-finance programs have flourished over the past 20 years, numerous studies have shown a strong correlation between women's access to micro-finance and their increased status within the household: women's role in the household becomes more valued by other household members as they are recognized as a source of income for the family. As a result of this women gain more decision-making power. This has also been demonstrated in SFD's 2008 study on Gender and Micro-Finance, in Yemen. The report pointed out that traditions and customs pose significant barriers for women in accessing banks, which are considered the realm of men and where women feel they will not be taken seriously. Given such mobility restrictions, micro-finance programs offer women the opportunity to access financing to grow businesses for themselves or their family members to support their families and improve their status within the household. Still MFIs in Yemen remain small scale and predominantly in urban centers (78 percent) with only small penetrations to rural areas (22 percent).

Figure 8: Share of Women Involved in Decision Making



Source: Government of Yemen and JSEA Staff.

3.4.5 Local Food Production and Food Aid

Wheat Production and Subsistence Agriculture

There are two wheat markets—domestically produced (10 percent of the total) and imported (90 percent)—both of which are critical for food security. The figure below compares the growth of these markets from 1990 to 2008 (WFP 2010 FS Survey).

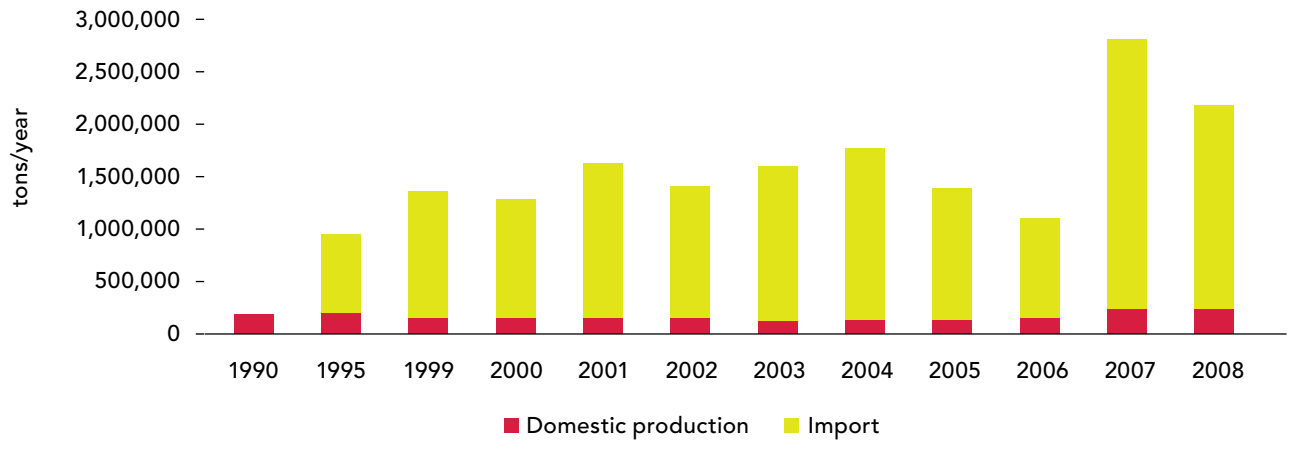
The Domestic Wheat Market

Domestically cultivated wheat is mainly grown as a subsistence crop by poor farmers in rainfed conditions above 1900 meters. It is also grown using irrigation in governorates such as in Mareb and Hadramout. In total,

[42] In a study conducted in 2010 by The Status of Women in the Middle East and North Africa, 37 percent of women in urban areas reported making decisions by themselves or jointly with their husbands regarding household purchasing (compared to 15 percent in rural areas).

[43] Conditions in Rural Yemen: findings from the RALP baseline survey, Daniel Egel et al. 2010.

Figure 9: Wheat–Domestic Production vs. Imports



Source: Government of Yemen and JSEA Staff.

the domestic wheat market has over 250,000 producers, which is second only to Qat. Although promising growth was experienced during the 2000s, there is a clear lack of competitiveness in the domestic wheat market and imported wheat is sold at a fraction of the price. In addition, around 60 percent of wheat grown is held back for household consumption.

From a food security perspective the fact that many of the poorest farmers grow small quantities of rainfed wheat for their household consumption is significant. It also provides support agencies with an opportunity to deliver effective advice services to those farmers in order to raise the productivity of their wheat crop. Typically, subsistence wheat farmers do not buy inputs such as seeds and fertilizers. They select the best seeds from the previous harvest, which is an effective strategy for around three years. In that timeframe fresh genetic seed-wheat needs to be available but subsistence wheat farmers do not have easy access to supplies. They cultivate wheat on ancient terraces, which are designed to be flood-irrigated should sufficient rain fall. This form of irrigation is very low cost and effective when good early rains occur. But it is high risk in these times of climate change as the seed can germinate and then die due to lack of water. The terraces themselves need to be frequently repaired, as they are very susceptible to erosion and quickly lose their level contours. This is labor intensive work and burdensome at a time when many males are migrating away from their villages in order to obtain paid work elsewhere. Some families simply do not cultivate their terraces nowadays as they feel that the rewards are too low to justify the effort and level of risk. SFD has interventions to rehabilitate terraces under its food for work program. To assist them to continue cultivation these farmers need advice on appropriate techniques for stabilizing their terraces, for storing rainwater, and on how to maximize their yields, perhaps by growing crops that are more drought resistant. It is possible that, as a consequence of increased unemployment during and since the crisis, more workers are available in these highland villages to work on their family terraces, but this has not been verified.

Other Subsistence Food Cultivation

Subsistence farmers either have very small land holdings, typically less than half a hectare, or they have small tenanted holdings. In mountain areas they are terraced, as mentioned previously, and on the coastal plains they tend to be interspersed between the holdings of much larger farmers. With a rapidly increasing population and growing indebtedness the further

fragmentation of these smallholdings seems inevitable. Along with some coffee and fruit production these farmers are likely to grow small quantities of vegetables primarily for their own consumption or perhaps for barter/sale in small local markets. The economic viability of these holdings is very limited. Although farmers have inherited knowledge of cultivation techniques, there is a need to introduce new climate adaption techniques and to empower these producers to take advantage of new seed technology and other innovations, which can improve their yields. Currently, the World Bank is supporting a Rainfed Agriculture Program (RALP) with the MoAI and IFAD are starting a new value chain orientated program to support small-scale farmers and fisher people.

Tenant farmers are discouraged from introducing innovations, or making improvements to their soil and water conservation techniques, as they must first have permission from their landowner. There are few, if any, farmer associations and/or water users' associations to represent the interests of small scale and tenant farmers. Such associations, if promoted effectively, could assist in the provision of extension services for improved production techniques, as well as supporting the provision of high quality inputs and appropriate marketing channels.

Livestock

As reported below, Yemen's poultry sector now meets 100 percent of local demand for eggs and 54 percent of demand for meat (Agriculture Sector Strategy 2012–2016). Red meats such as mutton and beef are also very popular although expensive and therefore only consumed regularly in higher income households. Due to a preference for freshly slaughtered, halal meat, the value chain for meat products is rather short (producer > market/butcher > consumer). There is some limited milk production, but due to the cost of fodder and the complex husbandry demands of high milk-yielding cattle breeds, these products are relatively expensive. Processed and packaged milk products are typically only available in urban areas.

The relative absence of animal healthcare and advisory services leaves poor livestock owners highly vulnerable to losses due to poor husbandry practices and the spread of infectious diseases.

The main impact of the crisis on this sector appears to have been experienced by producers who were unable to get their animals and birds to the market on time due to insecurity and road blockades. This results in increased feed costs, which for intensively reared animals is considerable. For sheep and goat herders, where their animals are not reared intensively, the main impact would have been felt in terms of delayed income from sales. For small-scale producers this would be significant at a time when they were experiencing many other adverse economic shocks. No numeric date has been obtained regarding these impacts.

Imported Wheat and Food Aid

In June 2011, it was observed that no locally cultivated wheat was available in community markets visited by OCHA (OCHA, SDR 2012). Over 90 percent of domestic demand for wheat is met by imported wheat, which is a staple of food for millions of Yemenis. During the 2011 crisis, between January and November, the price of wheat in Sana'a increased by 90 percent ton average (OCHA, SDR 2012).

The oligopolistic structure of cereal importers has led to the general perception that more competition is needed in order to reduce local cereal prices. This perception is supported by results from a simple comparison of local market prices in selected markets in Yemen with international prices. Irrespective of the location of local markets, wheat prices in Yemen are, on average, twice as high as the average international price.[44] Although part of the margin is explained by the usual trade margins there is wide suspicion that the oligopolistic structure of cereal imports extracts additional rents. In fact, cereal imports are organized by only five major private companies, which effectively form

[44] http://www.ifpri.org/sites/default/files/publications/ifpridp01036.pdf.

an oligopoly. These five companies cover about 90 percent of all cereals imports, and the largest of those five controls about 30–40 percent of the market. Most cereal imports come from Australia, the United States, Pakistan, Turkey, and Uzbekistan. The 2007–2008 food price crisis highlighted the vulnerability of Yemen to sudden price spikes on the world market. Wheat prices increased much more dramatically in domestic markets as compared with world markets.

3.4.6 Recommendations

Currently, Yemen is experiencing a very high level of food insecurity and its agricultural sector is producing a fraction of the country's needs. But improving access to food is a much more urgent priority than increasing local production as there will never be enough production in Yemen to significantly reduce dependency on imports.

Due to its unstable economic and political environment the country could become more susceptible to currency devaluations with consequent increases in the cost of imported foods. For the poorest, many of who are already suffering from very severe food deficits, this will be catastrophic, as they do not have sufficient purchasing power at today's prices. Therefore, improving their economic access to food, either through increased income and job opportunities as described herein, or through improved cash transfers and safety nets (as detailed in the social protection section of this report) should be the first priorities for improving the food security status of the most vulnerable.

Investing in women should be regarded as fundamental cross-cutting issue for transitional development in Yemen, and crucially within the realm of food security. Education and skills among rural women are keys to improving agricultural productivity, hygiene practices, and food security including nutrition, particularly at a subsistence household level.

An effective nationwide food security information system, managed by the government, should be further developed and gradually rolled out to other Governorates after the completion of the first baseline survey by the CSO (Central Statistical Organization) in Al Hodeidah Governorate with EU funding (March 2011). Information on food stocks, climatic change, regional and global food prices and related markets, food consumption, and nutrition indicators should be regularly collected and disseminated from government institutions all the way to each household. Such information will provide early warning of further food insecurity and inform future humanitarian intervention.

Sustainable intensification of agricultural production is required to mitigate, to some extent, the high dependency on imported foodstuffs, particularly in light of Yemen's rapid population growth. This requires diversification away from Qat production and into high value fruits and staple foods, using varieties that are drought resistant. The move away from Qat has been official government policy for many years, but with little effect to date, perhaps due to a deficit of political will and strong incentives in the form of diesel subsidies, significantly reducing the cost of production. Production intensification-related programs will only start giving results after 10 to 20 years under the best scenario, so this is a very long-term recommendation.

The development of a policy focus on common livelihood assets that are used to device coping strategies should be addressed under the transitional government plan. During times of crisis, the poorest and most vulnerable Yemenis often turn to livestock production to increase their monetary income, though the quality and regional coverage of animal health services is weak. Investment in the upgrading of public animal health services is a prerequisite that will help poor people to protect their most valuable assets. Progressively, the policy should be informed by global success stories where the private sector has been able to provide good quality animal health services, often with wider coverage. At the same time, attention must also be given to enhancing productivity of markets that support livestock such as forage and fodder. Poor households turning to subsistence agriculture as a coping mechanism urgently need better access to information and improved seed technology, while on a macro level,

issues surrounding land regulation, ground water governance, and modernized irrigation techniques must be addressed, especially as disputes in ownership and access to scarce natural resources are likely to increase due to the displacement during conflict.

3.5 Livelihoods for Refugees and Internally Displaced People (IDPs)

3.5.1 Introduction

IDPs and refugees have been selected for further exploration due to their particularly high levels of vulnerability. During the crisis, the number of refugees that entered Yemen reached the highest level ever recorded, while at the same time, the total number of IDPs increased in both Sa'ada and Aden.

Yemen faces three simultaneous and on-going scenarios:

There is an influx of refugees from the Horn of Africa escaping drought, conflict, and human rights abuses. In 2011, over 103,000 people arrived in Yemen; the highest annual rate since UNHCR started gathering statistics in 2006. Many are attracted to Yemen as an access point to entering other Gulf States for work. In some cases, they hope to receive passage to countries outside the region. Refugees are mostly located in urban areas (mainly in Sana'a and Aden) rather than in camps (just 10 percent in Kharaz camp in the South). A total of 215,707 were registered by December 2011.

In the northern Governorate of Sa'ada, there is a protracted displacement situation due to successive rounds of conflict since 2004 between the Al-Houthi armed group and Government forces. While a February 2010 ceasefire between the Government and Al-Houthi continues to hold, armed clashes between the Al-Houthi and opposing tribal groups continue, with the result that new displacement is on-going, particularly in Hajjah Governorate. The number of registered IDPs in the North at the end of 2011 was 312,887 compared to 220,994 at the end of 2010.

In the south of Yemen, internal displacement is a more recent phenomenon, which began once an insurgency came to prominence in May 2011. This has created conflict with Government forces and resulted in families fleeing the Governorate of Abyan, the majority of whom settled in Aden and its surrounds. The number of registered IDPs in the South at end of 2011 is 150,565, of which 23,726 are in Abyan.

Refugees arriving in Yemen are permitted to work in the informal economy and therefore they compete directly for jobs with the local population. Displacement also disrupts the usual livelihoods of IDPs, who also therefore need to look for work. In both cases, the influx of new workers has the potential to undercut some of the small earnings paid to the host community.

JSEA Livelihood NGO Workshop – Society for Community Development in Amran

Hannan from The Society for Community Development in Amran that also serves Sada'a and Hajjah indicated that in 2011 Sada'a enjoyed relative peace compared to the situation 2010. This is unlike Amran in 2011 where the armed conflict was intense in several districts and the turmoil and tension was at the highest level. In her view women and children suffered most; child physical disabilities, trauma cases and child orphans increased. Women IDPs suffered from violence and harassments particularly since there is no women-designated toilets in the IDPs camps.

3.5.2 Livelihood Issues Affecting Refugees

Camp-based refugees in Yemen depend on humanitarian assistance, while those in urban settlements are more self-reliant. However, in both situations their resources are insufficient. In addition, the high unemployment rate in Yemen along with very high inflation during 2011 worsened their situation. Microfinance schemes and business development training are insufficient to respond to the increasing demand from refugees. Other difficulties faced by refugees in 2011 include:

- Women lost regular work as cleaners/domestic workers and other ad hoc employment.
- Lack of job opportunities for refugee men. Ethiopians lost their work in construction and complained of a lack of income generation opportunities. They also reported mistreatment at work.
- Lack of income forces families to have only one or two meals per day, which leads to malnutrition among children. Refugees are also unable to pay housing rent.
- Children are engaged in the labor market in order to support their families.

3.5.3 Livelihood Issues Affecting IDPs

Displacement typically results in the loss of housing, land, property, jobs, physical assets, social networks and resources. This in turn often leads to food insecurity, increased health problems and social marginalization. In many cases, IDPs lack such documents even prior to displacement; whereas the majority of IDPs in the South possess personal documentation, as many as 80 percent of IDPs in the North are undocumented. Due to the lack of livelihood assets, few IDPs can afford the fees to obtain or replace this documentation. Children may lose access to education, due to these documentation issues or because school fees cannot be paid, thereby undermining their future livelihood opportunities. In 2011, these problems were exacerbated by the rapid and dramatic rise in basic living costs. Having access to livelihood opportunities during displacement is a right of IDPs and is critical for them to meet the basic needs of their families. In the absence of such opportunities, IDP (and refugee) women and children find themselves at heightened risk of sexual exploitation, trafficking, and the use and recruitment of children by armed forces or groups. Regarding durable solutions to displacement, IDPs have three options:

- Return and reintegrate in their place of origin;
- Settle and integrate in the area to which they have fled; and
- Settle and integrate in another part of the country.

Under the first option, it is essential that IDPs can return in safety and that the underlying reasons for their displacement have been addressed. These reasons often involve issues related to inter-communal conflict, lack of development, corruption, and the absence of the rule of law. On returning home, IDPs may find that the assets they left behind, including land, may have been badly damaged, stolen, or that their homes and land are occupied, which is a source of new conflict. If returning home is not possible, or if IDPs do not wish to return, there is a need to identify long-term solutions that do not create conflict with host communities. In some cases, such solutions may involve previously rural communities having to adapt to urban lifestyles.

Under all three options, access to employment and re-establishment of livelihoods, along with safety, an adequate standard of living, and mechanisms for restitution of housing, land, and property, is an essential criteria for IDPs to achieve a durable solution. There is likely to be a need for new occupations to be identified and this requires training in new skills. It may also require the provision of credit to buy productive assets and the identification of viable markets. Access to services such as education, health, housing, and to potable water and sanitation are essential but often requires the presentation of identity cards, which as noted above may not be possible.

In an effort to reduce the burden on services within host communities, several donors led by UNHCR supported a number of Quick Impact Projects (QIP) in 2011. For example: through these, UNHCR rehabilitated six health centers, four schools, and four water projects. UNHCR also supported the establishment of a new market in Hajjah, providing better access to food and economic opportunity for vulnerable IDPs, as well as for members of the host-community. In all, these projects benefited some 200,000 people.

However, short-term displacement often converts into protracted displacement and the needs then change

Table 14: IDP Profiling Conducted by Danish Refugee Council in 2011

Livelihood issue	North Yemen–Haradh	North Yemen–Amran
Current Livelihoods:	**percent**	**percent**
Involved in daily labor	47	8
Support from family	—	28
Involved in livestock	17	4
Casual work, e.g., Qat smuggling	5	—
Small trade	4	2
Agriculture	2	22
Potential future livelihoods:		
Agriculture	—	40
Livestock	84	—
Small business/trade	39	12
Vocational training	9	—
Preferred solution:		
Return home	77	90
Relocation	1	—

Sources: Government of Yemen and JSEA Staff.

from humanitarian issues to predominantly developmental, requiring a focus on hosting communities more broadly in order to address the needs of the IDPs and of the hosting communities. The key development challenges to achieve sustainable solutions for displaced people include: (i) restoring access to land, housing, and property belonging to the displaced; (ii) reestablishment of livelihoods; (iii) delivery of services comprising security, health care, education, drinking water and sanitation, and other infrastructure; and (iv) accountable and responsive governance, particularly at the local level, that gives voice to those in displacement or returning from displacement.

3.5.4 Technical and Vocational Education and Training (TVET)

Training, both formal and informal, small business start-up, and self-employment initiatives were supported by UNHCR through SMEPS and other local NGOs throughout 2011. Trainings took place in Haradh, Amran, and Sana'a and provided over 1,000 persons with the skills necessary to gain employment, including as: mobile telephone repair service providers, mechanics, electricians, beauticians, seamstresses, nurses and midwives. IDPs who applied for small business grants in Sana'a were required to participate in small business training to strengthen their capacities and improve their chances of success. Furthermore, 1,199 families benefited from small business support and/or skills and vocational trainings in Amran and Sana'a in order to sustain their livelihoods during the civil unrest of 2011.

Some of the livelihoods activities with national authorities were disrupted for a couple of months due to the civil unrest of 2011, but had resumed by the end of the year. Many training institutes closed during the civil unrest and those enrolled could not complete their training. Also income from the skills acquired contracted; some IDPs sold their tool kits in order to gain immediate cash.

3.5.5 Recommendations

In 2012, the Government of Yemen, in line with its current commitment to UNHCR should develop and operationalize a national policy on internal displacement. The policy needs to set out the rights of IDPs, in accordance with international standards (namely

the Guiding Principles on Internal Displacement) and the responsibilities of the authorities towards IDPs. It should articulate key strategic priorities of the Government towards addressing the current challenges of internal displacement in Yemen. A strong focus of the policy should be on creating conditions enabling IDPs to secure a durable solution to displacement. With access to livelihood assets being, as noted above, an essential criterion of a durable solution to displacement it is important that livelihood considerations, which should include the developmental needs of the hosting communities, be fully integrated into this national policy framework. Supporting the Government and building policy capacity, in particular the Executive Unit on IDPs, to implement the policy will also will be essential.

4 Expanding Social Service Delivery

4.1 Social Protection

4.1.1 Introduction

This section reviews the impact of the 2011 crisis on social welfare and focuses on the poorest and most vulnerable section of the Yemeni population. It examines the existing social protection instruments and their role during 2011. Even prior to the 2011 crisis, Yemeni's welfare and the level of resilience, particularly among the poor, had been deteriorating. There has been a clear upward trend in poverty from 2005/6 to 2010.[45] Yemenis have experienced various shocks since 2008, such as food price increases and volatility, cycles of drought and flood, and political instability.

This assessment will focus on the major social welfare mechanisms existing in Yemen, mainly the Social Welfare Fund and the SFD. It will review effectiveness in terms of adequacy of the assistance to cover consumption gap, its operational efficiency, including targeting, and its role in contributing to the reduction of chronic poverty through investment in human capital.

It will also address issues of child welfare and the welfare of people with disabilities. It will describe the

[45] Based on simulation analysis carried out by the International Food Policy Research as part of the preparation of Yemen Food Security Strategy found that the poverty rate had increased from 34.8 percent in 2005 to 42 percent by the end of 2009, and to 54.5 percent by the end of 2011.

Pre 2011 Context (Baseline)

Yemen's existing public social safety and social protection instruments consist of programs that provide income assistance, training, small and micro credit, public works and community driven operations. It also includes contributory social security and pensions for public and private employees. There is no health insurance scheme, although in November 2011 Parliament passed the Health Insurance Law, which will cover those employed in the public and private sectors, while excluding those working in the informal sector, and those who are self-employed. Yemen as a tribal and traditional society still maintains a community-based social welfare protection tradition that complements public provision to some degree.

Key Facts

- 42.8 percent of Yemenis live in poverty (47.7 percent rural – 29.9 percent urban)
- Population of Yemen: 23,153,982 (2010 Yemen Statistics Book)
- Recipients of SWF social assistance: 1 million beneficiary cases (about 5 million beneficiaries)
- Population of children under age of 18: 12,060,000 (UNICEF)
- 22 percent of the population are child laborers under age 18
- 2 percent-6.5 percent of the population are living with disabilities (Yemen 2004 Census, 2005/6 HBS)

Source: Government of Yemen and JSEA Staff.

existing social welfare protection instruments, including; labor market social protection instruments particularly those providing cash-for-work schemes, social security and pensions and the role of community-based social welfare networks.

4.1.2 Social Safety Net Mandated to Provide Immediate Assistance

Social Welfare Fund

The Social Welfare Fund (SWF) is the Government's primary social assistance mechanism. The SWF's main objectives are to ensure financial assistance for poor disabled or unemployed persons and help those who can work to reintegrate into the labor market. It also aims to promote the human capital of Yemeni children to break the intergenerational cycle of poverty.[46] In 2010, the SWF had 1.046 million[47] beneficiary cases. In 2011, the SWF expanded to reach 1.5 beneficiary cases, representing 6.9 million individuals in all 21 governorates. As of 2012, there are 400,000 applications in the pipeline that have not been dealt with, most of which were submitted in 2011. According to SWF, the number of families in poverty has increased as a result of the crisis and it is believed that a high number of these new applications are eligible for support.

In 2008, due to the increase in food prices, the government doubled the amount received by SWF recipients. Since then the cash transfer has ranged from YR 2,000 to YR 4,000 per HH per month, and is transferred on a quarterly basis, mainly through Post Offices. In remote rural areas, beneficiaries receive their payments through SWF's district cashiers. There are no conditions imposed, except having a renewed SWF registration card based on the 2008 verification survey. Beneficiaries who meet specific criteria can get an advance payment equivalent to their annual entitlement to purchase income-generating assets.

Although cash assistance in 2008 was increased, it is insufficient to cope with the effects of the crisis. Removals of fuel subsidies and inflated prices have eroded the relative value of the transfer, which caused

[46] Social Welfare Fund Operation Manual, 2009, page 21 as corresponded to the Law no. 38 in 2008.

[47] Fourth Development Five Year Socio-Economic Plan For Poverty Re-education, 2011–15.

Box 4: SWF Cases as of March, 2012

- 54 percent of cases (HHs with at least 6 members) receive the maximum benefits of YR 4000; in 33 percent of these cases the main beneficiaries are women
- 15 percent of cases (single person HHs) receive the minimum benefits of YR 2000; in 73 percent of these cases the recipients are women

No. of recipients in the HH	Number of cases			Estimated transfer (YR)	Estimate beneficiaries
	Total	Women	Women percent		
1	223,082	162,700	73	446,164,000	223,082
2	102,908	50,789	49	246,979,200	205,816
3	87,755	51,684	59	245,714,000	263,265
4	117,261	61,826	53	375,235,200	469,044
5	160,323	79,939	50	577,162,800.00	801,615
6	819,082	273,454	33	3,276,328,000.00	4,914,492
Total	1,510,411.00	680,392	45	5,167,583,200.00	6,877,314

Source: Government of Yemen and JSEA Staff.

Box 5: SWF Assistance is too small to meet some families' basic consumption needs

Fatima Mohammad Hassan lives in Harat Al-Mutla'a (المطلاع), one of the alleys in Al-Khafji in Sana'a City. Her family consists of her three grandchildren: two grandsons and a granddaughter. Her grandchildren do not receive any education.

One grandson, who is 16 years old, is paralyzed and the other, a 17 year old, is working in a variety of menial jobs, such as a construction worker, cleaning cars, or whatever jobs he finds. He is the family's only breadwinner. Her granddaughter is 19 years old and a divorcee with an infant who also is cared for by Fatima. The family receives YR 8400 ($40) each quarter, collected from the postal office in Shumaila, and it pays YR 2000 ($9.30) a month for rent on their corrugated tin shed home. During the rainy season the roof leaks very badly.

Families interviewed for this assessment, like Fatima's, indicated that in 2011 they incurred additional expenses for electricity, water, and cooking fuel. In the opinion of an Al-Khafji community leader (Al-Akel), who is himself a SWF recipient, the SWF stipend, even though small, makes a difference to the lives of the poor, particularly as it is received every three months; "*it is like a feast when the money arrives, poor families can buy wheat flour, cooking oil, and other foodstuff.*"

Source: Government of Yemen and JSEA Staff.

livelihoods to deteriorate. Furthermore, since payments must be collected at the Post Office, many beneficiaries must either rent high-cost transport or pay a middleman to collect their entitlements.

The 2011 crisis triggered additional price hikes. Public water supplies, electricity, and cooking fuel became scarce due to interrupted supplies. Water charges, lighting, and cooking fuel costs increased sharply. In urban areas and neighborhoods where armed conflict occurred, such as in Sana'a and Ta'iz, families had to bear the costs of moving from their homes to safer locations, either in other neighborhoods or to move back to their home villages and towns.

The *SWF reaches all governorates* in Yemen and during the peak of the 2011 crisis SWF transfers continued with the exception of two governorates that were inaccessible due to military and political conflicts, namely Abyan and Sa'ada, along with several districts in Amran and Sana'a. However, some recipients managed to receive their entitlements through the nearest SWF district cashier or Post Office. It should be noted that the 2011 crisis led to a decrease in institution building, technical assistance, and funding to SWF.

Despite its national coverage there are still eligible poor who do not receive assistance (see Annex Chapter 4). To address this, removing barriers that might discourage applications, such as the need for certification by community leaders, could be considered. Alternatively, SWF must hold community leaders to account if they misuse their power. On the other hand, SWF's accountability should also be strengthened, and as a first step, an effective and transparent Monitoring and Evaluation function, as well as an appropriate complaints and grievances mechanism, should be put in place.

SWF has improved its targeting approach and its selection of beneficiaries. The 2005/6 HBS showed that SWF had poor targeting: 45 percent of beneficiaries were deemed to be non-poor. In 2008, SWF adopted a proxy means-tested targeting system. This divides potential recipients into 6 categories from A to F, where categories A and B are very poor, category C is poor,

Box 6: Potential for Indexing the SWF Stipend

In 2008 SWF stipends were doubled as a response to food price increases.

The overall CPI for the years 2008, 2009, 2010 and 2011 was 19 percent, 5.4 percent; 11.8 percent and 19.5 percent respectively (IMF 2012).

There are no recent poverty updates that estimate the poverty gap and how much a poor person should receive to be lifted out of poverty.

Descriptions	Current situation	Indexed per CPI overall
Transfer per individual per month (minimum benefits)	2000	2,853
Transfer per household per month (maximum benefits)	4,000	5,604
Current average transfer per month at end of 2011	3,421	5,023
Number of SWF cases as end of 2011	1,510,411	1,510,411
GDP (000 YR) 4th DPPR 2011 (estimated)	7,696,396,000	7,696,396,000
National budget (000 YR) 4th DPPR 2011 (estimated)	2,372,595,420	2,372,595,420
SWF budget Transfer in YR (excluding administrative costs)	5,167,116,031	7,586,610,654
Social transfers as percent of GDP	0.67	0.99
Social transfer as percent of national budget	2.18	3.2

Source: Government of Yemen and JSEA Staff.

category E is transitory poor and F is non-poor. In the same year, they undertook a comprehensive re-certification process of all actual beneficiaries, as well as those in the pipeline. This revealed that categories E&F (ineligible) made up 25 percent of their beneficiaries. The distribution of these categories (E&F) varies from one Governorate to another with high concentrations in Al-Mahrah, Sana'a City (Al-Amanah), Dhamar and Aden (see Annex 2).

SWF's challenge now is to remove these ineligible recipients, but this has so far proved to be too politically sensitive in some areas, and therefore little progress has been made. The 2011 crisis delayed action in this regard. It is very important to address this issue, because the presence of ineligible persons on the roles prevents those in need from accessing the system and burdens the institutional capacity of SWF. The adoption of the Social Welfare By-Law in 2010 offers options to address the issue over time.

Conditional Cash Transfers (CCTs)

Education. In 2010, due to increasing food prices, the European Union agreed to support SWF to raise the purchasing power of its poorest beneficiaries, mainly those in categories A and B who have school-aged children. The additional cash is tied to the sustained enrollment of their children in school. SWF monitors attendance records of the participating schools. Ten districts in Ta'iz were selected jointly by the EU, SWF, and MOE to target 10,000 families including around 50,000 children.

The major shortcoming of the CCT is that it is dependent on short-term donor funding, with a commitment period of just two academic years, as it is a pilot project. The management capacities of the SWF, already overstretched, would also not be able to handle the additional procedural and administrative requirements of a CCT program on a national scale at this point in time. A future challenge will be

Box 7: A Snapshot of CCT Program in Taiz City

Ahmed A. A., a food vendor, has three girls and three boys, all of school age, and lives in Taiz City. The girls attend school thanks to the CCT program, but the boys do not. He said that he couldn't enroll the three boys in school because there is no participating boys school in his neighborhood and he has high living expenses, including monthly house rent of YR 18,000. He was able to buy a small cart, from which he sells cooked potatoes, with an advance payment of one year's non-conditional cash transfer from the SWF. He said that it has been four months since he was able to buy a gas cylinder, and is using wood and charcoal to boil the potatoes and to cook for the family. He uses the CCT cash to cover school related expenses, to pay rent, to buy basic food items, and to give a daily allowance to the girls when they go to school.

Ahmed's experience is typical of families participating in the CCT pilot. During an on-site visit in late January 2012, UNICEF questioned social workers about their role in the CCT program, and whether they conduct outreach visits to homes. They explained that they call parents to the school, as most students, especially adolescent girls, are embarrassed by their poor living conditions. The social workers provide help to all school students, and they have not received additional training as part of the CCT program.

Location: Al-Durrah School for girls, Wadi Al-Madame, Taiz City.

Source: UNICEF 2012

to extend the outreach of the program to rural areas while maintaining robust monitoring an oversight capacity. Selected schools are required to employ social workers to monitor children's attendance and each child's performance. This demands institutional capacity, as well as coordination between the SWF and the Ministry of Education. Also, children with learning difficulties may be unable to achieve their performance targets.

Health and Nutrition. The World Bank is initiating a pilot program focused on conditional cash transfers tied to health and nutrition indicators. The project is to be jointly implemented by SWF, the Social Fund for Development and the Ministry of Health, with technical support from UNICEF.

These education and health targeted cash transfers top-up the small transfers available under the non-conditional program (as previously described), while also promoting improved education and child health. As the institutional capacity of the SWF is enhanced the conditionality of cash transfers offers to sustain the assistance while aiming for results that can be monitored.

Institutional Capacities

In 1998, the Social Fund for Development started its first phase of organizational support to the SWF with the development of a management information system (MIS). At that time, SWF had 35,000 beneficiary cases and payments were often delayed for several months. With the establishment of an MIS, SWF's efficiency in issuing payments increased. The MIS now contains the records of 1.5 million beneficiaries including recipient's pictures, fingerprints, and other information.

In 2002, the EC launched its first project to support the institutional capacity of the SWF focusing on policy reform and institutional capacity-building to improve SWF's effectiveness and efficiency. In 2008, the World Bank also launched a capacity building project and introduced proxy means-testing. As such, SWF has been able to benefit from donor support despite the difficult environment it has been working in. Several donors now support SWF, as it is the only national social safety net program that is mandated to provide immediate cash assistance. In addition, this legal operating framework has been

greatly strengthened with the 2010 adoption of the social welfare By-Law.

A source of concern is that the cost of identifying and monitoring beneficiaries in rural areas is high in relation to the level of transfer. A recent assessment commissioned by the EC provided a detailed plan with costing to strengthen this aspect of monitoring. This assessment estimated the cost of monitoring at 0.6 percent of SWF's budget. While the assessment concluded that cash transfers do reach the beneficiaries in Yemen, up to 30 percent of SWF assistance is made through their cashiers, which could induce practices such as small payment deductions. In terms of efficiency, the assessment found that SWF has room to increase its efficiency and to improve its monitoring and evaluation by:

- Involving civil society organizations in identifying and monitoring cash transfers.
- Establishing a system to properly receive and handle complaints and grievances.
- Raising awareness, including within SWF's staff, of the beneficiaries' right to present substantiated complaints.

4.2 Child Welfare

Poverty and the cycle of conflicts exposed children in Yemen to heightened risks and vulnerabilities throughout the crisis. Prior to 2011, one-third of Yemen's 12 million children were considered vulnerable.[48] The 2011 crisis Yemen has made the situation of the most vulnerable children even more precarious, exposing them to various forms of violence, abuse, and exploitation, including grave child rights violations, child labor, child marriage, child trafficking, irregular cross border movements, and smuggling.[49]

4.2.1 Low Birth Registration

The Convention on the Rights of the Child states that every child has the right to a name and a nationality and the right to protection from being deprived of his or her identity. Birth registration is a fundamental means of securing these rights for children and is closely linked to the realization of other children's rights: protection from early recruitment into the armed forces, protection from early marriage and protection from judicial misjudgment. In Yemen, low birth registration is an important factor that limits access of children and families to social services, hinders effective planning for poverty alleviation and social services programs, and directly affects protection of children, as only 22.3 percent of children under five in Yemen have their births registered.[50]

4.2.2 Child Labor

Child labor—both a cause and a consequence of poverty—damages a child's health, threatens education and leads to further exploitation and abuse. Importantly, it violates Yemen's commitments under the MDGs, CRC, and International Labor Organization Conventions 138 and 182, as well as the World Fit for Children document. Taking children out of school and using them as laborers is one of the coping mechanisms that impoverished families and families whose men are otherwise engaged in conflict have adopted in Yemen, and in particular in response to the 2011 crisis. Commonly, such children find themselves working in Qat production where, in addition to violations of their rights to education, they are exposed to harmful pesticides. In the conflict-affected northern governorates, 29 percent of interviewed children had worked for pay within the previous three months, 14 percent of whom were between 8–14 years of age.[51] Although limited in size, the percentage is slightly higher than the national average of 22.7 percent,[52] while in Al-Jawf, an estimated

[48] Yemen Social Protection Strategy, 2008, page 45.

[49] Secondary data review for Yemen. OCHA, page 35, 1st September–15th.

[50] Yemen Multiple Indicator Cluster Survey (MICS), 2006.

[51] "Interagency Comprehensive Child Protection Assessment in conflict affected governorates of North Yemen (Sa'ada, Hajja, Al Jawf, Amran & Sana'a Governorates) " Yemen Child Protection Sub-cluster, August 2010.

[52] Yemen Multiple Indicator Cluster Survey (MICS), 2006.

35.6 percent of families are engaging their children in income generating activities or sending them out in search of work.[53]

4.2.3 Grave Child Rights Violations, Including Use and Recruitment of Children by Armed Forces and Groups

It is reported that children constitute twenty percent of Al-Houthi and 15 percent of the pro-government militia. Over 844 children were directly harmed during the 2011 conflicts, including 159 children killed (138 boys and 21 girls) and 363 children maimed (312 boys and 51 girls) through live bullets or ammunition and hundreds of other children who were affected by teargas suffocation in the main cities of Sana'a, Aden, and Ta'iz.[54] In 2011, reports indicated that the recruitment of thousands of children was becoming a livelihood option for many children under the age of 18. For example, in Amran, it is reported that school children dropped out to join the army or rival armed groups.[55] Concern over the widespread use and recruitment of children within the armed ranks of Government and anti-Government forces, such as the National Security Forces and the Republican Guards and also with the opposition's breakaway armed group of General Ali Mohsen's First Armored Division and extremist groups such as Ansar-Al-Sharia,[56] continued during 2012, as reported by the Human Rights Council.[57]

4.2.4 Child Trafficking/Smuggling

Channeling children into illegal migration is a coping strategy of families faced with increased living expenses.[58] This is not a new practice but reports indicate that it has intensified in 2011. In a study released in 2010, in three northern conflict-affected governorates families were using coping mechanisms, including removing children from school, engaging them in labor, and sending them illegally into neighboring countries.[59] In the north, the protection center in Haradh for victims of child trafficking has documented over 400 child victims.[60] A total of 40 percent of the Yemeni children in this center responded that overcoming economic hardships of families was one of the main reasons for their trek into Saudi Arabia.[61]

4.2.5 Child Marriage

Negative household coping mechanisms to offset the shocks of 2011 also affected girls, through early marriage. While a deepening sense of poverty as a result of rising food, fuel, and water prices drove increasing numbers of families to engage in this practice, conflict and the displacement it caused further exacerbated this trend. When asked, approximately one third of IDP caregivers revealed their willingness to marry their under-age girls. There are a variety of reasons for this response, ranging from strong incentives to reduce the financial burden of one additional household member, to feelings of obligation toward host families who are rewarded by marriage to (IDP) girls.[62]

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53 "Draft Vulnerability Assessment in Al-Jawf," October 2011, IOM.

54 20 percent of Al-Houthi and 15 percent of the tribal militia affiliated with the Government, Al-Jaysh Al-Sha'bi, are children. "Children and Armed Conflict," Report of the Secretary General (A/65/820 – S/2011/250), 23 April, 2011 page 46.

55 A rapid assessment conducted by Social Fund for Development on the impact of 2011 crisis, November, 2011.

56 2012 Yemen Humanitarian Response Plan, United Nations.

57 Report of Human Rights Council (A/HRC/19/51), issued on 13 February 2012.

58 A rapid assessment conducted by Social Fund for Development on the impact of 2011 crisis, November 2011. The study was conducted in 20 governorates.

59 "Interagency Comprehensive Child Protection Assessment in conflict affected governorates of North Yemen (Sa'ada, Hajja, Al Jawf, Amran & Sana'a Governorates)", Yemen Child Protection Sub-cluster, August 2010.

60 Yemen is one of the major "source" countries of trafficked children to Saudi Arabia (UNICEF 2011).

61 UNICEF field monitoring assessment for the center of Haradh for the period from first of January to end of July 2011.

62 "Interagency Comprehensive Child Protection Assessment in conflict affected governorates of North Yemen (Sa'ada, Hajja, Al Jawf, Amran & Sana'a Governorates)", Yemen Child Protection Sub-cluster, August 2010.

4.2.6 Decreased Sense of Security and Children's Psychosocial Wellbeing

In every needs assessment or monitoring effort conducted among children in 2011, it is clear that children across the country have experienced high levels of distress or were otherwise emotionally affected by the 2011 conflicts. At the peak of the conflict in September 2011, 54.8 percent of children queried in a regular household monitoring project in Sana'a reported a fear of playing outside their homes, compared to 15.8 percent in Al-Hodeidah. While the figure obtained from Al-Hodeidah is lower than the one in Sana'a, it is important to note that children across the country were affected by conflict, regardless of whether they were directly in the line of fire, or living in relative safety. Parallel to this, the percentage of children suffering from nightmares was reported at 13.6 percent in Sana'a and at 9.4 percent in Al-Hodeidah. In the conflict-affected northern governorates, one in three children reported feeling unsafe, sad or frustrated, suffered from diminished hope, fear, anger, and hatred as well as experiencing difficulty sleeping.[63] Among the IDPs of Aden, over 90 percent of families interviewed indicated that their children have experienced a wide range of psychosocial problems including disobedience, problems with peers, problems in sleeping, and others, and the majority of children are suffering from lack of adaptation to the new situation, causing many problems and trouble for them and their parents.[64]

4.2.7 Under Funded Child Welfare Sector

Major gaps exist in Yemen's child- and gender-relevant social policies, regulations, and recourse mechanisms. Historically, there has been insufficient funding for the social welfare sector in order to expand its presence beyond the capital cities of the governorates, as well as to effectively deliver services and reach vulnerable children in remote rural areas. Almost all the social defense and social welfare expenditure is towards human resource costs with very limited funds left to address essential case management activities and follow up on the most vulnerable children.

The traditional system focuses responsibility on government and NGOs to run social care centers in the governorates' capital cities. There are donor initiatives to establish community-based, child protection and safeguarding groups in some areas, including IDP camps, to report child abuse and violence, but these are limited. Exacerbating this difficult situation, funding that was available to the sector in charge at the Ministry of Social Affairs and Labor (MoSAL) was diverted to respond the needs of the IDPs from Sa'ada and Abyan.

In spite of government's investment in high education to ensure available social work capacity (under the jurisdiction of the Ministry of Education), opportunities for social work graduates to find employment within the Ministry of Social Affairs and Labor is extremely limited. However, social workers are available in schools with a mandate to deal with vulnerability issues of children (see the sub-section on Conditional Cash Transfers in Section 4.1.2), but with limitations on capacity, because there is no referral system to deal with cases beyond the school setting for those outside the school system. Moreover, there is no outreach to vulnerable children in rural areas, where most live, or to urban children not enrolled in school.

4.3 Welfare of People with Disabilities

The disabled are among the most vulnerable segments of society and their livelihoods may have further deteriorated as a result of the 2011 crisis. It is estimated that the 2011 armed conflicts in affected regions have increased the number of the disabled as a result of

[63] "Interagency Comprehensive Child Protection Assessment in conflict affected governorates of North Yemen (Sa'ada, Hajja, Al Jawf, Amran & Sana'a Governorates)", Yemen Child Protection Sub-cluster, August 2010.

[64] Initial rapid assessment conducted by UNICEF and Child Protection Sub-Cluster members with 220 IDPs in Aden on the impact of the Abyan displacement, June 2011.

increased laying of landmines and improvised explosive devices; however, there are no statistics that illustrate the magnitude of such incidents. Armed conflicts also produce psychosocial trauma resulting in disabling behavior, if left untreated.

The statistics from the 2004 Census and 2005/6 HBS, show that the disabled in Yemen range from 2–6.5 percent, though it is believed that families may shy away from reporting disabled members. There are many causes of impairment in Yemen ranging from accidents, conflict, low immunization rates, consanguineous marriages, and poor maternal care.[65] In reference to children, it was reported that a quarter (24.5 percent) of children two to 9 years of age had at least one disability. The disability most commonly reported was delay in sitting, standing or walking (9.3 percent) followed by being unable to understand instructions (six percent) and unable to be understood (six percent). There were no major differences found between children living in urban or rural households. Mother's or caretakers in poorer households reported higher levels of child disability. In the poorest households it was estimated that 29.4 percent of children had at least one disability compared to less than 20 percent in the two richest wealth quintiles. Among children three to nine years of age it was reported that 7.4 percent did not have normal speech with little variation among the background variables. A quarter of mother or caretakers with a two-year-old reported that their child cannot name at least one object.[66] In Sa'ada, 1,783 children with physical disabilities were registered by the Handicapped Association: 50 percent of the disabilities were attributed to the conflict.[67]

The MoSAL is responsible for protecting the rights of persons with disabilities. The Government's Social Fund for Development and the Fund for the Care and Rehabilitation of the Disabled or the Disability Fund (DF), administered by the MoSAL, provide services and support more than 120 NGOs and care centers[68] to assist persons with disability. By law, five percent of government jobs should be reserved for persons with a disability, and the law mandates the acceptance of persons with disabilities in universities, where they are exempt from paying tuition fees. It also requires that schools be made accessible to persons with disabilities. It is not clear to what extent this law is implemented.

The Disability Fund (DF), established in 2002, is a Government-funded instrument, which provides assistance for health care, education, recreational activities, and assistive devices (e.g., hearing aid, artificial limbs, and medications). Students can apply for a scholarship to cover accommodation, food, and transport. The financial resources of the DF fluctuate as they arise from hypothecated taxes raised on the sale of cigarettes and air tickets. The Disability Fund provides generous support regardless of the type of disability, age, or economic situation of the applicants. It has five regional offices covering Ibb, Ta'iz, Aden, Hadhramout, and Al-Hodeidah. It has attempted to reach rural areas, but currently their service is biased toward the urban population, particularly in Sana'a City (accounting of 48 percent of the Fund's resources).[69] The DF carries out need assessments and is available for disabled men, women, and children. However, men take the largest portion of the benefits.

The number of beneficiary cases from the DF service reached 185,000 in March 2012. Along with the Red Cross, it extended its services to camps that serve IDPs from Sa'ada.[70] The DF has no data on persons disabled as a result of conflict in 2011 or prior to that date, as it is politically sensitive to record such information. However, according to the Director, most disabilities are a result of car accidents, accidents at work, and firearm incidents.

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65 Fund for the Care and Rehabilitation of the Disabled Institutional Assessment, OMP, 2010, page 4.

66 UNICEF. Multiple Indicator Cluster Surveys (MICS), 2006.

67 "Interagency Comprehensive Child Protection Assessment in conflict affected governorates of North Yemen (Sa'ada, Hajja, Al Jawf, Amran & Sana'a Governorates)", Yemen Child Protection Sub-cluster, August 2010.

68 According to the director of the DF in a meeting on 28 March 2012.

69 Yemen Social Protection Strategy, 2008.

70 According to the director of the DF.

4.4 Cash for Work Safety Net

The Social Fund for Development and the Public Works Project are two important social safety net instruments in Yemen. Both provide pro-poor, medium to long-term development opportunities that assist poor households to manage economic shocks.

4.4.1 Community Based Labor Intensive Works

In 2008, The Social Fund for Development implemented a community-based cash-for-work (CfW) program targeting the poorest areas. The program was designed to respond to the 2008 food price increase and has continued since then.

In 2010, community-based labor intensive works (LIW) became one of the main programs of SFD to serve as a productive safety net. The design aimed at inducing a longer-term impact by targeting most impoverished sub-districts in the country for a period of three to five years, to build more sustainable livelihoods. This includes assisting communities during dry seasons to provide income, and at the same time to build community assets, for example: constructing and maintaining agricultural land and terraces; providing water harvesting facilities; and developing irrigation schemes. SFD is also responsive to emerging situations by initiating operations for a shorter duration through labor-intensive works that are technically simpler and have a shorter implementation cycle. In this way, the LIW can operate as a core productive safety net program that could be scaled up (and down) in response to shocks of various kinds (such as a food price crisis or localized crop failure).[71]

4.4.2 Targeting Effectiveness

The community-based cash-for-work modality is designed to work directly with poor local households rather than contracting private contractors who are not prepared for such implementation approaches and usually free to select non-local laborers. It targets the transitory and chronically poor. The target workers are in rural areas, as well as unskilled and semiskilled laborers in urban areas who queue at certain locations waiting for a day job. Wages are set at about 10–20 percent lower than the prevailing market rate of laborers in the sector of construction, so as to attract most needy laborers and not to impact on commercial employment. This program has been implemented in 15 out of Yemen's 21 governorates so far.

[71] Social Fund for Development Phase IV Project Document, 2009, page 45.

Box 8: Multiplier Effects

The cash-for-work program aims to provide immediate assistance through payment of wages. It is expected that while the income received assists families to by food and pay off debts, savings would be used to buy productive assets such as livestock, sewing machines, etc. The works undertaken construct local community-owned assets, such as roads and water storage facilities.

Description	2009–2010	2011	Total
No. of projects/communities benefited (more than one village)	98	181	279
Average transfer per HH (excluding operating costs) in US$	$700	$600	
No. of households benefitted	16,841	27,318	44,159
No. of work days created	898,711	1,377,629	2,276,340

Source: Government of Yemen and JSEA Staff.

4.4.3 Feasibility at the Time of Crises

The CfW modality had proved to be an effective approach during the 2011 crisis. While 23 percent of overall SFD projects were suspended, only three percent of the CfW projects were stopped during the crisis. These projects use predominantly locally sourced materials and labor so communities have a strong incentive to ensure their continuation.

Adequacy: The cash for work program transfers an average of US$600 per household per intervention. This program is targeting the most vulnerable and this amount is deemed to be sufficient to compensate households for a certain time during a downturn of the jobs market, and to, sometimes, induce multiplier effects.

4.4.4 Instruments in Place

This community-based LIW program has been in place since 2008 and proved to be effective in assisting households to cope with the effect of the crisis by increasing their resilience. The findings from evaluations indicate that this program is highly targeted. The transfers are used to smooth basic consumptions and to repay debts. Provided that funding is available, SFD is planning to increase CfW's beneficiaries close to a cumulative total of 100,000 households or approximately 670,000 persons by the end of 2015.

Currently, this program is heavily dependent on donor funding, which affects its sustainability. Since 2006, the government of Yemen has allocated US$20 million annually to implement labor intensive works activities; however, it is not clear if such allocation would continue given the Government's budgetary constraints. The other challenge is to increase the coverage of this program countrywide so that it becomes—eventually—an integral part of a national social safety umbrella. Yemen is going through cycles of shocks and such interventions are becoming increasingly important. In the long term, local governments could be in charge of implementing the cash-for-work labor intensive interventions. Currently, SFD is implementing a program for empowerment of local governance. The intention is to engage 80 out of Yemen's 333 districts from 2011–2015, to build their capacity. The target is for 40 districts to be able to implement development interventions in their areas.

4.4.5 Infrastructure for Service Delivery

Both SFD and PWP are creating jobs opportunities through implementing infrastructure for basic services delivery. These works include health and education facilities, water, and rural roads and other targeted infrastructure schemes.

The events of 2011 decreased confidence among some donors, and led to decreased or suspended funding to both SFD and PWP. For example, in 2011 PWP disbursed US$42 million, which is 53 percent of the original budget and SFD disbursed US$132 million, which is 80 percent of their disbursement plan. Other reasons for low performance include: scarcity of fuel, increasing building material prices and deterioration of security. It is important to note that both SFD and PWP continued to implement projects and to disburse funding throughout Yemen during the crisis, with the exception of areas of armed conflict.

Box 9: Overview

In 2011, 72,773 work/months were created by the Public Work Program (PWP) activities. PWP created more employment opportunities with fewer investments than in 2010. This results from implementing projects with high labor content, including street pavement. Similarly, SFD also gave priority in 2011 for projects with high labor content.

Description	PWP	SFD
No. of communities benefiting	298	700
No. of work/months created	72,773	210000

Source: Government of Yemen and JSEA Staff.

4.5 Social Security and Pension

Four formal pension funds provide old age income protection and insurance against work injury, disability, and death to fulltime workers from the civil service, military, police, and policyholders in the private sector. This limited range of pensioners does not include the poorest segments of society.[72]

All four pensions are pay-as-you-go defined contribution plans and provide a safety net component by setting a minimum pension. While it is considered a generous pension, because it provides 100 percent of salary at retirement, inflation and limited indexation in the civil servants' scheme—or no indexation whatsoever in the private sector scheme—can quickly erode the purchasing power of such a pension.[73] It is believed that the livelihoods of both lower-income and middle-income groups have been affected.[74]

It is suggested that the 2011 crisis has impacted the beneficiary groups of these funds. The recipients generally consist of widows, elderly people, and orphans who may have limited other sources of livelihood to compensate for their losses. Also, funds were impacted by the 2011 events, particularly private sector funds, which experienced high turnover as many business and self-employed people stopped their contributions. The time and scope of this study does not allow for an assessment of the depth of this impact. However, Section 4.5.1 and 4.5.2 describe two pension funds and the challenges they are facing.

4.5.1 The General Authority for Social Security and Pensions

All civil servants, public enterprise employees, and their administrative units are required to contribute to General Authority for Social Security and Pensions (GASSP). It currently has around 560,000 registered members and 108,000 pensioners and pensioners' survivors. The contribution is based on the salary of the employee. The employee contributes six percent of their wages and the employer an additional six percent plus one percent for accident insurance. The benefits provided under this scheme are:

- A minimum (or safety net) pension for contributors of 15 years, currently at YR 20,000 per month;
- A benefit calculated on the basis of final salary and number of years of service;
- Disability insurance for employees or their survivors who have completed at least one month of employment; and
- The replacement rate of the pension varies from 43 percent for the minimum eligible period of 15 years service up to 100 percent after 35 years of service, which is reflected in the following formula: final month's salary multiplied by the number of months of contribution divided by 420 months.

4.5.2 The General Corporation for Social Insurance (GCSI)

The number of people enrolled as of end 2011 is 170,000 and the number of pensioners and survivors is around 8,000. The disability/insurance component of the employer's contribution is often not paid and therefore some private sector employees are not covered in the event of disability/death. The basic parameters of the public sector scheme described above also apply to this private sector fund with the following differences:

- The employees' contribution amounts to six percent of their wage and the employers' contribution amounts to nine percent of the wage.
- Replacement is calculated based on the average salary of the last five years or the final salary, which is lower.

[72] Food Comprehensive Survey 2010, WFP pages 53–54.
[73] Yemen Social Protection strategy 2008, page 34.
[74] Introductory statement by Mr. Al-Shatter, Deputy Minister of Planning, March.19, 2012.

- No benefit adjustment—in the public pension the benefits are adjusted by 50 percent of the value of any salary increases granted to active civil servants.

4.5.3 Challenges: Public Sector Pension Scheme

The public sector pension scheme is costly, not well balanced, and financially threatened:

- The benefit structure, which bases the pension benefits on the last year of earnings, provides incentives for employers to promote an employee prior to retirement;
- Survivor benefits to future generations are extremely costly;
- Investment strategies yield relatively low rates of return;
- Inability of the pension authority to identify individual contributors since there is no information system in place. Contributors should be registered with the Ministry of Civil Service.
- A recent actuarial study suggested that to keep the public insurance out of deficit by 2028, the contribution has to increase from the current 12 percent to 24 percent, everything being equal.

Box 10: Pensions paid by General Authority for Social Security and Pensions

- Fifty-eight percent of pensioners fall in the minimum wage category between 20–30 thousands riyal, which is approximately US$100–150;
- Only two percent receive more than 100,000 riyals which is about US$500.

Monthly entitlement in Yemen Riyal	No. of pensioners/ survivors	Percent
20,000–30,000	62077	58
31,000–50,000	28212	27
51,000–70,000	9197	9
71,000–100,000	4692	4
More than 100,000	2262	2
Total	106,440	100

Source: Government of Yemen and JSEA Staff.

4.5.4 Challenges for the General Corporation for Social Insurance

The private sector retirement suffers especially from a low coverage:

- Dealing with large informal sector with high turnover;
- Contribution could be affected by economic shocks and crisis. For example, in 2011 many businesses and the self-employed stopped contributing;
- Low subscription rate for eligible private sector employees, and this excludes the self-employed who are the largest single component of the private sector workforce;
- Need to improve its management information system.

Both funds have to work in an environment where birth and death registrations are limited and identification cards can be manipulated. It is difficult to verify the legal documents issued and the pensions' transfers may continue to be disbursed even after the death. To eliminate subscribers taking an early retirement, it is that age be the only determining factor for retirement: rather than the current practice, which is years of service or target age (whichever is first).

4.6 Community-Based Social Transfers

In a low-income country like Yemen, informal and private transfers are important. It is believed that private

Box 11: Pension paid by General Corporation for Social Insurance

- Sixty-seven percent of pensioners/survivors fall in the category of the minimum wage between 20,000 Riyal which is less than US$100
- Women are about four percent of all pensioners

Pensions categories in YR	Males	Females	Total	Percent
Up to 20,000	4176	178	4254	67
20,001 to 50,000	1255	44	1299	21
50,001 to 100,000	389	16	405	6-
100,001 to 200,000	167	11	178	
More than 200,001	87	4	91	3
Total	6074	253	6327	100

Source: Government of Yemen and JSEA Staff.

transfers, social networks, and CSOs were important instruments of support to the poor during the 2011 crisis. Consumption credit was still available; however, it became less accessible. Remittances and consumption credit are assessed in Chapter 3.4 Food Security.

4.6.1 The Role of Civil Society Organizations (CSOs)

The role of private and civil society organizations is important, especially with the scarcity of public resources. Around 17 percent of the 477 households interviewed as part of a study[75] conducted in 2011, indicated that they received transfers from charities and CSOs.

In a rapid study on the impact of 2011,[76] CSOs played a role in varying degrees. The study reveals the positive role of CSOs in providing livelihood support, including provision of financial assistance, food, and health services. International agencies have extended their support to IDPs through local NGOs particularly during intensified conflicts.

4.6.2 Cooperatives Assisted their Members to Access Fuel and Needed Inputs

Agricultural and fisheries cooperatives provided various kinds of support for farmers and fishermen, such as storing and marketing their products, helping farmers getting agricultural inputs (seeds, fertilizer, etc.) at reasonable prices, following up with authorities to provide diesel fuel (for farmers), getting loans to fishermen (as in Hadhramout) for fuel/emergencies (to be repaid after the products are sold).

4.6.3 Provision of Food and Services to Poor People

Focus group discussions indicate that large charities distributed food and clothing to the poor and provided health services. One of Yemen's largest charity foundations indicated that the monthly allowance it transferred to the poor tripled in 2011. "Alms giving during Ramadan were even extended to the families of public employees that are supposed to be middle class, but the hardships of 2011 reduced them to poverty."[77] It is believed that charitable works of the largest NGOs in the country assisted in mitigating the impact of the crisis.

[75] A survey in 15 Governorates as part of the assessment of Social Fund for Development cash-for-work programs.

[76] A rapid assessment conducted by Social Fund for Development on the impact of 2011 crisis, November, 2011.

[77] Meeting with Abdulwasa Hayel Saeed, a member in the board of trustees of Al-Saeed Foundation, on April 5, 2012.

In Hadhramout Governorate, charities were active to provide poor families with services to mitigate the crisis. These charities benefit from well-to-do migrants who raise funds for poverty alleviation and to provide health and education workers. Some NGOs were active in providing financial support to needy families, support to IDPs, care for orphans, and in appealing for social cohesion.

In Al-Dalea, political leaders established "people committees" to follow-up receipt of the rationed diesel fuel and then supplied it at pre-crisis prices to ensure that the cost of water trucks and taxis did not increase. They also assisted in securing communities and reducing excessive rents for displaced families. People's Committees were established in urban areas, though their role was limited and sometimes politically driven.

4.6.4 Supporting Humanitarian Actions

In Aden, Lahj, Amaran, Hajja and Sa'ada, the number of civil societies increased to provide services to IDPs. International humanitarian agencies and international NGOs have relied on local NGOs to provide services to IDPs.

4.7 Social Fabric

The 2011 crisis has without doubt divided the country. The tension has varied according to geographical location, social norms, urban vs. rural, and distance from centers of tension. The Yemen Country Social Analysis underlined that the gap between rich and poor is widening, along with the concentration of economic and political power, and the weakening of the traditional systems of social cohesion, governance and accountability, without them being replaced by yet functioning "modern" mechanisms. A rapid assessment study conducted by SFD at the end of 2011 found general consensus around the negative impact of social and political tension on all areas such as agriculture, investment, and other means of livelihood. There is a need for intervention especially in activities that restore social harmony, emphasize positive norms, and promote social cohesion. The political polarization led to decrease security, increasing with various degrees of intensity.

4.7.1 Deterioration of Security

The deterioration of security correlated to the appearance of checkpoints along roads between governorates. Sabotage of oil pipelines increased exponentially (40 incidents) by late 2011 compared to just one in the two years prior to the crisis, according to authorities. In governorates such as Al-Mahawit, Amran, and Raima political partisanship was so deep that it divided the authorities at all levels, from the highest down to local authorities. Security deteriorated to varying degrees, manifested by road gangs extorting and robbing travelers and levying illegal tolls on oil tankers and cars carrying Qat. Illegal drug smuggling increased in an unprecedented way.

4.7.2 Increase in Domestic Violence

In urban centers, there has been an increase in the divorce rate and in domestic violence (Dhamar/Ibb) as a result of decreasing income and political disputes within families and among co-workers. Programs supporting organizations providing legal protection to abused women were very active during the period of conflict. In other urban centers like Al-Hodeidah City, there was increased tension between people due to the economic crisis, loss of jobs, fuel shortages, and price increases. In most towns there has been increased evidence of small weapons being carried.

4.7.3 Increased Tensions between Residents and IDPs

In Aden/Lahj, tensions increased between IDPs and residents. In addition, increased drug use among youth has been attributed to unemployment and social exclusion. Interviewees mentioned that thefts are now occurring weekly (as opposed to rarely before) committed

by residents (as opposed to outsiders). An increase in vandalism and destruction of property belonging to owners from northern governorates was reported at the JSEA NGO workshop.

4.7.4 Governorates that Maintained Social Norms Were Less Affected

In governorates such as Shabwa, there has been an increase of social solidarity with IDPs coming from the Abyan Governorate. Social solidarity has also been enhanced in response to price increases in the eastern region, including Hadramout and Al-Mahara. In certain rural areas, such as in Al-Hodeidah, existing social norms (the "sea code") acted as a reference for resolving arguments over scarce resources such as fuel.

4.7.5 Recommendations

The level of cash assistance from the Social Welfare Fund (SWF) is insufficient for a family to meet its basic consumption needs. The incidence of poverty in both urban and rural areas has increased significantly as had food insecurity as well. To make social assistance through the SWF an effective tool for poverty reduction, the amount of cash transfers must be increased and coverage expanded to include more poor people. The savings from excluding ineligible SWF recipients, as well as some of the savings from reduced fuel subsidies, could cover the financing of such an increase.

Barriers that discourage poor people from applying for SWF stipends, such as the need for certification by community leaders, which may also be used as a political tool, should be addressed,. Alternatively, SWF must hold community leaders to account if they misuse their power. Civil society organizations could be involved in identifying eligible households who are not receiving assistance. On the other hand, SWF management systems should also be made more transparent and effective (particularly Financial Management and Reporting, Monitoring and Evaluation, Complaints and Grievances, etc.).

Moving the SWF from being a means of survival to investing in human development capacities should be considered (conditional transfers to health/nutrition and education programs). Conditional cash transfers could additionally contribute to child welfare and help address other issues such as: child soldiers, child trafficking, and child labor. SWF stipends should also be more inclusive regarding disabilities and youth. While education and health targeted programs address the development of 0 to 18 year olds, the social assistance through SWF should give consideration to special needs, including the disabled poor and youth.

The Disability Fund is the main provider of support to people living with disabilities. There is a need to provide this fund with technical assistance capacities in order to develop its targeting and outreach to rural areas. Also, its information system must be developed, along with other procedures, to better serve vulnerable groups.

Strengthening the process of birth and death registrations, as well as forming a unique social security/identification system led by the Civil Registry Authority of the Ministry of Interior, is critically important, especially to child protection initiatives. As a result, social safety net instruments can provide better services.

Assistance needs to be provided to strengthen the social welfare system, including the development and implementation of standard child welfare frameworks. Institutional structures, and capacities need to be strengthened and recommended changes should be piloted in selected governorates or districts and eventually scaled up nationwide. Mapping of available services and introducing case management is another component to ensure that the most vulnerable children are reached, followed up with, and protected. The need for building and strengthening safety, protective, and violence-free components in other systems such as education and health cannot be overstated.

The role of CSOs in providing social protection services is important. They can also play a role in enhancing positive traditional norms, social harmonization and peace building. CSOs should be nourished

and encourage to play such roles. Close monitoring of these organizations is required.

Health expenditure consumes a substantial amount of poor peoples' income. A social health insurance scheme needs to be considered. It is important to start piloting how to cover poor people who are mostly employed in the informal sector and are highly unlikely to be covered at present.

5 Expanding Basic Service Delivery

5.1 Nutrition

5.1.1 Baseline

The precarious condition of the nutritional status of Yemeni children was evident even before the 2011 crisis, and stems from longstanding structural inequalities and inadequate infrastructure. Data from 2003 showed Yemen to be the second worst country after Afghanistan for stunting, with levels exceeding 58 percent, and third after India and Bangladesh for underweight children (41 percent).[78] Global acute malnutrition (GAM) has been a chronic problem showing a negative trend even before 2011, with GAM rates of 12.4 percent in 2003 worsening to 15 percent in 2006, while severe acute malnutrition (SAM) hovered around three percent.[79] In 2010, 600,000 children under age five suffered from moderate acute malnutrition (MAM) and 129,000 were affected by SAM.[80] Meanwhile, acute child malnutrition increased from 12.9 percent in 1997 to 15.7 percent in 2010, while chronic child malnutrition has increased from 51.7 percent in 1997 to 57.9 percent in 2010. Additionally, 25 percent of Yemeni females aged 16 to 59 years old were found to be acutely malnourished.[81] Maternal malnutrition and maternal mortality are both high, with corresponding negative consequences for child nutrition and mortality.

The underlying causes of Yemen's dismal track record on nutrition are a product of the combined effects of entrenched structural problems such as food insecurity, insufficient access to clean water and adequate sanitation, and poverty, coupled with the need for behavior change in areas such as infant and young child feeding and caring practices. Despite clear links between household-level deprivations and malnutrition, the Government of Yemen's policy and institutional response has been insufficient to offer meaningful safety nets and offset the critical nutritional situation (for more on social welfare and safety nets, see Chapter 4).

Rural women and children are particularly exposed to acute malnutrition.[82] Children less than 24 months are vulnerable compared to older age groups due to the high prevalence of GAM, indicating that this particular vulnerability is related to suboptimal infant and young child feeding, which begins at birth with high level of Low Birth Weight and poor breastfeeding and complementary feeding practices. Moreover, stark gender effects mark malnutrition in Yemen, with boys suffering higher rates of wasting (34 percent versus 28.9 percent) and stunting (60.2 percent versus 58.9 percent) than girls.

While mortality rates among children under the age of five decreased from 122 cases per 1,000 live births in 1992 to 78.2 in 2006 (and infant mortality rates decreased from 83 cases per 1,000 live births in 1992 to 69 cases in 2006) the rate of reduction slowed considerably from 2006 onwards so that Yemen is not currently on track to achieve its MDG targets by 2015.[83] The infant mortality rate in 2009 stood at 69 per 1,000 live births, or 65 for females and 72 for males.[84]

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78 Family Health Survey (2003, the most recent country-wide conducted in Yemen).

79 Yemen Multiple Indicator Cluster Survey–2006 MICS.

80 Correspondence from UNICEF, 12 September 2010.

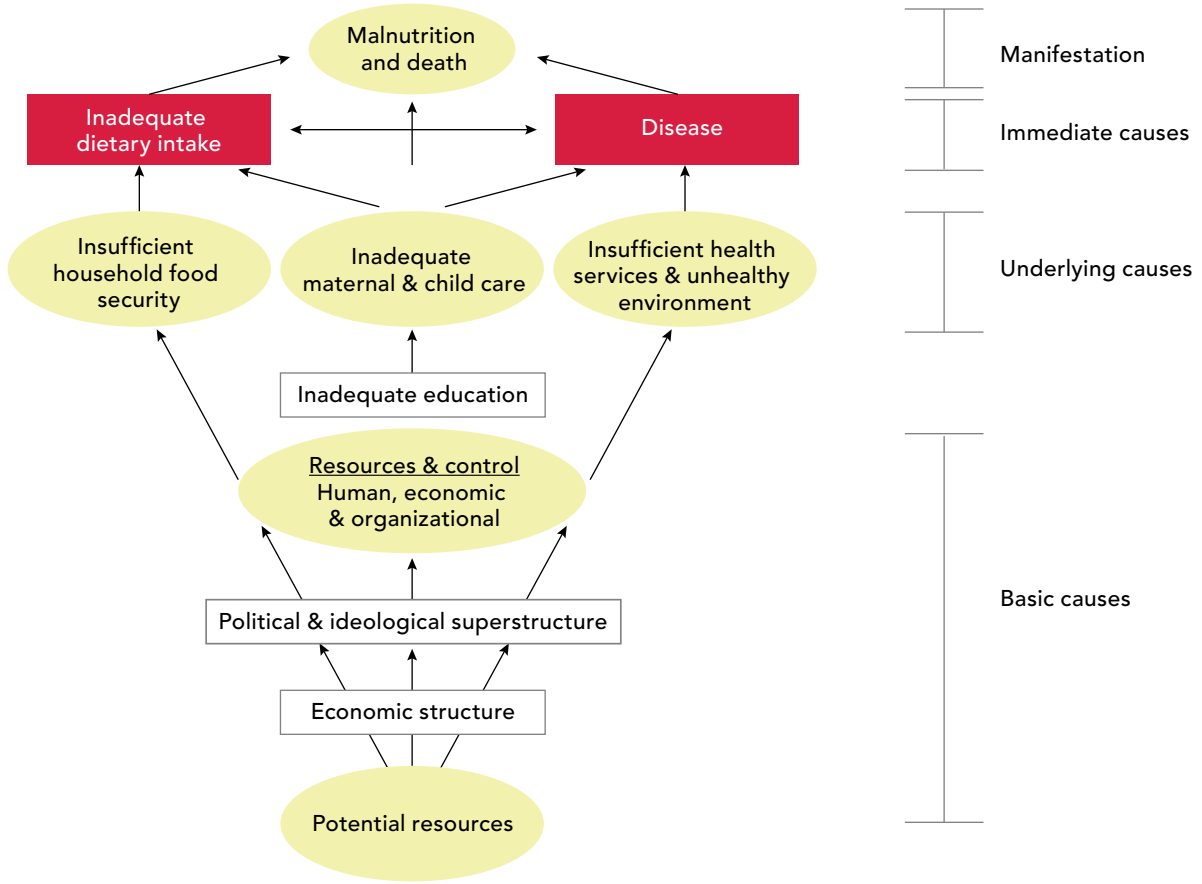
81 WFP 2010. Yemen: Comprehensive Food Security Survey.

82 WFP, 2010. Yemen: Comprehensive Food Security Survey.

83 UNDP with the Republic of Yemen, 2010. Yemen Report 2010: Millennium Development Goals.

84 UNICEF, 2009. Mid Term Review Report: 2007–2011 Program of Cooperation, 12.

Figure 10: Malnutrition and Death Causes



Source: Government of Yemen and JSEA Staff.

Box 12: Poor Infant Feeding Practices

- Less than one-third (30 percent) of all newborns receive breast milk within one hour of birth.
- Fewer than one in eight infants under six month are exclusively breastfed.
- During the important transition period to a mix of breast milk and solid foods between six and nine months of age, one-quarter of infants are not fed appropriately with both breast milk and other foods.

Box 13: High Disease Burden

- Sixteen percent of child deaths are due to diarrhea. Undernourished children have an increased risk of falling sick and greater severity of disease.
- Undernourished children who fall sick are much more likely to die from illness than well-nourished children.
- Parasitic infestation diverts nutrients from the body and can cause blood loss and anemia.

5.1.2 Crisis Impact

All sectors of life in Yemen were affected during 2011, and as might be expected the nutrition situation deteriorated during that time. Given the weak starting point outlined above, most vulnerable Yemeni families began 2011 ill prepared to absorb the shocks induced by the crisis. As a result, conflict, general insecurity, and rising prices for essential commodities aggravated hunger and malnutrition. Vulnerable populations experienced a lack of access to food, reduced diversity in diets, changes in breastfeeding practices as a result of the crisis, and reduced access to clean water because of fuel prices, which led to catastrophic results. Compounding the above, the overall breakdown of social services as a result of the unrest created conditions whereby addressing the intensifying problem of children's health and nutrition became even more challenging. For example, while the number of malnourished children seeking treatment at health centers increased during the first half of the year,

Table 15: Prevalence of Malnutrition Compared to the Previous Surveys and 2010 WHO Projections

		Wasting			Underweight			Stunting		
Survey	Year	Severe [a]	Moderate[b]	GAM[c]	Severe [a]	Moderate [b]	Total	Severe [a]	Moderate[b]	Total
1. Demographic Health Survey (GoY, CSO)	1997	2.6	10.3	12.9	14.5	31.6	46.1	26.7	25.0	51.7
2. Family Health Survey (GoY)	2003	3.0	9.4	12.4	15.2	30.4	45.6	22.2	30.9	53.1
3. Household Budget Survey (HBS)	2005/06	4.4	11.3	15.7	15.0	27.9	42.9	35.4	22.5	57.9
4. WH0 Projections 2010 based on WFP (CFSS 2009)	2010	3.9	11.1	15.0	19.0	24.0	43.0	37.1	20.9	58.0
5. Comprehensive Food Security Survey (CFSS) Survey, 2012[d] (WFP)	2011	3.6	9.4	13.0	12.6	12.9	35.5	21.7	14.9	46.6
6. Hajjah Nutritional Survey (UNICEF)	2011	9.1	22.3	31.4	20.3	28.0	48.3	22.8	20.8	43.6
7 Hodeidah Survey (UNICEF)	2011	9.9	21.8	31.7	26.7	32.9	59.6	26.6	27.9	54.5
8. Ta'iz Nutrition Survey Mountains (UNICEF/WHO)	2012	1.0	8.4	9.4	9.1	25.9	35.0	17.1	34.4	51.5
9. Ta'iz Nutrition Survey Coastal (UNICEF/WHO)	2012	3.1	12	15.1	13.4	30.9	44.3	19.1	30.0	49.1

Sources: GoY, UN.
Notes: [a] Severe acute malnutrition (SAM).
[b] Moderate acute malnutrition (MAM).
[c] Global acute malnutrition (GAM); GAM = MAM + SAM.
[d] The CFSS excludes Sa'ada and al-Jawf governorates, which have been affected by long-lasting conflict. Given that the prevalence of child malnutrition in these two governorates has been significantly above the national average (see e.g., MOPIC & IFPRI 2010), the reported prevalence rates are likely to be understated.

by June 2011, approximately 70 percent of Outpatient Therapeutic Programs (OTPs) were non-reporting, an indication that they likely were not functioning.

Malnutrition in Yemen, moreover, is not equally distributed throughout the country—certain pockets post exceedingly high rates well above emergency thresholds. Nutritional surveys conducted in response to the 2011 crisis revealed that in Hajja, Hodeidah, and the coastal areas of Ta'iz, for example, acute malnutrition has exceeded an alarming 30 percent,[85] while an additional 58 percent of Yemeni children suffer stunted growth, approximately 35 percent of whom are severely stunted.[86] As of February 2012, the emergency threshold for severe acute malnutrition of five percent has been exceeded in five governorates: Hajjah, Sa'ada, Hodeidah, Aden and Lahj, and the emergency threshold for global acute malnutrition of 15 percent is exceeded in the three governorates of Hajjah, Al Hodeidah and Abyan.

A nutrition survey in Hajjah Governorate conducted by UNICEF, the MoPHP and WFP among both girls and boys under age five in IDPs and host communities provide indication of increased vulnerabilities in conflict-affected areas. The findings show alarmingly high GAM rates of 31.4 percent and with a SAM rate of 9.1 percent, both above emergency thresholds. GAM prevalence is significantly higher among children under two years of age—43.9 percent compared to the national average of 28.9 percent—and is highest among males. The overall prevalence of SAM of 9.1 percent, an underweight prevalence of 48.3 percent that is marginally higher than the national average of 43 percent, reported stunting of 43.6.

The UNICEF Social Protection Monitoring Report covering the period July 2011–March 2012 indicates that whether children under five receive decreased or increased numbers of meals is extremely sensitive to even small disruptions or interventions in household budgets and charitable support. Despite these fluctuations, some constant trends were evident throughout 2011. Most notably, almost none of the rural households reported any protein intake (red meat, fish, or chicken) among children less than five years of age during the six-month reporting period, while only 8.8 percent of urban households enjoyed protein intake. In addition, 60 percent of rural households reported decreased meals among children less than five years of age compared to those in urban areas at 40.8 percent. Similarly, a recent survey in the coastal and mountainous areas in Ta'iz showed how levels of malnutrition are not equally distributed across geographical regions, even within the same governorate: the GAM rate in Ta'iz's Mountainous Zone is 9.4 percent, which is classified as poor by a WHO classification scheme of GAM severity, while in the Coastal Plains the GAM rate is deemed at a critical stage, at 15.1 percent, (MOPHP /UNICEF/WHO 2012).

Conflict presents an additional burden that exacerbates vulnerabilities, as evidenced by surveys conducted among displaced populations from Abyan which indicate alarming rates of GAM and SAM for children under age five living in conflict-affected areas: 18.6 percent for GAM and a SAM rate of 3.9 percent.[87] Reasons for these high rates of GAM and SAM can be traced to the direct and negative impact on access to food, access to fuel, the collapse of health services, and the lack of access by humanitarian partners to affected populations. In addition, less than 70 percent of mothers sustained breast-feeding for children between 12 and 24 months of age, though rates of breastfeeding of boys (69.9 percent) is slightly higher than for girls (65.1 percent). Meanwhile, bottle-feeding for those between 12 months and 24 months are higher for girls than for boys at 66.7 percent and 58.9 percent respectively.

Micronutrient deficiencies are also pervasive, and more than one-third (38 percent) of women are anemic according to a 2012 WFP report.[88] Malnutrition was higher among pregnant women with poor access

[85] Hajja and Hodeidah nutrition status surveys July and November 2011 (MOPHP and UNICEF).

[86] OXFAM 9/2011.

[87] UNICEF Nutrition assessment of 6-59 month old girls and boys among IDPs in Abyan, Sept. 2011–GHO in Abyan, page 3.

[88] Emergency Food and Nutritional Support to Conflict Affected Populations in Yemen, 2012. WFP, page 4.

Table 16: Prevalence of Morbidities in the Two Weeks Preceding the UNICEF Hodeidah Survey Compared to the Previous Surveys

Survey	Year	Diarrhoea	ARI	Fever
Family Health Survey[a]	2003	29.60 percent	42 percent	40
MICS[b]	2006	33.5	NA	NA
Hajjah Nutritional Survey[c]	2011	47.40 percent	43.10 percent	54.6
This survey	2011	45.40 percent	64.10 percent	57.70 percent
TENDENCY		↑	↑	↑

Source: Government of Yemen and JSEA Staff.
Note: [a] Ministry of Public Health and Population. Central Statistical Organization, and League of Arab Sector. Yemen Family Health Survey, Principal Report; 2005.
[b] UNICEF. Multiple Indicator Cluster Surveys (MICS), 2006.
[c] UNICEF (2011). Nutrition Survey among U5 Children and Women of Childbearing Age in Three Districts in Hajjah Governorate, Yemen.

to food. Anemia remains a particular concern, with increased rates being observed in children between 2008 and 2009 in all sites. The 2009 anemia survey included all refugee sites, and total anemia and severe anemia were found to be 77.9 percent and 8.8 percent, respectively, among refugee children under age five in Kharaz refugee camp, 73.9 percent among Yemeni children under age five around Kharaz camp, and 47.5 percent and 3.7 percent among refuge children under age five in Sana'a respectively.

In Hodeidah, the nutrition survey among children under age five found an overall GAM prevalence of 31.7 percent and SAM of 9.9 percent, both much higher than the respective emergency thresholds. The underweight prevalence of 59.6 percent is alarmingly high, among the highest in the world, and far above the 2015 MDG target. The stunting prevalence found through the same survey is 54.5 percent.[89] The underlying causes of the problem appear to be related to: lack of food diversity including lack of fortified food; limited livelihoods opportunities; frequent disease outbreaks; poor infant and young child feeding practices; inadequate water and sanitation facilitie; limited nutritional program coverage; high tea consumption and wheat based diet (high phytate and polyphenol/tannin content of the diet); poor child care practices at the home level, inadequate health service; and Qat consumption.

As noted above, the crisis of 2011 prompted an increase in the numbers of children seeking treatment for malnutrition, from 15,000 children treated for SAM in 2010 to 65,000 children in 2011. While the increase in children being treated can in part reflect a positive trend of expanded Outpatient Therapeutic Program (OTP) and Therapeutic Feeding Center (TFC) coverage throughout the country, the dramatic increase is largely driven by the worsening nutrition situation among children.

5.1.3 Food Security and Malnutrition

WFP conducted data collection for Comprehensive Food Security Surveys (CFSS) in 2009 and 2011 in response to the dire nutrition situation in Yemen. Results from the earlier survey provide a national baseline for GAM of 12.4 percent prior to the outbreak of the 2011 crisis, though many experts perceive this rate as underestimating likely GAM due to methodological constraints.

The follow up survey, which was conducted from November to December 2011, included approximately 7,750 households throughout Yemen's 21 governorates (with the exception of Sa'ada and Al Jawf, which were inaccessible). Included in the survey was an examination of the nutritional and food consumption status of more than 11,000 children and around 10,000 mothers between the ages of 15 and 49.The preliminary findings from this survey indicate that food insecurity in Yemen has dramatically worsened, reaching

[89] MoPHP/UNICEF 12/2011.

alarming levels, with 44.5 percent of the population—over 10 million people—labeled food insecure. Over five million, or roughly 22 percent of the population, are severely food insecure and unable to produce or buy the food they need. This represents a shocking 87 percent increase from the earlier CFSS, and is well above the threshold at which external food assistance is required. An additional five million people were found to be moderately food insecure and at risk of becoming severely food insecure in the face of rising food and fuel prices and conflict. As with health indicators, food security presents wide disparities between urban and rural populations: in rural areas, more than one in two Yemenis were found to be food insecure, while in urban areas nine percent of the population is severely food insecure and 18 percent moderately food insecure.

With respect to the exogenous shock of rapidly rising food and fuel prices throughout 2011, the survey found that nearly all Yemenis—90 percent of households—reported difficulty in accessing food due to higher food prices. In addition, rising food prices have caused households to buy more food on credit, resulting in as much as one-third of households surveyed reporting debt related to food. Over all, survey

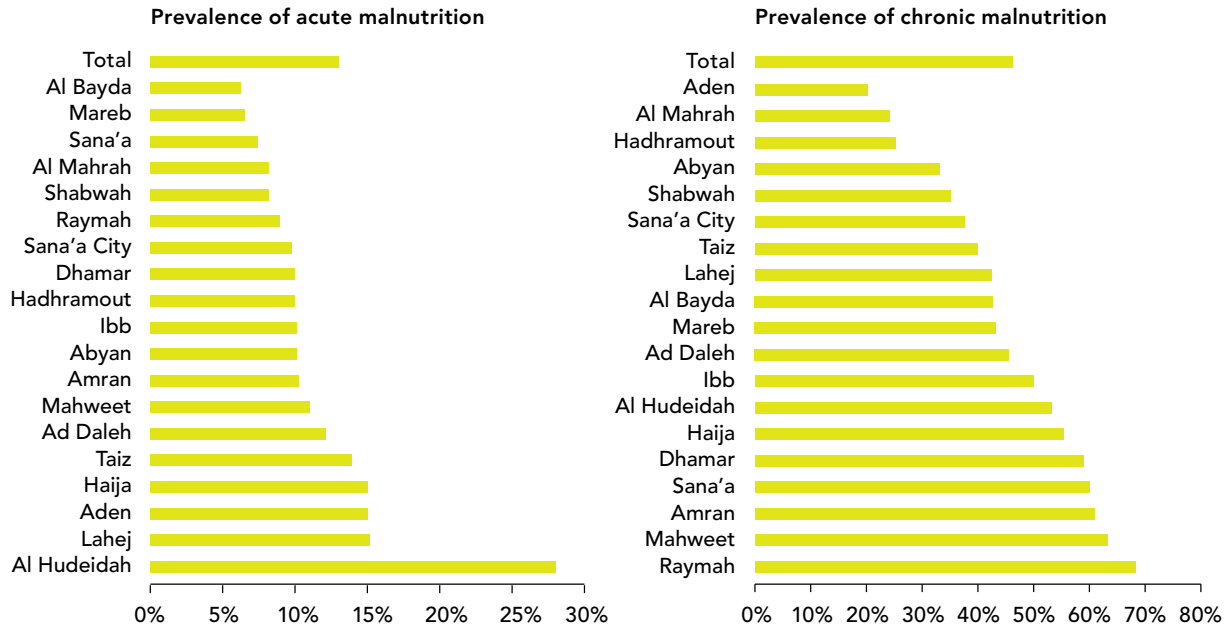
Box 14: Limited Access to Nutritious Food

One in three households are food insecure; large amounts of land and water are devoted to growing Qat, a mild narcotic that has no nutritional value and competes with food production.

Achieving food security means ensuring quality and continuity of food access, in addition to quantity, for all household members. Dietary diversity is essential for food security.

Solution: Involve multiple sectors including agriculture, education, transport, gender, the food industry, health, and other sectors to ensure that diverse, nutritious diets are available and accessible to all household members.

Figure 11: Prevalence of Malnutrition in Yemen



Source: Government of Yemen and JSEA Staff.

results revealed a very high prevalence—more than 40 percent—of severe food insecurity in the governorates Al Bayda, Mareb, and Sana'a (excluding the capital). The greatest concentration of severe food insecurity is found in the Highlands region.

5.1.4 Recommendations

The nature of malnutrition is complex and multi-sectoral. As a result, durable solutions proposed to tackle this problem also must be multi-sectoral. As it stands, placing malnutrition as an issue related only to the health sector addresses only part of the problem while ignoring many of the deep root causes previously mentioned. In addition, the present health system is ill-equipped to manage the estimated 966,000+ caseload. The Government of Yemen and partners working on Agriculture, Health, Water, Sanitation, Education, Local Government, and other sectors must synergize their respective strategies and interventions to comprehensively address the multiple dimensions of factors contributing to Yemen's malnutrition crisis. Such an approach will require stronger coordination and leadership from the highest levels of Government than what was provided in the past.

While this is the most appropriate strategy in addressing chronic malnutrition, the immediate risk of death faced by the over 260,000 children under the age of five with Severe Acute Malnutrition must be addressed. Community based management of Acute Malnutrition using Ready-to-Use Therapeutic Food is recommended as the best approach to treat children who are severely malnourished. This approach needs to be rolled out in all governorates[90] and districts with Severe Acute Malnutrition rates of over five percent. The multi-sectoral approach to the nutrition crisis suggested here will also reinforce the response to Severe Acute Malnutrition.

The National Nutrition Strategy[91] provides for set actions, among which Nutrition for Emergency Situations, School Nutrition, Control of Child and Maternal Undernutrition, Control of Low Birth Weight are some of the priorities already highlighted prior to the 2011 crisis.

Roll out SMART Surveys: The priority would be to roll out Standardized Monitoring and Relief Transition (SMART) nutrition surveys to all governorates, identifying and targeting the most vulnerable populations within each governorate in order to address inequalities throughout the country. The response plan must be designed in an integrated comprehensive fashion to address both the immediate and underlying causes of malnutrition, and provide for scaling up these interventions to reach all the affected populations.

Community Management: To ensure sustainable change, special focus must be paid to community-based structures, including capacity strengthening of nutrition volunteers. Among functions that must be undertaken: screening for malnutrition; follow up to prevent relapse and to deliver appropriate care practices; IYCF /Breastfeeding counseling services and WASH advocacy messages; livelihood interventions and directly linking these to a targeted social protection mechanism.

School Nutrition: Increase awareness of children and parents about importance of dietary intake for the development of children; develop education materials targeting health, nutrition, and hygiene. As described in Section 4.1 on Social Protection, initiate targeted school feeding programs linked to social safety nets operational and management schemes.

Control of Child and Maternal Undernutrition: Promote early initiation, exclusive breastfeeding for the first six months and breastfeeding for at least two years with timely introduction of appropriate complimentary foods. Promote breastfeeding at birth places (home based and health facilities). Enhance collaboration with agriculture and other relevant sectors to promote and improve most vulnerable households' food security.

Chronic malnutrition and the immediate risk of death for over 260,000 children with Severe Acute Malnutrition remain to be addressed. Community Based Management of Acute Malnutrition using Ready-to-Use Therapeutic Food is recommended as the best approach

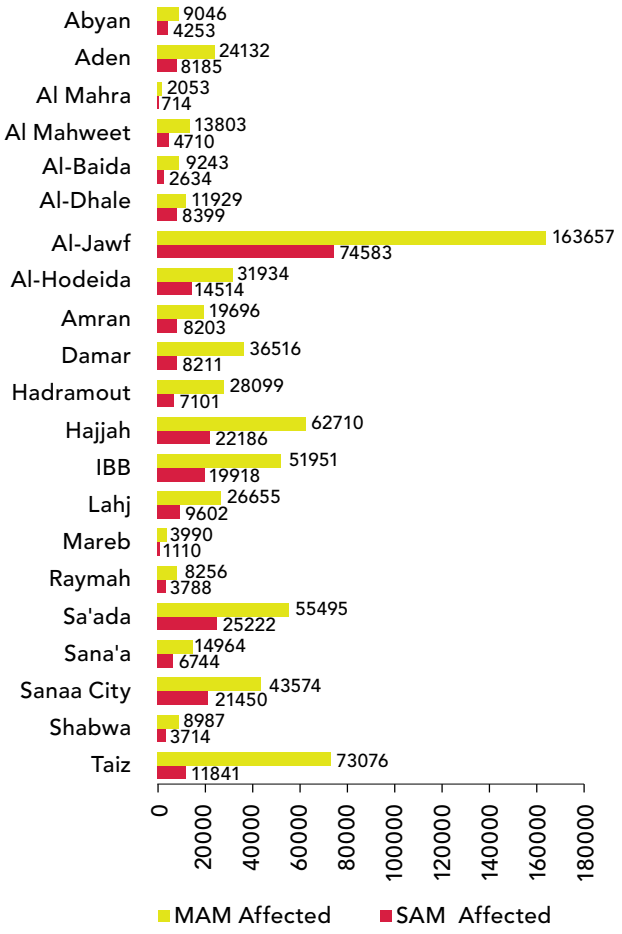
[90] Currently only three governorates are covered.

[91] National Nutrition Strategy for Yemen (draft); Family Health Directorate, Primary Health Care Sector, MOPHP.

to treat children who are severely malnourished. This approach needs to be rolled out in all governorates and districts with Severe Acute Malnutrition rates of over five percent. The multi-sectoral approach to the nutrition crisis encouraged herein will also reinforce the response to Severe Acute Malnutrition.

Funding: In order to address the needs of severely wasted/acute malnutrition (SAM) children, the government will need on average an estimated US$100 per SAM case. Reducing the prevalence of Severe Acute Malnutrition (Wasting/SAM) can be accomplished through improving maternal malnutrition, adopting appropriate Infant Young Child Feeding (IYCF) practices including proper care practices, extending health services to remote and hard to reach areas through institutionalizing outreach services to deliver a comprehensive minimum package of PHC and nutrition services, and improving water supply and sanitation, among other initiatives.

Figure 12: Number of MAM and SAM Affected Children under Five (Distributed by Governorate)



Source: Government of Yemen and JSEA Staff.

5.2 HEALTH

5.2.1 Health Services

Crisis Context

In 2011, essential Government services such as health care, social welfare, education, power, and water were reduced or eliminated as a result of civil unrest and conflict compounded by rising commodity prices. This has exacerbated severe and widespread chronic vulnerabilities in Yemen, particularly with regards to nutrition, food security, and access to water, social welfare, education, and healthcare. Government wages were either late or unpaid for months, including those for medical workers, resulting in persistent service disruptions. The effect of these disruptions was amplified by the timing of the crisis, occurring on the heels of a years-long recession that negatively impacted society's most vulnerable, i.e., women, children, and young people.

The increased political violence in the central/west part of the country also took its toll on deteriorating health care services in a number of governorates. Any further escalation and spread of violence could result in a further dramatic deterioration of the country's weak health system, which receives only 3.6 percent of the national budget. Presently there are 842 Public Health Centers (PHCs), ostensibly staffed with physicians and paramedicals who cater to the needs of the entire country, but which effectively reach a mere estimated 68 percent of the population.[92] These centers, which are often understaffed and under-resourced, especially in rural and remote areas, consistently rely

[92] CSO 2010.

on humanitarian agencies and charitable organizations for the continued provision of services.[93] Many factors contributed to the substantial increase in the number, magnitude and impact of communicable and vaccine-preventable disease outbreaks, including: the disruption of social services including water and sanitation; limited vaccination coverage due to lack of access as well as disruptions to the cold chain; and high food and fuel prices.

In addition to PHCs, Yemen possesses a number of Health Facilities, though assessments are needed to determine how many of these meet basic service capacity standards. Even before the crisis, the 2010 baseline of utilization of these centers reflected a stark inequality of per capita outpatient rates, ranging from 0.58 to 2.7 contacts per year depending on the geographic area in the country. While 0.58 is quite low, the rate of 2.7 is quite high compared to other crisis countries.[94] Exact data for service utilization specifically for hospital service utilization is either absent or unreliable, though estimates put the range at less than 15 and less than seven clients a day respectively.[95]

There are limited reports that show utilization of services was even further affected during the crisis. The reports from Abyan, Sa'ada, and elsewhere provide evidence of the destruction of facilities, their occupation by armed forces, the looting of properties, the insecurity and blockage of transports, the inability of staff to report to work as normal, and the additional burden placed on facilities in neighboring governorates as IDPs flee fighting in conflict-affected areas. All of these reflect the impact the crisis had on people's rights to access basic social services in general, and access to health in particular.

The conflict also took a high toll in the numbers of dead and injured among civilians, amounting to about 6,500 victims in all governorates, though sector experts suspect the actual numbers to be much higher than the official count. Regardless, even at 6,500, the number of wounded requiring emergency care overwhelmed the health care facilities. The lack of adequate trained staff across the country, insufficient funding, high turnover of human resources, and lack of medicine, electricity, fuel, compounded with the outbreak of epidemics such as measles, malaria, and water-borne diseases/cholera and general lack of coordination and guidance pushed the already weak health system beyond its limit.

In addition to these challenges, the doubling of costs of commodities negatively impacted the sector's ability to provide adequate services and coverage to a population that increasingly could not afford even that which was available. Throughout 2011, both petrol and diesel became scarce and saw a 130 percent price increase when it was available. Such difficulty affected all administrative, curative, preventive, emergency response initiatives including the vaccination cold chain, medical supplies, and drug delivery to the governorates and districts. In addition, constant and frequent interruption of electricity affected the overall system, and in particular water pumps, computers, refrigerators, operations for the injured, blood

Box 15: Impact on Health Service Delivery

Due to conflict in Abyan Governorate, foreign doctors withdrew from their duties; affecting six hospitals in Lawder, Moudyah, Al Mehfed, Shokran, Al Wadee and Ahwar; and leaving vacant important functions such Gynecology & Obstetrics, Pediatrics, General Surgery, and Anesthesia. Those functions are crucial to providing the much-needed services to people living in those districts as well as IDPs around those areas. Medical supplies are facing critical shortages making the emergency situation even direr, given that even before the crisis Abyan would receive only five percent of the supplies provided to the Regional Store in Aden.

Source: Government of Yemen and JSEA Staff.

[93] Civil society and community groups are a major contributor on social service delivery and are increasingly reaching out the most vulnerable where government structures are absent. This was clearly demonstrated throughout 2011 crisis.

[94] World Bank Discussion Paper, 1998.

[95] Salad Health system profile, WHO 2011.

banks, emergency units and so forth. Even generators, designed to buffer the system against such problems, were negatively affected, as they quickly burned out from overuse.

Governance

Decentralization of health care kicked off in the mid-1990s, as the MoPHP, which has overall responsibility for the health sector, initiated a sector reform plan. A key feature of decentralization was the creation of local health councils, comprised of an Executive Organ Director and appointed community figures. The decentralization effort was further elaborated by the development of a "National Model of a District Health System" in 2003.

The decentralization process has been hamstrung by weak capacity to plan and implement at the local level, and by a centrally-managed budget system. Local District Councils (LDCs), for example, plan according to strategic objectives given to them by the central level. While 90 percent of Yemen's districts manage to draft annual plans according to agreed templates, the weak capacity of staff in terms of planning—only 25 percent of overall Ministry staff have training in the area of planning and management—translates into limited ability on the part of LDCs to guide their own development. Thus, while decentralization may be well articulated in the policy sphere, its implementation has not achieved the desired results.

Impact

The national health care system, along with other sectors, experienced dramatic disruption during 2011. Price shocks combined with the weak state of health care prior to the escalation of conflict translated into a sector unable to ensure continued service delivery to a population in crisis. Notably, the sector as a whole—from the level of the central Ministry down to local councils—failed to identify contingency plans that could have buffered vulnerable populations from the worst effects of the emergencies. As a result, just as the population's needs were increasing in terms of higher rates of malnutrition, water-borne diseases, communicable diseases, and conflict-related injuries, the system became increasingly unable to respond.

In addition to the overall weak state of emergency preparedness, the Ministry itself absorbed direct threats to its premises in Sana'a. Starting as early as March 2011, Ministry staff was increasingly unable to report to work due to roadblocks/checkpoints throughout the city, and shelling and gun battles in the neighborhood where Ministry buildings are located. The lack of provisions for alternative workspace resulted in a near halting of administrative work, including the implementation of much-needed development programs.

The Ministry was further constrained by delays or suspension of the health budget. For example, the Department of Child and Adolescent Health responsible for Integrated Management of Child Illness (IMCI) did not obtain the department's budget for the second half of 2011 and for the first half of 2012, causing significant delays in planned activities and contributing to poor performance and worsening conditions of child health. Against this backdrop, the donor coordination system was also interrupted during the crisis due to closure of MoPHP and evacuation of the technical staff belonging to multilateral and bilateral agencies and donors. In response, many observers note the increased role of the private sector and NGOs during the crisis, and in particular their efforts to reach the most difficult-to-reach in remote areas. Analysis of the impact of the crisis on their capacities and resources however is outside the scope of this assessment.[96]

Organization & Health Workforce

Currently there are 229 hospitals, 791 health centers, 2,849 health units, and 2,566 reproductive health centers in Yemen. The total number of beds is 15,691.[97] When functional, these facilities provide access to

[96] 15 April Workshop findings.

[97] Reference the figures.

approximately 68 percent of the population. In addition, there are 168 private hospitals, 324 dispensaries, 541 health centers, and 657 private clinics concentrated mostly in urban areas.[98] Private for-profit health care is essentially curative and is available mainly in and around urban areas. There are also a number of private clinics, which are well equipped and have up to 50 beds. Private health services are strictly commercial and charge substantial fees to their patients. While private, for-profit and non-profit health services offer some alternatives to public services and could potentially be tapped for innovative solutions to barriers to access, overall they are poorly coordinated as a sector.

Public health services are organized in three levels starting with Primary Health Care (PHC) supported by secondary and tertiary referral care. The health services start at the village level where PHC units are run by paramedical staff and are backed up by PHC centers, most of which are managed by one physician and have laboratory and X-ray facilities. Patients who cannot be properly cared for at the PHC level are referred to rural, district, or governorate hospitals (secondary care) for further diagnostic and curative treatment. Some of these hospitals also provide support for national or regional immunization and disease control programs. Finally, tertiary hospitals provide specialized care and serve as teaching hospitals for the medical faculties of the country's two universities. The District Health System (DHS) is based on three levels of health facilities, which are the Health Unit, Health Center and the District Hospital. Two higher levels of health care provision such as Governorate Hospital and Central Hospital function as referral levels for the DHS. Each health facility in the DHS is supposed to be managed by a Health Facility Committee (HFC). Community-based health services and services provided through mobile clinics are usually linked to a health facility. A District Health Management Team (DHMT) manages the DHS as a whole and is located at the District Health Office (DHO). The DHMT receives support and supervision from the Governorate Health Office (GHO). Mandatory community participation in the DHS is exercised through community representatives in the HFC and through defined working relations of the DHMT with the Local Council in the district. The GHO and the DHS were launched to address the well-known failures of the formerly highly centralized national health system.

The overseeing bodies for the MoPHP are the Health Department within the Central Organization for Monitoring and Accountability and the Health Committee in the parliament. The MoPHP has recently established a department for monitoring and accountability aiming at monitoring the whole range of activities of the Ministry.

There are about 50,000 people working in the health sector in Yemen, with four out of every five workers employed by the public sector. It is common that technical staff (doctors, nurses, midwives, lab technicians) work in the public health sector in the morning and in the private sector in the afternoon. There is no oversight control on the human resources, hospitals, and clinics of the private sector despite Executive Bylaw of Law No. 60 for the year 1999, which mandates oversight of private medical and health establishments.[99]

Service delivery and utilization in Yemen is constrained by the unequal distribution of qualified health professionals in urban areas and in district centers, leaving remote rural areas without coverage.

The baseline of the health workforce is quite low: medical doctors 3/10,000; nurses 5/10,000; and midwives 2/10,000.[100] The WHO benchmark for adequate comprehensive coverage is 2.5 health workers per 1,000 persons. Compounding the problem of accessibility for female patients, for every female staff there are two male colleagues, despite that in first-line health services the majority of patients are women.

In order to address emergency medical needs during the crisis, mobile teams were mobilized to facilitate

[98] Prime Minister's decision No. 132 for the year 2004 about the Executive Bylaw of Law no. 6 for the year 1999 about Private Medical and Health Establishments.

[99] Prime Minister's decision No. 132 for the year 2004 About the Executive Bylaw of Law no. 60 for the year 1999 about Private Medical and Health Establishments.

[100] Central Statistical Office 2010.

access to basic health services for vulnerable population groups, especially IDPs. During 2011, the total number of medical consultations provided by medical teams in all emergency operating sites was 243,819[101] including:

- Eight mobile health teams providing life-saving health services to Abyan IDPs in Lahj and Aden;
- Ten fixed medical teams providing PHC and life-saving services to IDPs and host population in Sa'ada; one psychiatrist and one general surgeon providing services to population as needed based in Al-Jumhuri Hospital in Sa'ada;
- Two fixed medical teams providing PHC and life-saving services to IDPs and host community based in Khaiwan and Al-Houthi hospitals in Amran;
- One Comprehensive Health Center and three mobile teams providing PHC and life-saving services to IDPs in Haradh and Khyran districts of Hajjah;
- One mobile health team providing PHS and life-saving services to IDPs and host community in Al-Jawf.

Medicine and Technology

Even before the crisis, few health facilities possessed adequate essential drugs, and health centers—including in the main cities—received very small drug stocks, typically only two or three times per year.

During 2010–2012, international organizations provided support to a number of health centers and hospitals in key locations throughout the country through delivery of the following to fill long-standing gaps:

- Medical Products: 26 Trauma A and B kits, 13 Diarrheal kits, 19 Interagency Emergency Health kits and 65 Basic Boxes in addition to 40 metric tons of locally-procured life-saving supplies;
- Equipment supplied to Al-Malaheet hospital (Sa'ada); AMP in Sana'a University Square, Kuwait hospital, Sabeen hospital (Sana'a); Rowdha, Safwa hospitals, Operation Room and Field hospital (Ta'iz); Naqeeb hospital, Jumhuria and Wehda hospitals, establishment of Rehydration Centers and Nutrition Centre (Aden); Bin Khaldoon hospital Rehydration Centre (Lahj).

Information Management

In general, assessment of the quality, provisioning and accessibility of services is constrained by the lack of reliable data generated by the system and available to the Ministry. The Health Management Information System (HMIS) is not properly functioning within the MoPHP, leaving data collected from different sources, including humanitarian partners, scattered throughout the system in the absence of a central repository. Moreover, there is scant data collected, and what little exists is of questionable quality. While all governorates use standard reporting formats, with the exception of a handful of governorates, reporting is inconsistent and weak. The absence of policy and financial commitments from the MoPHP to strengthen a central system has contributed to duplication of efforts, as well, as different health programs attempt to overcome the problem by establishing small-scale parallel systems with no provision for sustainability and/or increase in outreach. The lack of a unified, reliable system has direct impact in policy formulation, planning, performance monitoring, and resource allocation under each of the components of the health system.

Funding

Many of the pre-crisis weaknesses in the health care sector can be linked to the chronically low financing of the system: despite clear unmet needs, the health sector receives only 3.6 percent of the national budget. Annual per capita total expenditure on health rests

[101] In 2009, the number of diagnoses of various illnesses were 4.8 million; the 4th 5-year DPPR, MoPHP, page 22.

at US$64 (YR 15,375), while government expenditure on health is merely US$70 per capita, resulting in a 71 percent (or US$81) out of pocket expenditure of total health expenditure.[102] Other funding sources for health care such as emergency or development support have not been factored into the coverage rates.

Compounding the problem of unevenly distributed health facilities, patients are not charged standard fees, which may vary greatly for service delivered in different levels of Health Facility. The lack of regulation of user fees poses a threat to equity of care especially for the poor, the majority of whom are female-headed households.[103] The lack of regulation also prohibits estimates of unit costs for standard procedures, and thus limits monitoring. In addition to the lack of fee price regulation, the system further deepens the inequality effect through its lack of user fee protection for those unable to pay health services.[104] Only a few ad hoc community initiatives support the poor at the local level, while special funds that provide financial aid to certain categories of vulnerable people such as the SWF, SFD, Disability Fund etc., are underutilized. Thus, as prices for food, fuel, transportation, and water increased throughout 2011, vulnerable people's access to healthcare suffered even further, as user fees put medical treatment beyond the reach of most.

5.2.2 Health Emergency Services

In the health sector there are three main committees overseeing the health sector emergency and disaster planning. These include the Higher Health Council for health emergencies and disaster preparedness, the preparatory committee for health emergencies and disaster preparedness planning, and the executive committee for health emergencies and disaster preparedness plans. Each of these committees has representation at the national, governorate, and hospital levels. All three committees are headed by the Minister of Health but differ with technical membership.

Emergency and Rescue Services (ERS) are of crucial importance in protecting population under crisis conditions both in disaster and conflict times. Within the MoPHP, the General Directorate of ERS is the central institutional department responsible for management and technical issues related to preparedness, planning, coordinating, and supervising the process of ERS provision in all governorates. The department coordinates with the main hospitals; Governorate Health Offices (GHOs) are based in the governorates and supervises the emergency operation room located in the MoPHP. Despite this structure, the coordination mechanism is not clearly established within the MoPHP.

Main hospitals are the main points of provision for ERS, though their capacity to respond at present does not match needs. Moreover, the weakness of ERS network is clearly reflected by the lack of resources (financial, technological, and human) in the governorates,[105] where the need increasingly exists. MoPHP has prepared a national plan that addresses the need of Emergency Service and Rescue interventions such as providing ambulances, human resource capacity building, and medicine provision, and is seeking support for the establishment of 10 centers at the governorate level.

5.2.3 Reproductive Health

Baseline

Reproductive health (RH) and population growth indicators paint an alarming picture. Yemen has one of the highest maternal mortality rate in the world at 366/100,000 live births in 2010, making this more than just a technical problem but a political problem. Add to this the high fertility rate at 6.1 children per woman in reproductive age (rural: 6.7, urban 4.8); total fertility rate (TFR) of 6.7 for illiterate women; 4.3 for those with preparatory education; and 2.8 for women who completed secondary

[102] Source: MoPHP.

[103] At PHC level in Sana'a, the doctor focused specialized service to generate fees rather provide essential primary health services; the funds generated are shared among health workers.

[104] This despite a legal obligation on the part of private facilities to provide free emergency care to individuals unable to pay for services.

[105] Reports of the governorate on the situation of ERS.

education;[106] infant mortality rate (IMR) of 68.5/1,000; crude birth rate of 37.9/1,000 (CSO 2010); and contraceptive prevalence of only 19 percent corresponding to levels of population growth rate at three percent per year, and it is clear that the need is not matched by an appropriate number of dedicated staff and health facilities. Despite the fact that authorities recognize the huge unmet needs for RH in Yemen population, the financial backing of the subsector, necessary for the full roll out of appropriate strategies, is inadequate.

Various assessments report unmet needs for reproductive health services, with deliveries conducted under unhygienic conditions, inadequate health care services, and virtually no referral systems for Basic Emergency Obstetrics Centre (BmONC). For example, all governorate hospitals provide a Basic Emergency Obstetrics Center per 500,000 population. (Consider the number of women of reproductive age at 3,421,805 (CSO 2010) and if there are 56 government hospitals that provide BmONC, then on average, 1 hospitals provide BmONC for 61,104 women of reproductive age.)

The 3rd five-year National Health Plan identified one of its key six objectives as the reduction of maternal mortality rate by extending "safe motherhood services in the context of reproductive health services in all health facilities and among all community groups." The same priorities were carried over to the 4th five-year National Health Plan. From the 3rd Plan to the 4th, only 56 percent of the targeted objective was met, with the lowest achievements in the categories of: i) support female staff involvement in the health sector (at 34 percent); and ii) extend and promote quality pregnancy care (at 37 percent). The situation is further compounded by prevailing cultural norms, under which women may not leave their homes without being accompanied by a male adult family member, even to seek medical care for themselves or their children. For the same cultural reasons, instances of sex- or gender-based violence (SGBV) and female genital mutilation (FGM) are rarely reported.

Women's health and maternal health are affected by any number of broader social challenges, such as malnutrition and extreme poverty. Lack of access to clean drinking water, particularly in more isolated rural areas, leads to the spread of associated diseases and infections, which has serious implications for hygiene, including during delivery. Meanwhile, hunger often impacts expectant mothers more severely than others, weakening women and placing them at increased risk for other avoidable illnesses. All of these issues have a compounding impact on women's health—especially reproductive health.

Impact

Though no comprehensive baseline data and reports on RH exist, and it is impossible to evaluate the impact of the crisis as a whole, it can be stated that the available data speak for dire conditions already before the events of 2011.[107] Prior to the crisis, 77.2 percent of deliveries were reported to be unassisted by skilled staff, placing both mother and child at serious risk.[108] In rural areas, only four out of every 10 women receive ante natal care (ANC), and only three receive care during delivery,[109] disproportionately increasing mortality rates among women. During 2011, the maternal mortality rate is expected to have remained high as a direct result of the severe deficiency in ANC provided to women, as well as the lack of access to medical services designed specifically for women, including reproductive health services.

Yemeni women had been already suffering risk and vulnerability in their daily lives (as detailed in the baseline data), and the crisis has made them even more vulnerable in terms of their reproductive health and rights. Demonstrating the impact on reproductive health, however, is difficult, especially in the Yemeni context. While this section seeks to assess the impact of the crisis given the available data, there are several

[106] YFHS 2003.

[107] The rise in fuel prices, lack of electricity, as well as high transportation costs compound by lack of safety and security and traditional and cultural norms are all indicators that lead to the belief that the situation has worsened.

[108] Yemen Report 2010: Millennium Development Goals.

[109] CCA 2011.

important caveats which need to be recognized when considering the analysis:

- The overall data in this category is already a challenge to acquire, given the various cultural and traditional barriers that exist to survey such information;
- The institutional capacity to obtain such data has historically been weak, and the disruption of security in 2011 only made it more difficult to carry out important surveys such as DHS and the Household Budget Survey. This means that the opportunity to survey some of the key issues surrounding reproductive health has been missed;
- Also, the kind of impact that occurs in reproductive health is not always as immediately visible as death, but one that lingers and is often cascaded behind other competing priorities. In fact, such level of prioritization in itself is indicative where women's status is in such situation.

Destruction of Health Facilities Reproductive Services

From ground reports it is clear that many health institutions providing services to women have been destroyed, especially in areas such as Abyan that continue to experience violence. Coupled with this reality, Ministry of Health's capacity has been heavily affected, whereby anecdotal accounts collected by UNFPA describe how ministry and other government health officials could not access health offices and clinics due to the insecurity of these areas. For example, the Director General of Abyan health office still cannot access his office due to the volatile security situation. Also, all health staff in Zinjbar and Jaar districts has fled from the health offices, leaving health offices dysfunctional. This includes all the foreign health workers who were providing technical assistance to the district health offices.

In fact, the vacuum of foreign health workers not only occurred in areas such as Abyan but also in the center capital of Sana'a. For example, UNFPA recently communicated with the Zubeiri Health Office of Al Thawra Hospital in the Old Sana'a and confirmed that it has not been able to provide much maternal health care due to fleeing of foreign health care workers, especially related to maternal health issues. And this part of the Al-Thawra hospital has been especially equipped well for maternal and child health care, to provide safe delivery, emergency obstetric care services, and even treatment for obstetric fistula cases. While the infrastructure exists in good condition, without enough health care providers, the institution cannot meet the needs of many women.

Outside of Sana'a, while some other health offices in nine districts within Abyan are technically "open," health workers are operating with minimal supplies. More specifically they receive only around five percent of the total drugs allocated for five governorates instead of the 20 percent needed to function properly, including reproductive health commodities. Again, the lack of security coupled with the inaccessibility of the health workers has left health offices without steady delivery of drugs for the past four months.[110] Cases of in Abyan and Sana'a depict more than the infrastructural debilitation of reproductive health services delivery. The connotations of this destruction speak to the depletion of women's sexual and reproductive rights.

Lack of Funding for Reproductive Health Interventions

Moreover, many Yemeni women of reproductive age have further experienced setbacks due to the lack of well-funded international assistance available against their needs. This is because international assistance has been largely catered towards more "immediate" needs such as food, water, and shelter. For example, as of March 2012, project proposals for reproductive health identified in the Consolidated Appeals Project (CAP) for the United Nations have been funded at

[110] UNFPA interview with Director General of Abyian Health Office.

0 percent. Also, several development partners evacuated and halted their interventions on the ground due to security instability, especially at the height of volatility in 2011. This means that there was an overall increase in the needs of reproductive health services by Yemeni women which could not be met by international interventions due to lack of funding and/or evacuation of development partners.

As a result of the above, the risk and vulnerability of women to access safe delivery, family planning, and emergency obstetric care have been greatly compromised. Especially in a country like Yemen where the adolescent fertility rate[111] is 73.7 births per 1,000 women who are between the ages of 15 and 19, there is a greater chance of these women being exposed to suffering from various delivery-related complications. This means that the overall reproduction rate of Yemeni women under 20 is currently at 52 percent, which is lower compared to 1994 rate of 66 percent,[112] however the figure remains high compared to the global average. In general, the mortality rate among mothers less than 20 years of age represents one-third of total maternal deaths, indicating a serious risk associated with early pregnancy.

In the case of IDPs, there is an estimate of 115,875 women[113] who are of reproductive age.[114] For example, in the North,[115] the estimated number of IDP women of reproductive age is 55,600, of which 11,117 women are pregnant. In the South,[116] 17,162 are of reproductive age of which 3,500 are pregnant. In a UNICEF survey, of the 1,592 women of childbearing age sampled, 23 percent were pregnant, about half of whom were at severe to moderate risk of intra-uterine growth retardation, and 37.8 percent had moderate to severe anemia (UNICEF/MOPHP July 2011). Applying similar rate to the Northern and Southern IDP pregnant women, approximately 5,500 pregnant women could be suffering from anemia and are at great risk of experiencing complications during delivery as well as losing their babies. There is also a record of 194 miscarriages among 2,800 pregnant women IDPs in the Hajja (Harad is part of Hajja governorate), which represents a miscarriage rate of approximately seven percent.[117]

Gender-based Violence and Women's Health

Gender-based Violence (GBV) is particularly an area that merits attention during crisis and post-crisis period, as recognized by Security Council Resolution 1820, and the various Secretary Generals' Reports in response to the resolution. Gender-based Violence includes sexual violence, and has been noted in the Yemeni context as elsewhere. Moreover, GBV, and in particular Violence Against Women (VAW), often has significant impact on women's reproductive health.

Preliminary figures from 2011 indicate high levels of gender-based violence as a result of the civil unrest. In April 2011, for example, there were 7,240 cases of violence against women reported, 6,099 in May, 480 in June and 693 in July. The incidences of violence per geographical location are: 13,265 in Sana'a; 2,910 in Ta'iz; 1,688 in Hodeidah; and 633 in Aden. In the first quarter of 2012 alone, five rape cases were reported in Ta'iz. Also Médecine Sans Frontières (MSF) record showed cases of early/formed marriages by IDP families. Anecdotal accounts collected by UNFPA reveal that IDP families who are especially poor are prone to opt for marrying their daughters at younger ages in order to mitigate the overall household economic burden. In some cases, IDP families have "offered" their young daughters for marriage to better assimilate themselves to the host communities. Monitoring data on the civil uprising in different key cities across the country indicates that sexual violence occurred during the crisis, but due to stigma and cultural norms it is often under-reported and remains a largely hidden form of abuse.

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[111] The adolescent birth rate measures the annual number of births to women 15 to 19 years of age per 1,000 women in that age group. It represents the risk of childbearing among adolescent women 15 to 19 years of age. It is also referred to as the age-specific fertility rate for women aged 15–19. http://mdgs.un.org/unsd/mdg/Metadara.aspx"?IndicatorId = 0&SeriesId = 761.

[112] Yemen Report 2010: Millennium Development Goals.

[113] At 25 percent of the total population of 463,500 IDPs.

[114] 15–49 years of age.

[115] Sa'ada, Hajjah, Amran, Al Jawf.

[116] Abyan, Lahj, Aden.

[117] Part of Hajja governorate with 102,346 IDPs.

According to the data collected by the Sisters Arab Forum for Human Rights (SAF) on behalf of UNFPA, an estimated number of 17,803 cases of violence were reported in different governorates across the country; the majority involving male perpetrators, accounting for 85 percent of cases, two percent women, four percent boys, less than one percent girls and another nine percent are not accounted for. The statistics from SAF indicate that two cases of rape against women were recorded, 12 women were kidnapped, probably exposing them to sexual violence and abuse. Another two boys and one girl were abducted. The key perpetrators of the violence are security forces, accounting for 88 percent of all recorded cases, while other armed opposing groups accounted for 11 percent of all recorded cases.

Data collected by humanitarian organizations in Haradh shows that sexual violence is a major protection issue among displaced populations. From January to April 2011, MSF Spain registered 17 cases of sexual violence within the family (related to early/forced marriage), of which six are male and 11 are female; and 10 cases of sexual violence outside the family (six female and four male). The IDP profiling report (2010)[a] revealed that girls face serious risks of sexual violence in going out to herd animals and in collecting firewood beyond the camps in Haradh.

[a] Danish Refugee Council & UNHCR (Sept 2010): Profiling for IDPs and returnees in Northern Yemen.

The consequences of coerced and early marriage are, including but not limited to, non-consensual sexual intercourse (equivalent to rape) that causes physical and psychological damage as well as obstetric fistula from complications during delivery.[118] The effects of obstetric fistula are that the affected woman cannot control her urine and sometimes her bowel, leaving her unable to stay dry. Further, the smell of urine/feces often makes her ostracized from her own community. Given that there are currently no comprehensive emergency obstetric care services available in IDP camps—procedures such as Caesarean section—the risk of maternal death and other complications such as fistula are elevated for the several thousand young women who are pregnant.

Girls who have undergone female genital mutilation/cutting (FGM/C) are under similar risk in relation to childbirth. Practices of genital mutilation or cutting can result in significant complications during child birth, including death from bleeding, and sometimes in the death of the baby (raising the likelihood of death to 15–55 percent, depending on the level of mutilation), and obstetric fistula. In Yemen the national average of FGM/C is recorded at 21 percent. Geographical disparities, however, reveal extremely high concentrations of affected women that the national average obscures: of the governorates of Hodeidah, Hadromout, Al Mahra and Aden, which range between 82.2 to 96.6 percent of women, are extremely high. Moreover, many IDPs originate from these areas, further underscoring the heightened vulnerability of these women.

The Interagency Comprehensive Child Protection Assessment in conflict-affected governorates in North Yemen[119] reveals that rates of sexual violence, exploitation, and abuse had increased during the displacement period during and after the 6th war in February 2010. Up to nine percent of interviewed girls and four percent of boys report having experienced sexual abuse and exploitation. Of these cases, 30 percent of the perpetrators were from the family, 25 percent from the community and 25 percent from security officials. It is a problem that victims and survivors of sexual violence have fairly limited access to appropriate care and support in the conflict-affected areas.

[118] Obstetric fistula is "a condition that often develops during obstructed labor, when a woman cannot get a Caesarean section (C-Section). Obstruction can occur due to malnutrition and pregnancy at a young age (which leads to small pelvis width and thus pronounced cephalic-pelvic disproportion)." Taken from the Obstetric Fistula Needs Assessment Report Findings from Nine African Countries.

[119] See also http://www.humanitarianinfo.org/iasc/; the report was issued in June 2010. The Interagency Standing Committee is a consortium of UN agencies and Non-UN agencies engaged in humanitarian affairs.

5.2.4 Child Health

Baseline

While the Government of Yemen was beginning to show modest improvement in some key child health indicators before the crisis, the situation of children's health was precarious even before 2011. Mortality rates among children under the age of five, for example, decreased from 122 cases per 1,000 live births in 1992 to 77 in 2010, while infant mortality rates decreased from 83 cases per 1,000 live births in 1992 to 57 cases in 2010.[120] Data from 2006, however, show that the rate of reduction slowed considerably between 2006 and 2010; as a result, at the end of 2010, Yemen was not on track to achieve its MDG targets by 2015.[121] The root causes of these high mortality figures largely reflect high rates of poverty in the country.

Within the 3rd five-year DPPR objectives, reduction of child mortality was one of the key objectives evaluated against four policies and 10 indicators with an average implementation rate of 55 percent. The lowest indicators were "enhance coverage of the extended immunization program to eliminate Polio and Measles by 2010" with an implementation rate of 42 percent, and "extend the integrated child health strategy for the management and control of common childhood diseases such as malnutrition, acute respiratory infections, measles, and diarrhea." Prior to the crisis coverage of well-proven interventions that are known to reduce child mortality were already quite low: Only 47 percent of children with suspected pneumonia were taken to a health facility and out of these only 38 percent received antibiotics; over 50 percent of children under the age of five have diarrhea and only 48 percent receive oral rehydration solution and continued feeding. Coverage of children under age five with twice-yearly supplementation with Vitamin A, which has been shown to reduce all-cause child mortality by up to 24 percent,[122] is less than 45 percent.[123]

Child mortality in poorer families remains significantly higher than the national average, highlighting the strong link between poverty and mortality. In addition to lower rates of access to health care and poorer nutrition, children from poor families seek employment outside the home, placing them at greater risk of social harm and social violence, while the high stress of chronic unemployment and hunger within families makes children more vulnerable to neglect and domestic violence or abuse at home. The analysis done within the United Nation's 2011 Common Country Assessment describing the root causes of child mortality is still relevant and should be addressed by the longer-term development programs.

Malnutrition is the leading cause of childhood death, severe hunger often starting in the womb, whereby maternal hunger often results in children being born underweight and with an increased risk of dying before the age of five. Adequate food consumption dropped from 76 percent in 2006 to 40 percent in 2008, with inadequate food consumption increasing from nine to 24 percent, and nearly 22 percent of the population severely food insecure which represents 87 percent increase from the last CFSS conducted in 2009. At the same time an additional five million people were found to be moderately food insecure. Early age of motherhood is also a factor, as children born to very young mothers are more vulnerable to diseases and hunger in the early stages of life. Compounding complications around early motherhood, a majority of babies are delivered at home, without the presence of a skilled health worker, which increases the risks for both mothers and newborns. Furthermore, some governorates receive a much lower level of funding for health services than others.

Impact

While the real impact on child morbidity and mortality rates may not be known, a number of indicators

[120] Yemen Fact Sheet: UNICEF, WHO, UN Population Division and the World Bank, 2011.

[121] Yemen Report 2010: Millennium Development Goals.

[122] Mayo- Wilson et al British Medical Journal 2011 Aug 25, 343.

[123] UNICEF, SOWC 2012.

point to continuing challenges as a result of the 2011 crisis. In 2012, the Government officially reported a measles outbreak with a total of 4,250 cases and 177 deaths Over 75 percent of the deaths were registered in the last two months of 2011 and early 2012. Children under five years of age bore the greatest brunt of the outbreak with 70 percent of the reported cases and the majority of the reported deaths. The first cases of measles outbreak were reported in Maaber area of Jahran district in Dhamar governorate in June 2011, due to the low immunity profile as a result of the lack of access by immunization teams. The outbreak spread out to the other governorates affected by recent crisis such as Shabwa, Abyan, Aden, Lahj, Al-Dhale and Al-Biedha, demonstrating the link between chronic underdevelopment and heightened vulnerability in a crisis.

The crisis caused a disruption of routine vaccination services and much lower vaccination coverage during 2011—with only 27 percent of districts achieving coverage of 80 percent of the targeted children—compared to 75 percent of districts achieving the same coverage in 2010. The four rounds of outreach services that contribute to 30 percent of the overall coverage were not undertaken due to the crisis until the last quarter of 2011.

Analysis by WHO of the acute watery diarrhea (AWD) outbreak in 2011, shows a total of 31,789 cases with 124 deaths. The cases were from Abyan (34 percent), Aden (46 percent), with other cases reported in Ibb, Lahj, and Al-Dhale governorates. Of the total cases reported, an overwhelming 56 percent was among children under five years of age, while 66 percent was among children aged less than 15 years. Considering that 46 percent of Yemen population is below 15 years of age, this figure represents an excess in morbidity for this age group.

Despite Yemen being declared Polio free in 2009, a polio outbreak was recorded in 2011, which prompted an immediate outbreak response vaccination campaign that reached approximately 4.4 million children (97 percent of target) under the age of five. In Sa'ada governorate, which has not been accessible to vaccination teams for years due to ongoing conflict, 132,000 children (80 percent of target) were vaccinated in 2011. Subsequent vaccination campaigns were needed in 2012 to contain polio and measles outbreaks and boost population immunity that had declined due to the crisis. This has been at a cost to both the government and partners, diverting the scarce resources from other competing priorities such as the routine immunization program and overwhelming an already weakened health system. The measles outbreak response campaign, for example, that had to target a wider age group of children aged six months to 10 years to contain the outbreak, cost US$7 million. More campaigns within other programs will need to be launched in order to cover missed cases and to compensate for unavailable services in locations where facilities are not functioning.

The overall limited access to health services due to high transportation costs, lack of capacity, safety and security (including the very low number of operational OTP centers in the Northern, Central and Western governorates), increased risks associated with child health. It is estimated that as much as 20 percent of facilities were shut down at some point during 2011 as a result of frequent power cuts and gas shortages, while other locations, such as Aden where the cold vaccination room was overrun by militia in 2012, were more directly impacted by civil unrest and conflict. The table below additionally illustrates the negative impact of 2011 on one of the key child survival

Table 17: Trend of IMCI Selected Activities

Description	2009	2010	2011
Number of training courses	39	41	7
Number of new districts	26	30	9
Number of new health facilities	360	324	37
Number of newly trained staff	907	937	195
Number of new children beneficiaries	1,238,419 (Outreach +)	536,091 (No Outreach)	29,807

Source: Government of Yemen and JSEA Staff.

initiatives, the Integrated Management of Child Illnesses (IMCI) program.

5.2.5 Communicable Diseases

Baseline

Yemen, like other developing countries, has a high burden of communicable diseases. The 2009 MoPHP Annual Statistical Report show that infectious diseases contribute to 20 percent of outpatient attendance and are the commonest cause of hospitalization.[124] Among the communicable diseases commonly seen at the health facilities are (in order of magnitude) non-bloody diarrhea, malaria, typhoid, bloody diarrhea, and bilharzia. Other commonly reported diseases include meningitis, dengue, chikungunya, and viral hepatitis. In 2009, non-bloody diarrhea was in the top five diseases in 22 governorates and Socotra Island and the number one cause of outpatient attendance and inpatient admission in 19 governorates and second in four others. Bloody diarrhea, indicating very poor sanitation and inadequate supply of water, was reported in the top five diseases in 19 governorates. Diarrhea is endemic in Yemen and is the second leading cause of death especially among young children.

Impact

With disruption of the health services and prevailing risk factors conducive to spread of infectious diseases, the year 2011 witnessed increase of communicable diseases in comparison to 2010. Overall figures for 2011 are thought to be much higher even when compared with what is being reported, given the real incidences and prevalence of the diseases due to interrupted working environment and communications. For further reference, please see Table 12, Annex Chapter 5.

Most devastating was the outbreak of acute watery diarrhea (AWD)/cholera This outbreak stemmed from the reduced per capita household water availability due to increased costs of water and/or destruction of the water systems. The data are as shown in Table 18.

Box 16: Impact on the EPI Nationwide

EPI coverage was seriously affected during 2011. The vulnerability of immunization activities can be seen by studying the trend of coverage and measles outbreak cases starting from 2008 till early 2012. The low routine coverage in fixed posts was 60 percent in 2010 and 56 percent in 2011. Immunization activities were suspended in Al Jawf, and in Abyan (Zingibar, Khanfer) due the security situation. The outreach activities planned for May to July 2011 were delayed resulting in a further decrease of three percent of the outreach activities. This, in conjunction with the displacement of people, crowded living conditions and the decrease of the overall immunity has led to increase of communicable diseases, especially measles.

The figures show that measles cases per million increased about six times in 2011 compared to 2010 (2011: 135.9/1,000,000; 2010: 21.2/1,000,000).

Source: Government of Yemen and JSEA Staff.

In addition to AWD/cholera and measles, several other communicable diseases, including chikungunya and HIV/AIDS remain of concern. In October 2011, for example, Yemen witnessed an outbreak of chikungunya in October 2011, which affected about 13,500 people, out of which 199 cases were hospitalized, with 72 reported deaths (a case fatality rate of 53 percent). HIV-AIDS prevalence is estimated at 0.2 percent.[125] No data are available for increased spread of the disease during 2011 though patients on specific therapy may have suffered of gaps in follow up and stock outs of medicines.

[124] The Fourth 5-Year Health Development and Poverty Alleviation Plan 2011–2015-MoPHP.

[125] While the overall prevalence rate is low, it is rising among special groups (homosexual inclination) with a rising risk of transmission (see also UNGASS Country Progress Report 2012-Yemen).

Table 18: Cholera and Diarrhea Outbreak

AWD/Cholera Outbreak	Cholera or AWD	Cholera Affected
Abyan	30	10,842 + 431
Aden	16	13,850 + 551
Lahj	4	2,730
Al Dhale	42	3,172
Ibb: The AWD 12 deaths reported last two months but trend declining.	42	1,044
Hajjia	—	87

Source: Government of Yemen and JSEA Staff.

Table 19: Crisis Related Injuries

Geographic Location	Deaths	Injured
Sana'a	244	4443
Ta'iz	46	1016
Hadramouth	2	42
Aden	36	191
Abyan (explosion gun factory) (not calculated in the total)	35	97
Abyan	6	83
Other governorates	37	316
TOTAL	369	6049

Source: Government of Yemen and JSEA Staff.

5.2.6 Injuries Treatment

There is no baseline available for violence and injuries in Yemen; however the use of live ammunition in order to control demonstrations during 2011 may have increased the total number of cases. Again, there are no data on the number of population who are disable or face severe or extreme difficulties in functioning as a result of 2011 events, however, the government is taking measures in granting free treatment in country and/or abroad, e.g., Turkey, depending on the case. So far, there are about 369 deaths and 6,500 injuries confirmed. Many episodes presented as "mass casualty" increased further the demand on health services and on the health workforce that, despite efforts, were unable to triage and manage the logistics of mass casualties. Table 19 below comes from the analysis of different reports, and though it may not be complete because injured patients did not always go to health facilities in fear of being arrested, it gives an idea of strain put on governorates main hospitals.

Caught by the surge in demand and lack of capacities much attention was given to establish field hospitals and organize other related activities. Training of Trainers was conducted for 230 medical personnel in Triangle and Mass Casualty Management in Sana'a, Aden, Ta'iz and Hodeidah. Eight Advanced Medical Posts (AMPs) and Field Hospitals were established and operationally maintained in those four cities as well as in other demonstration sites. Youth volunteers operated these AMPs and support was provided to over 4,000 injured individuals that were transported by ambulances to referral hospitals during the political crisis. Another eight referral hospitals, both public and private, in Sana'a, Aden, Ta'iz and Hodeidah provided support in the form of medical supplies and equipment for emergency life saving health care services including surgical wards. User fees were removed as a compassionate measure during the crisis. In addition, 33 ambulances, stocked with with medicines and supplies, were supported (including the operational cost—fuel, maintenance, etc.) to provide round-the-clock services to transport injured people during the political crisis.

5.2.7 Mental Health

Although mental health/psychiatric care is an essential part of any emergency health response, resources for this area are not always forthcoming in complex emergencies. In Yemen, the dearth of trained mental health professionals in general, and female mental health professionals in particular, coupled with limited resources, stigma, and traditional behavior, severely limited the provision of mental health care services throughout the crisis. There is no existing data on percent of population with severe or extreme difficulties in functioning, but it is well known that

there is only one rehabilitation hospital in the entire country. Further, the psychiatrists providing psychosocial services to IDPs in camps or in hospitals, for example in Al Jumhuria Hospital in Sa'ada, are very limited in number. It is estimated that two to three percent of the population suffers some form of severe disorder, e.g., psychosis, severe depression, or severely disabling form of anxiety disorder. Statistics show that during conflict, the prevalence of severe mental disorder generally increases by one percent on average, while mild or moderate mental disorders (i.e., mild and moderate forms of depression and anxiety disorders, including mild and moderate Post Traumatic Stress Disorder (PTSD) is at 10 percent during conflict.

During conflict it is expected that a population, whether directly or indirectly affected, may suffer from symptoms such as anxiety and depression. This was borne out by results of a household vulnerability survey conducted by UNICEF in three governorates from June 2011 to March 2012. While the survey recorded heightened levels of fear and distress among children in households living in conflict areas, it also showed notable upticks among children from areas that did not directly experience violence. While there are no available data on prevalence of psychiatric disorders or symptoms to inform on the impact of the conflict on population at large, reports from a mission in Harad may prove instructive for determining needs among other conflict-affected populations. From October 2011 to February 2012, a psychiatric doctor was deployed to support the population of the Harad area, where he treated 812 cases, including five patients under the age of 15. The majority of cases were diagnosed as mood disorders, including mild depression; other cases included schizophrenia, delirium and seizures, as well as anxiety disorders.

5.2.8 Recommendations

Institutional Development of Ministry of Health & Population. Strengthen capacity of MOPHP at all levels to impart strategic and operational thinking and organizing of the national health services in an equitable, effective, efficient, and sustainable way. Such institutional development will allow the MOPHP to perform its role to steer the national health system and to act as the custodian for the health of all people in Yemen. Institutional development will strengthen policy and planning capabilities in order to efficiently implement the suggested priorities.

Organization and Management. Ensure the appropriate organizational structure is in place to a) re-establish the presently disrupted rapport between all levels of MOPHP, b) implement the strategic direction and ensure clarity of roles and functions of different levels of health care to achieve high access, equity, quality, effectiveness, efficiency, and sustainability.

Medicines, Medical Technology, and Supply of Essential Medicines. Develop pharmaceutical and medical technology systems to ensure the implementation of new technology underpins the strategic direction and that necessary organizational change accompanies investment in technology. Ensure increased availability of essential medicines and supplies through the establishment of a revolving fund that may or may not include a cost recovery system.

Improving Access to Health Services. Reduce the burden of disease by addressing the priority health areas through the most cost effective interventions and the development and enforcement of national policies and norms to steer the national health system in Yemen and achieve MDGs targets.

Human Resources for Appropriate Health Care Delivery. Strengthen human resources management, workforce planning, production, and utilization—and value staff in their provision of health services. The purpose of this area is to correct the unfair dictum: "unskilled, untrained, un…" This dictum should change to make staff confident, credible, and accountable.

Performance Management, Quality/Safety, and Clinical Effectiveness: Improve quality and responsiveness of services and strengthen the role of the Ministry of Public Health and Population in the promotion of clinical excellence and the performance management of service improvements.

Investment into Capacitating Health Offices (especially in the rural areas): there is a great need for health offices (hospitals, clinics, and centers) to have larger quantity and better quality of health providers. There needs to be further effort to produce more "qualified" health workers in tandem with the reconstruction/rehabilitation of the current health offices. Often hardware reconstruction projects are pursued during the transitional years. However, they should be simultaneously backed by software support.

Innovative ways of increasing the health workforce to the recommended ratio must be implemented. Identify, train, and deploy a cadre of staff that can be retained in remote rural areas; commencing with paid community `volunteers' with training in undertaking simple curative and preventive health care including deliveries. Phasing in of paramedical personnel who specialize in pediatrics, surgery, and other fields that can be deployed to the same areas.

Special effort to increase female health care workers in gender-sensitive areas such as obstetrics and gynocology, and midwives should be seriously considered. This effort should be further augmented by significant revision of the Medical School curriculum to build on the effort to nurture "qualified" health workers. In particular the curriculum should be revised to put more emphasis on on-the-ground practical training. Also for women's health issues, medical school curriculum should expose medical school students to the taboo issues that often affect women's health (obstetrical fistula and early marriage, women's sexual rights, and family planning, among others).

Combating Gender Based Violence. There is a need to transcribe/translate the various international treaties and conventions that Yemen has signed off into national laws. Particular focus should be put to the Committee on the Elimination of Discrimination against Women (CEDAW) process (for development efforts) as well as the implementation of Security Council Resolution 1325 (for humanitarian efforts) in Yemen. Yemen has committed itself at the international level on the various women and human rights' treaties and conventions, but implementation of these commitments at the national level is lacking. One of the major gaps is the lack of laws that protect and empower women (i.e., combating early marriage, female genital cutting/mutilation, etc.). Also, the transcription of international treaties andconventions should be pursued in a culturally sensitive way so that various stakeholders, including religious leaders, support the "nationalization process."

Health Care Financing Management. Design a health-financing framework to ensure equity and social protection through rigorous examination of financing alternatives while also developing transparent, effective and efficient budgeting, accounting, and audit systems. Government should aim at allocating at least seven percent of its GDP to health as a minimum. A target of five years to achieve this can be set with clear outputs/results.[126] For example, an increase in government allocation to health by one point of GDP will reduce infant/under-five mortality by 10 percent. Careful attention needs to be put in increasing Government's budget on health and gender-based budgeting. In doing so, it is important to ensure that the increase in the budget would be for programmatic activities rather than for operational cost. There needs to also be a policy that enforces gender-based budgeting to be practiced in the Health Ministry.

Community Involvement: Encourage individuals, families and communities to take more responsibility for their own health and to contribute to determining the shape and patterns of delivery of health services in the future.

Enhancing Women's Health: increased availability and awareness of Family Planning services, including emergency obstetric care. The interventions surrounding family planning would help decrease rapid population increase and contribute towards overall population control.

Health Information and Communications Systems & Technology: Develop a health information system that ensures the implementation of new ways of

[126] Government, WB, UNICEF can work to calculate the exact budget.

working and communication to underpin the effective implementation of the suggested priorities as well as long-term plans; and develop the necessary organizational changes to accompany investment in HIS and its technology.

5.3 Water Sector

5.3.1 Water, Sanitation and Hygiene

Background

Yemen is one of the most water-deficient Arab countries, with declining freshwater resources due to over-pumping of aquifers, and the increasing level of aridity that is the result of low rainfall and high temperatures. In recent decades, the rapid growth of the population and of commerce and industry, together with the development of commercial agriculture, have led to a surge in demand for water, estimated in 2010 at 3.9 billion cubic meters (bcm) (90 percent for agriculture, eight percent for municipal uses, and two percent for industry) against a renewable supply of 2.5 bcm. The shortfall (1.4 bcm) has been met by depleting Yemen's stock of non-renewable groundwater, which became accessible in the 1970s because of modern tubewell technology.

Neither traditional nor newly established water governance institutions have been capable of effectively moderating the depletion of water reserves, and government has not been able to put in place or enforce a modern regulatory framework. Water sector governance is thus extremely weak, with traditional collective institutions largely overtaken by the individual appropriation of the groundwater resource, and modern laws and regulations proving highly ineffective in the Yemeni context, which is characterized by weak enforcement of legislation (see also *context review*). As a result, after thirty years of apparent abundance, water availability is declining rapidly and non-renewable resources are expected to run out within one to two decades in the densely populated highlands.[127] The possible impact of climate change in Yemen is highly uncertain, but is expected to be, on balance, negative. In some areas, rainfall may increase but in others decrease. Most likely there will be steady warming, increased unpredictability of rainfall, and more droughts and floods.

Lack of adequate water resources, combined with under-investment and weak institutions, results in poor water supply and sanitation services, creating notable differences for urban and rural residents. In 2007, only 56 percent of the urban population was connected to a public network (Middle East and North Africa (MENA) average is 96 percent). In many cities, water cannot be provided on a daily basis, and in Ta'iz the interval sometimes reaches 40 days. The capital Sana'a has similar water supply problems, with water provided once every two or three weeks. Much of the infrastructure is in poor condition and physical losses are high. The active private sector supplies the needs of unconnected households through tankers, local networks and water shops, and also meets the shortfalls in supply to households connected to the network. Costs, however, are high—water from a private tanker can cost up to ten times as much as network water. It is predominantly the poor who are not connected to networks, and who have therefore to pay these high prices. Network sanitation coverage is about 31 percent, with most households connected to cesspits.

In rural areas, communities have invested for millennia in elaborate water supply schemes, although the springs that were the source for many of these schemes have now largely dried up. As a result, access to safe water in rural areas was estimated to be 44 percent in 2007 (MENA average 81 percent). In recent years, access and services have been improved through public and community cooperation to develop and manage tubewell-based schemes. However, groundwater-based schemes are more and more vulnerable as water tables drop, and as the water resource has dwindled,

[127] For example, Sana'a water utility has to drill about six new deep wells every year to replace drying wells.

it has become a challenge to sustain rural water supply schemes in many locations. Adding stress to the rural household, access to safe sanitation stands at less than 30 percent of the population according to recent surveys, and poor hygiene practices further undermine health conditions.

The effect of these barriers to access on the population has been dramatic, and has hit the poor the hardest. Surveys estimate that around 4.5 million children lived in households that have no access to an improved water source and that over 5.5 million children have no access to adequate sanitation.[128] These types of low rates of access to safe water and sanitation are major contributing factors driving the high prevalence of diarrheal diseases, malnutrition, and mortality in those under five years of age.

Since the beginning of the civil unrest, the security situation has significantly deteriorated and access to basic services, including water, sanitation, and hygiene (WASH) has worsened. The General Authority for Rural Water Projects (GARWP) has reported a sharp decline in the implementation of water projects in 2011, and estimates that over 239,000 rural inhabitants who were expected to benefit from a planned 105 projects to improve their access will not see those much-needed resources. In addition, it is estimated that more than 5.7 million people have been affected by the lack of fuel, the absence of resources to perform basic maintenance on existing systems, and inadequate funding for 3,628 rural water projects. In addition to the heavy impact on rural communities, urban areas also were affected, such as the Aden neighborhood of Shoula, where sewage is flooding the streets while solid waste is accumulating—a sign of the deterioration in public services.[129]

Reforms Implemented Prior to 2011

Yemen has long recognized that water shortages are a critical constraint to economic and human development, and has worked hard over the last two decades to develop investment and institutional responses to the emerging crisis.

Water resource management: Beginning with the creation of the National Water Resources Authority (NWRA) in 1996, Yemen has struggled to put in place a modern water-governance framework. In 2004, the newly established Ministry of Water and Environment (MWE) piloted the *National Water Sector Strategy and Investment Program* (NWSSIP), which set out the implementation plan for a governance framework of basin planning, basin committees and local level community-based water associations. The NWSSIP was updated in 2008. In 2009, a 'sector-wide approach' (SWAP) based on NWSSIP was agreed upon by government and donors to ensure that all water sector investments were harmonized and aligned within NWSSIP.

However, implementation of this governance framework has fallen short of expectations. The main reason for this is that water resources are in the hands of hundreds of thousands of fiercely independent local households, and top-down regulatory approaches to water resources management have gained little traction in Yemen's chronically centrifugal governance environment. Little impact on water use or resource sustainability has so far resulted from the government's initiatives. By contrast, however, there are striking examples of communities coming together to try to manage their own water resources more sustainably, sometimes with public support, but often without it. In recognition of the reality of local control over water resources, a national conference in January 2011[130] validated NWSSIP and endorsed the *Sana'a Declaration on Water* with both documents having a particular emphasis on decentralized approaches to water management, the primacy of community-based management, and the need

[128] WHO/UNICEF Joint Monitoring Program for Water Supply and Sanitation, 2010 update.

[129] Humphrey, J.H. (2009) "Child undernutrition, tropical enteropathy, toilets, and hand-washing." The Lancet; vol. 374, no. 9694; p. 1032–1035. doi:10.1016/S0140-6736(09)60950-8.

[130] The National Conference for the Management and Development of Water Resources in Yemen.

for public agencies to work in support of community-based 'bottom-up' approaches.

Agricultural water management: In agriculture, public agencies have long worked with farmers to support improved agricultural water management, co-investing in water use efficiency and conservation in both groundwater and spate irrigation, and in watershed management and water harvesting. Research and extension programs have also focused on water use efficiency. Public programs have scaled-up these approaches and begun to link improved agricultural water management to broader, integrated community-based water resources management approaches. Both NWSSIP and the *National Agricultural Sector Strategy and Implementation Plan* (NASS), approved by the Council of Ministers in March 2012, confirm this approach. However, coverage of these programs is so far limited, and unless improvements in water use efficiency are linked to collective water resources management, there is no assurance that the consumption of water actually will reduce.

Urban water supply and sanitation: In urban water, a far-sighted reform program was adopted in 1996 to decentralize service provision to autonomous utilities, local corporations (LCs), which were established to run along commercial lines. At the same time, investments were programmed to finance the rapid expansion of networks and supply. This approach was confirmed by NWSSIP. However, although there has been considerable investment in expanding coverage, water consumption in towns is expanding even faster, and the percentage of the urban population covered has scarcely risen. In some highland towns, bulk water shortages have meant that expanded networks have resulted in *reduced* per capita supply, with pre-crisis average per capita supply in some large towns as little as 30 liters per capita per day. Evidently, these utilities are running in order to stand still. They are also conflicted between three, at times, incompatible mandates: affordable service expansion and provision, a business approach, and protection of the poor, all of which are to be served by a scarce water resource. In all cities, tariffs remain below operation and maintenance cost-recovery levels.

Rural water supply and sanitation: In rural water supply, following the bleak assessment of previous 'top down' approaches, the last decade has seen the introduction of global best practices in the 'demand-responsive approach' (DRA), which gives community associations choices but also responsibility in the investment and operation of locally-run water supply schemes. This approach was incorporated in NWSSIP, and resources were allocated to move Yemen rapidly toward much higher rates of coverage. Over the last decade, progress has been made, with an extra 3.3 million rural people reported to be accessing safe water, though as noted above, overall the percentage of rural access still hovers at a low 44 percent (2007). Government's rural water agency, the General Authority for Rural Water Supply Projects (GARWSP) has been overhauled. The Social Fund for Development (SFD) has successfully innovated low-cost and sustainable supply from water harvesting. The Rural Water Supply and Sanitation Project (RWSSP) has piloted DRA. Community-based organizations have shown how grassroots initiatives can create strong sustainable institutions, and non-governmental organizations have introduced alternative technologies and supported community mobilization and health education. The main challenges are expanding coverage to the poorer, remotest communities at affordable prices, offering a broader range of appropriate, low-cost technologies, and ensuring sustainability of water sources.

Long-Standing Structural Challenges of the Water Sector

Clearly, as Yemen entered 2011 the nation faced multiple structural challenges in its water sector, and these challenges remain valid today after the political events of 2011:

- Mechanisms for more sustainable water resource management need to be strengthened, based on the reality that only local water users can change water use patterns;

- Agriculture has to adjust to greater water use efficiency and less water-intensive production systems while maintaining agricultural income as far as possible ("more income per drop");
- The economy has to prepare for an orderly shift from a predominantly rural, agriculture-based economy, to non-farm activities and a gradual rebalancing of the population towards urban centers;
- Settlements have to negotiate increased water sources from their rural hinterlands as well as improve water use efficiency;
- Towns have to ensure expansion of network coverage in an affordable and sustainable way, offering options for the poor;
- Rural water supply has to be increasingly assured from sustainable sources, including from water harvesting;
- Future urban commercial and industrial growth has to be located where adequate sustainable and affordable water sources are available.

5.3.2 The Impact of 2011 on the Water Sector

The impacts of the political crisis of 2011 were pervasive throughout the country, not the least in the water sector. The principal impacts are summarized below:

Public agencies: Public programs and services suffered widespread disruption throughout the country and across all parts of the water sector. Public investment essentially ground to a halt, and donors suspended disbursements. Ministries and other public agencies were highly visible targets during outbreaks of civil unrest. MWE and GARWSP headquarters were extensively damaged and looted and require complete rehabilitation and re-equipment. Project facilities and stores also suffered extensive damage and looting.

Irrigated agriculture: In agriculture, the impact was felt in both production and markets. Public agencies and projects suffered significant disruption and damage. In production, groundwater irrigation was disrupted by a lack of diesel fuel and spare parts, and by the high costs of these items when they were available, often on the black market. Farmers were not able to benefit from public programs for irrigation improvement or from extension, as public services were disrupted on a major scale. There was also widespread breakdown in markets, due in part to civil turmoil, but also due to constrained transport from farm to market and onwards, due to shortage of fuel and spare parts. The activities of public agencies, including Ministry of Agriculture headquarters and branches, the regional development agencies, and the Agricultural Research and Extension Authority, were impeded, and a number of agencies suffered damage and looting, some on a large scale.

Urban water supply and sanitation: With large and visible installations in the heart of population centers, urban water utilities proved exceptionally vulnerable to the unrest. In addition, water services are dependent on energy, materials, and spare parts, supplies of which suffered widespread disruption. In all urban centers, utilities suffered from lack of electricity and diesel, which caused reduced production from wells, as well as persistent problems in distribution. Reduced supply performance and overall chaotic conditions also reduced both billing and customer payments, resulting in a cash flow crisis, which in turn impacted on service delivery performance. Non-revenue water increased as the number of illegal connections rose. Sana'a LC, for example, suffered a 20 percent drop in water supplied and billed, and a 47 percent drop in collections during 2011. By December 2011, the LC lacked resources to purchase fuel, resulting in a further vicious circle of reduced supply, reduced billings, and reduced collections. When fuel is available on the black market, it is sold at YR 130–150/liter, against the official price of YR 59/liter. Diesel shortages also affected private pumping and water sales, and retail water shops faced steep increases in the cost of both raw water and packaging. The retail cost of a cubic meter of water rose from YR 2,000 ($10) to YR 14,000 ($70), and many shops had to cease trading altogether.

Several LCs have suffered extensive damage to installations and equipment. In Abyan, the LC has been essentially taken over by Non-State Actors and resources have been looted or destroyed. In Ta'iz, the

already poor services were dramatically impaired by sabotage and looting of equipment and machinery.

Disarray of public agencies and the suspension of disbursements by donors have led to the interruption of investment programs. This has had a secondary effect on contractors, who have not been paid, and hence on the survival of their businesses and on the economy more generally. There have also been negative physical impacts, as works left half-completed have been damaged through pillage or flooding.

Rural water supply: Rural water supply schemes were little affected by damage, as violence occurred principally in large cities. However, shortage of diesel affected supply from pumped schemes. GARWSP offices and stores were extensively damaged and looted in several locations. SFD's program of investment in rural water was partially disrupted but the largely gravity-fed schemes operated as normal during the year, as they were not dependent on outside inputs.

Costing the damage: According to MoWE and the utilities, the total cost of damage and losses caused by the 2011 events are about US$265 million. Of this, US$40 million would be for emergency works and re-equipment and the remainder for: priority operations and maintenance, rebuilding of working capital, studies etc. Of the US$40 million for the immediate program, about US$26 million has already been mobilized (about US$13 million from the Government-donor sector wide approach instrument, the Water Sector Support Program (WSSP), and about US$13 million from the Kreditanstalt für Wiederbau (KfW).

5.3.3 Rural Sanitation & Hygiene

Historically, rural sanitation has received little attention from GARWSP, a point made as early as 2005 within the National Water Sector Strategy and Investment Plan (NWSSIP). Despite clear goals related to gender-sensitive sanitation and hygiene programs, GARWSP still lacks the capacity to adopt an integrated water supply, sanitation and hygiene promotion approach, although discussion between GARWSP and other agencies about low-cost sanitation approaches has continued.

As per UNICEF and WHO's joint monitoring program for water supply and sanitation, the use of improved sanitation facilities in rural Yemen has increased from as low as 12 percent in 1990 to 34 percent by the end of 2010. According to a breakdown of safe versus unsafe sanitation, however, the percentage drops to merely 26.7 percent of the population with safe access.

Predictably, the 2011 crisis has further impinged on rural communities' access to safe sanitation and hygiene. According to UNICEF's Social Protection survey, a substantial proportion of households do not have enough water for hand washing, compared to urban households. Likewise, not one rural household throughout nine months of monitoring indicated that it had enough water for house cleaning, a difference when compared to urban areas.

Beyond infrastructure or access-related constraints, Yemen's rural population engages in hygiene practices that create additional health risks. A January 2012 WASH cluster assessment of five governorates, for example, reported that as much as 68.8 percent of the rural population partly or entirely defecates in unmanaged open spaces, against 34.77 percent of the same governorates without sanitation facility in the previously noted 2010 survey.[131] Other important results from WASH cluster survey include:

- In 35.7 percent of sites in rural areas, 50 percent of the population does not have soap.
- In 56 percent of sites in rural areas, 50 percent of the women do not have sanitary goods.
- In 88.5 percent of sites garbage is seen close to the houses in rural areas.
- In 96.3 percent of the sites in rural areas there are no garbage disposal facilities.

Results such as this indicate the potential for relatively low-cost, high-impact interventions related to behavior change, which would have immediate and

[131] GARWP National Survey which has started in 2010 and stopped in 2011 and resumed early 2012.

dramatic positive effect, regardless of infrastructure investments that may take years to implement.

5.3.4 Effect on the Population of the 2011 crisis

The past year of unrest has caused a breakdown of public services. The water supply chain has been severely affected. As a consequence, the general lack of water results in most Yemenis relying on either unprotected traditional water sources or water truck distributors. A small sample phone interview survey of 30 water user associations in three governorates (Ibb, Hajah and Lahj) showed the following results:

- Eighty-three percent of the water systems had completely stopped delivering service for at least three months during 2011, due to shortage of fuel for pumping stations.
- Eighty-five percent of the respondents confirm that alternative water sources in their areas are not protected (open borehole, open shallow wells and unprotected springs).
- Ninety percent of water systems were affected by the shortage of fuel supply in some way or another (effects ranges from complete stop to intermittent interrupted supply of water.
- Seventy-three percent of WUAs continue to face difficulty in operating their systems due to increased operational costs and inability of beneficiaries to pay their water bills.
- One hundred percent of the WUAs reported that water consumption decreased during last year's crisis.

A 2010 survey conducted by GARWSP, showed average water consumption in rural Amran, Sana'a and Hodeidah at 35.5 liters per capita per day (l/c/d).[132] In 2011, the average as per UNICEF's Social Protection Survey for the same governorates is 19.5 l/c/d. This shows a decrease in water use due to increase in the price of water and the shortage of fuel (diesel). Information provided by most of the interviewed WUAs members confirmed that diesel continues to be a major problem facing rural water schemes. At the same time the price of alternative water trucking quadrupled from December 2010 to December 2011. People in rural areas are now looking for affordable drinking and domestic water anywhere they can find it, with dire consequences on public health and the wellbeing of the population, especially vulnerable groups such as children, the elderly, pregnant women, disabled persons, and others.

The main public health concern is the outbreak of diseases associated with poor access to water and sanitation. Even without widespread unrest and crisis, Yemen has struggled with such diseases in the past. In 2009, non-bloody diarrhea was among the top five diseases in all of Yemen's 21 governorates, and the number one cause of outpatient attendance and inpatient admission in 19 governorates.

Diarrhea is the second leading cause of death among children under the age of five. The current crisis has brought an increase in the prevalence and severity of disease. Outbreaks of cholera and acute watery diarrhea have been reported with increasing frequency since February 2011. In May 2011 an outbreak was reported in Abyan with 294 cases and four deaths. While predominantly in the above-15 age group, 40 were children aged five and younger, an indication of inappropriate hygiene practices and lack of clean water. In June the outbreak spread to Aden and Lahj among the IDPs from Abyan, and in August Dhale governorate reported 721 cases including more than 30 deaths. A fifth of the cases and a third of the deaths were children under the age of five. To date the outbreak has been reported in five governorates and is not showing signs of abating.

The origin of these outbreaks has been traced to contaminated water sources, especially wells that have not been disinfected, mainly due to insecurity and inaccessibility. The rapid spread of disease has also been blamed on the declining amounts of water available

[132] GARWP National Survey 2010 and stopped in 2011.

to households, caused by prohibitive prices and power cuts that prevent water pumping.

A UNICEF social protection monitoring system that has tracked water availability in sampled households in the governorates of Sana'a, Amran and Hodeidah showed 63 percent of households reporting a decline in water consumption in June, and 32.5 percent in September (improvement coincided with a return of electricity during the Holy month of Ramadan). The decline in water consumption corresponded with a reported 46 percent diarrhea prevalence among those under age five in June, declining to 21.8 percent in September.

WASH and the link with malnutrition: A recent nutrition survey among IDPs and host communities in Haradh found that half the children surveyed had diarrhea. There was a significant association between diarrhea and malnutrition, with those reporting diarrhea 1.5 times more likely to be malnourished compared to those without diarrhea. Sanitation and hygiene interventions have been known to reduce the prevalence of stunting between four and 46 percent with greater improvements among urban children.

In response to the nutrition crisis, in January 2012, the WASH cluster in Yemen conducted an assessment covering around 1 million inhabitants in Ibb, Ta'iz, Abyan, Lahje and Al Dhalea governorates. Preliminary results show the following:

- 65.7 percent of the rural population reported that water is not sufficient and 52.6 percent of the population survives at or below the emergency threshold of less than 15 l/c/d. Significantly, the 2010 Survey reported coverage in the same five governorates at 41 percent.
- 52.8 percent of the water systems in rural areas are not functioning and need repair (2010 Survey reported inoperative systems in the five governorates as 34.4 percent).
- 54.9 percent of the water systems reported that the water supply is not reliable.
- 61.6 percent of sites in rural areas have long queues and in 36.5 percent sites people spent more than 30 minutes to fetch water.
- 38 percent of the population depends fully or partly on water trucking in the rural areas.
- Only 35.2 percent of the population in rural areas is fully or partially dependent on protected boreholes.
- 15.7 percent of populations in rural areas fully depend on unprotected well and springs although there are other unprotected wells and springs in 32.4 percent of sites.

Conflict in various pockets throughout the country, moreover, has created additional barriers to populations' access to safe water, sanitation and hygiene. In the southern governorates of Yemen such as Abyan, confrontation between government troops and armed groups has forced around 100,000 civilians, of which more than half are children, to flee to other districts inside the governorate and to neighboring Aden and Lahj. In Aden alone, around 80 schools are hosting persons displaced from Abyan. Water, sanitation, and hygiene facilities for these populations are below standard, with a high risk of serious health repercussions. Moreover, the damage to WASH facilities in schools due to over-burdening of the system means that once alternative accommodation is located for IDP families, heavy investments will still be needed in order to render the schools fit for children's education.

In and around the capital Sana'a, severe fighting in the neighborhood of Hasabah, as well as the area around Arhab in Sana'a governorate, led to the displacement of hundreds of families in mid-2011. While some families were able to afford a move to safer areas, the most vulnerable have fled to slums, caves, and other deprived areas, where public services are all but non-existent, thus exposing an already vulnerable population to even higher risk of waterborne diseases.

In addition to the impact on WASH in schools in the south, many schools in conflict-affected areas of the North also have been damaged or destroyed by fighting, including damage to WASH facilities. Beyond the impact of conflict, WASH in schools throughout the country is inadequate, with the vast majority of

Yemeni schools lacking sufficient water and sanitation facilities even before the crisis.

5.3.5 Water and Sanitation and Hygiene (WASH) within Social Protection Schemes

Recognizing the dire impact of limited access of poorer Yemenis to safe water sources and sanitation and hygiene facilities, the Government of Yemen has developed a number of social protection initiatives designed to address the WASH needs of vulnerable households. These schemes are mainly implemented through the Social Fund for Development (SFD) and the Public Works Project (PWP) and typically support local or community-based approaches.

Operating nationwide from its own eight branch offices, SFD works through community contracting by training village committees to manage construction work related to WASH investments. Within this mandate, SFD is notable for its focus on water harvesting. It capitalizes on Yemen's long tradition of water harvesting, especially in mountainous areas. SFD is now piloting the "community-led total sanitation" approach, which is expected to involve strong participation of women. While widely assessed as a competent development partner, the SFD suffered as most agencies in 2011. Specifically, in response to reduced or frozen funding from Government and donors, the Social Fund reduced its operations and was compelled to cancel 124 water and sanitation sub-projects (with SFD's share of costs estimated at US$17,334,570) that were ready for implementation in 2011 in a number of governorates.

The PWP focuses on labor-intensive public works projects and compliments SFD's community-based approach. PWP's public works employ local contractors and community labor. Working through local consultants, PWP seeks to build the capacity of communities and their local contractors, and emphasizes community ownership of water schemes. As with SFD, deep cuts in PWP's budget resulted in a reduction of about 50 percent in terms of completed projects for 2011.

5.3.6 The Future Agenda and Recommendations

Provided security is restored, the installation of a new government gives the opportunity, not only to repair the ravages of the previous year but also to refocus the strategy in the water sector and to prioritize the reform and investment program. This new start also allows a refocusing of programs on specific areas, particularly poor or remote areas that have been left behind in previous public programs. This section looks in turn at priorities in water resource management, the water and agriculture nexus, sourcing water for towns; rural water supply and sanitation; and, urban water supply and sanitation. The section ends with a discussion on priorities for the role of donors.

Water Resource Management

1. Confirm the *Sana'a Declaration* and the *NWSSIP Update*, and revise/prioritize the NWSSIP investment program (in line with the recommendations in this chapter).
2. Mainstream the community-based water resource management approach and the supporting partnership role of government and public agencies. In parallel, reorient NWRA to become a supportive partner of local communities, rather than a top-down regulator.
3. Continue decentralization to basin level,[133] empowering basin committees and NWRA branches to complete preparation, validation, ownership and implementation of basin plans and the related investment and service delivery programs.
4. Use sector-wide approaches such as WSSP as mechanisms for integrating water programs at the basin level.
5. Support by all means possible community management of water resources and water

[133] See above–Water Resources Management–for the basin planning approach adopted in Yemen.

use efficiency, ensuring that all programs supporting agricultural water management and rural water supply are part of a community-managed plan for sustainable water resources management.

6. In the context of high population growth rates in economic centers such as Sana'a and Ta'iz, management of available resources may not be an adequate solution. It may be necessary to bring in additional water resources from outside the basin to sustain growth of those areas.

Immediate actions to implement this agenda could include:

1. Obtain approval of the NWSSIP Update and reconfirm the Sana'a Declaration by the Council of Ministers, as well as establish a committee to closely follow up implementation of recommendations under NWSSIP and the Sana'a Declaration.
2. Conduct a detailed resource availability study for priority basins such as Sana'a to confirm water availability in deep aquifers and/or neighboring basins. Similarly, conduct a feasibility study on importing desalinated water for Ta'iz and Ibb as well as rally support from public and private sectors to implement the project.
3. Rally support from donors for NWSSIP and align donor support along priority areas identified by NWSSIP and within the sector-wide approach, particularly for decentralized, basin-level, planning and programming and support to bottom-up, community-based, water resource management institutions.

Water and Agriculture

Yemen has been pursuing an agenda to improve the efficiency and sustainability of water management in agriculture. These efforts, however, need to be scaled up, with increased emphasis on the poor and production systems. Most importantly, all irrigation and other agricultural water management interventions need to be integrated in community-based water resource management approaches, as described above. The challenge is to do more and better in supporting farmers in nationwide implementation of five main approaches:

1. More efficient groundwater irrigation and more use of groundwater solely for supplementary irrigation, supported by (a) scaling up of the Government's programs for support to irrigation improvement similar to the Groundwater and Soil Conservation Project (GSCP) and the National Irrigation Program (NIP), and restructuring of the Government's fund for supporting agriculture (such as the Agriculture and Fisheries Production Promotion Fund—AFPPF, including under possible Global Agriculture and Food Security Program—GAFSP—and Pilot Project for Climate Resilience—PPCR—financing); (b) greater involvement of the private sector in manufacture, design, and implementation; and (c) integration of support programs into community-based water management. All of these entry points should be developed with a clear pro-poor focus.
2. Investment in infrastructure and improved water use efficiency of surface irrigation, especially large and small-scale spate, with attention to equity of water allocation, supported by: (a) scaling up of the Irrigation Improvement Project (IIP) to further large-scale spate schemes; and (b) extending NIP/GSCP support to small scale spate schemes nation-wide, possibly under GAFSP and PPCR financing. These entry points should be developed with more attention to equity and financial viability.
3. More intensive use of traditional agricultural and water harvesting techniques, and a more productive livestock economy, with a particular focus on poor or remote areas (supported by continuation of RALP possibly under GAFSP and PPCR financing, and a restructured AFPPF).

4. Adapting farming practices: changing cropping patterns, growing shorter cycle, drought-tolerant or later maturing varieties, changing the cropping calendar etc. Possibly supported by the proposed GAFSP as well as PPCR and through a partial implementation of the Aden Agenda, it will be important to revive research and extension in the Agriculture Research and Extension Authority (AREA), the Regional Development Authorities (RDAs) and the Agricultural Directorates in the governorates.
5. Adoption of integrated management of the water resource at all levels from the bottom up (mainstreamed in all agricultural programs in partnership with basin committees, the National Water Resources Authority (NWRA) branches, water user associations, NGOs/CBOs).
6. Development of flexible support mechanisms for poorer rainfed and livestock areas, e.g., a "Payments for environmental services" (PES) model which could support terrace rehabilitation, watershed management, rangeland management, etc., perhaps working through AFPPF and/or with PWP/NIP/SFD on a labor-intensive public works (LIPW) basis within basin plans and programs and linked with other water resources development projects to strengthen the synergy.

Immediate actions to implement this agenda could include:

1. Scaling up NIP/GSCP, accompanied by development of market-based water technology transfer (e.g., pipes distributed by the private sector on an OBA basis).
2. Restructuring of the AFPPF, perhaps on the model of SFD, to support local community investments.
3. Continued support for NIP to follow through with other half-completed programs such as IIP for other large spate schemes.
4. Innovating demand-driven research and extension, as a step towards redynamization of agricultural services envisaged by the Ministry of Agriculture's Aden Agenda.
5. Selective expansion of RALP or similar programs to support rainfed and livestock farmers.
6. Development of flexible support mechanisms for poorer rainfed and livestock areas, e.g., a Payments for environmental services (PES) model which could support terrace rehabilitation, watershed management, rangeland management etc., perhaps working through AFPPF and/or with PWP/NIP/SFD on a labor-intensive public works (LIPW) basis within basin plans and programs and linked with other water resources development projects to strengthen the synergy.

Water Sources for Urban Areas

The problems of highland cities and towns in sourcing water are growing fast. The government needs to confirm a clear set of approaches to ensure solutions that are fair to all citizens, both in source areas and in urban areas:

1. Work with communities to establish water rights, and work from existing community institutions (for example traditional water management institutions at local level, or more recent "modern" water user associations), strengthening where needed, to transfer water from agriculture to municipal and industrial use (M&I) following principles of equity, sustainability and no uncompensated harm. The proposals for the Sana'a basin, for example, could be a good place to start: zone the basin for agriculture, water sourcing, urban development and, reserve the deep sandstone aquifer for M&I etc. (see also Annex Chapter 5).
2. Work on supply management to increase supply. This could include: (i) contracting with community-based associations for bulk water

transfer; (ii) rooftop or other traditional rainwater harvesting techniques; (iii) partnership with private water suppliers; (iv)study of options for desalination and water resource transfers/distribution.

3. Prioritize solutions for the greatest problem areas: Sana'a, Ta'iz and Ibb. For Sana'a, the Government should revive the integrated water resource management framework (IWRM) established under the Sana'a Basin Project and establish the feasibility of arranging with local rural communities to transfer water from rural to urban areas. The Government should also follow up on the recent study by Sana'a University's Water and Environment Center (WEC) on the scope for public-private partnerships for Sana'a water supply. Moreover, the Government should review and update the detailed resources assessment study for deep aquifers in Sana'a basin (Tawilah aquifer) and review the resources and feasibility of out-of-basin resource transfers (including update of the nine options identified in the study Sources of Water for Sana'a (SAWAS) of 1996). For Ta'iz, given the scarcity of alternative options, the basin plan for Upper Wadi Rasyan should be reviewed, and the feasibility of pumping up desalinated water from Al-Mocha should be further studied.
4. Work on demand management to contain demand. This could include water saving devices, cost recovery tariffs etc.

Rural Water Supply and Sanitation

Innovations have been successfully introduced and expansion of coverage seems to have yielded results, albeit modestly. Attention is needed to ensure efficiency, quality, and sustainability. The agenda would include:

1. Continue the previous rapid expansion of coverage, focusing on affordable and sustainable supply, particularly in areas hitherto neglected. Ensure that successes of the 'demand responsive approach' and efficient project delivery are sustained.
2. Improve efficiency through decentralization and joint planning (GARWSP, SFD, PWP, NGOs /CBOs) at the local level, as well as, coordination among water users from other sectors such as irrigation to ensure sustainability of investments.
3. Ensure that sustainable, affordable technologies are available, particularly low-cost technologies not dependent on pumped groundwater.
4. Put in place transparent monitoring and evaluation to track increases in effective access, scheme sustainability, and socio-economic impacts (e.g., on peri-natal mortality, diarrhea incidence, and girl's school attendance).
5. Implement a comprehensive behavior change program designed to improve knowledge, attitudes and practices related to improved hygiene.

Urban Water Supply and Sanitation

Yemen has been pursuing a reform program in urban water for almost fifteen years, which has led to palpable improvements. However, LCs are far from being financially viable. Coverage and service quality are lagging behind the rapid growth in urban population. Meanwhile, the poorest pay the highest charges. The agenda would include:

1. Press on with the sector reform agenda, pursuing the goals of affordable service provision and a business approach, with each LC preparing a Business Plan showing how it will achieve these goals.
2. Keep the pro-poor imperative constantly in view and ensure that any implicit or explicit subsidy goes to help the poor and not the better-off.
3. Be flexible and responsive to local conditions, especially encouraging innovative, low-cost

technologies (such as decentralized sanitation with small bore outlets to the network) and new business models and partnerships (private sector, output-based aid, etc.) that can expand access and improve service delivery sustainably and affordably.

5.3.7 Recommendations

Based on the above agenda, the following are summary recommendations:

- Provide priority support to rehabilitation of key infrastructure.
- Align all internal and external stakeholders on NWSSIP, the Sana'a Declaration, and—to the extent possible—the sector-wide approach (e.g., through WSSP).
- Focus water management reforms and support on the bottom up participatory community-based water resource management approach, combined with strengthening water governance and agencies at the basin/decentralized level.
- Prepare water sourcing plans for key vulnerable cities (Sana'a–Ta'iz–Ibb).
- Strengthen support to irrigation improvement for both groundwater and spate, but only where communities are effectively managing their water resources.
- Focus support to rainfed areas on poverty-reducing investments in watershed management, terrace rehabilitation, productivity improvements, and rangeland/livestock improvement, including through the use of PES mechanisms.
- Continue rapid investment in rural water supply and sanitation, prioritizing poor and neglected areas, and ensuring inter-agency joint planning and ensuring appropriate technology and the sustainability of water sources.
- Design proper hygiene training, education, and awareness-raising programs to be implemented in selected rural areas where hygiene awareness is low.
- Introduce more flexibility and innovation in the urban water sector to work with the local private sector and, to adopt low cost technology and prioritize pro-poor services.

5.4 Education Sector

5.4.1 Pre-Crisis Sector Status

General Sector Background

Over the past 40 years, Yemen has performed relatively well in expanding formal education opportunities but important challenges remain. Enrollments at all levels have improved substantially. Illiteracy was halved in 30 years, from 90 percent in 1973 to 45 percent in 2004. Rapid population growth continues to be a challenge; nonetheless gains in coverage at all levels were made, especially for girls. However, there are still about two million children out of school, many of whom live in rural areas and are part of marginalized communities. Gender parity is still far from being achieved; retention throughout the grades is a serious problem due to both social factors and administrative constraints; and improving the overall quality of education remains a challenge.

Development of education and skills is a key development priority in Yemen. The country's Development plans have continuously stated that human development, and in particular educational development of the labor force, is a priority. Since 2002, the government has endorsed five major strategies to address education issues at the various levels of education:

The National Basic Education Development Strategy (NBEDS, 2003–15) aims to increase enrollments in basic education, particularly for girls and in rural areas, to reach 95 percent of the 6–14 year-olds in Yemen by 2015. The strategy received a strong and coordinated support from the donor community, and the government has made significant progress in strengthening the policy environment since the articulation of the NBEDS in 2003.

The National General Secondary Education Strategy (NGSES, 2007–2015) aims to provide equitable and

cost-effective quality secondary education for transition to tertiary education and the labor market. To implement policy reforms planned under the NGES, the Ministry of Education (MOE) has entered into formal agreements with the governorates and relevant ministries to ensure their commitment to comply with policy reforms related to recruitment, deployment, and monitoring of teachers. The strong support received from donors to the NGSES was lately reduced due to, among other factors, delays in implementation.

The National Strategy for the Development of Vocational and Technical Education (NSDVTE, 2004–2014) aims to achieve an "adequate" balance between general education and Technical Education and Training (TVET). The target of this strategy was to attract 15 percent of basic and secondary education graduates to post-basic and post-secondary TVET, respectively, by 2014. Among the policy reforms implemented under the NSDVTE were the amendment of the law for the Skill Development Fund (SDF) in 2009 to grant the SDF greater autonomy in its dealings with employers. To implement the strategy, the GoY received support from a number of donors including Saudi Arabia, DfID, GIZ, and IDA.

The National Strategy for the Development of Higher Education in Yemen (NSDHEY, 2006) focuses on four areas of reform: governance, finance, quality, and diversification. Regarding enrollment growth, the strategy aims to expand access to universities and other higher education institutions (including TVET), particularly for the 19–23 year-old age group, from 13 percent to 16 percent by 2010, and to 35 percent by 2025. One of the key policy reforms implemented under the NSDHEY was the establishment of the Higher Council for Quality Assurance and Accreditation. The implementation of the NSDHEY received support from The Netherlands and IDA.

The National Children and Youth Strategy (NCYS) was prepared as a response to the challenges in addressing the risks (particularly those related to health, education, and employment) that Yemeni children and youth face over their lifecycles. It used an integrated, cross-sectoral framework to identify the issues and gaps across the human development sectors that are most likely to impact the achievement of the MDGs, and to propose action plans to be integrated and implemented by concerned line ministries as part of their respective sector programs.

In addition, to these five strategies, Yemen has an ongoing National Strategy for Literacy and Adult Education, which aims to eradicate illiteracy in the population 10–40 years of age, and has prepared a National Strategy for Early Childhood Development.

Despite the many strategies, Yemen is missing one coordinated vision for education. Each subsectoral strategy is intended to increase access and equity, and improve quality and efficiency of education delivery quite independently of what is happening in other education subsectors. As a result, there are major disconnects among the strategies and investments of the various subsectors. A national vision that articulates the education and skills needs of the economy and the society, and the choices that must be made to provide these skills, is greatly needed. The work for the development of such vision has started based on the results of the comprehensive sector assessment made through the Yemen Education Country Sector Report (CSR) published in 2009.

The priority set for education was also reflected in the government spending on education. The funding increased 125 percent between 1997 and 2007, however the share of education spending declined from over 19 percent between 1998 and 2004 to 16 percent in 2007 (equivalent to 5.8 percent of the GDP). This figure is lower than the 20 percent reference point set in the EFA Fast Track Initiative (FTI) Indicative Framework. Sources from the Ministry of Education (MoE) indicate that in 2010, the government expenditure on education declined to 12 percent or four percent of the GDP with a distribution among education sectors as follows: General Education, 75 percent; Technical Education, seven percent; and Higher Education, 18 percent.[134] The system may be spending too much on administrative and support staff; it needs to reallocate or identify funding

[134] Ministry of Education.

to invest in improving the operation of schools and the overall education services.

Yemen has a comprehensive legislative and regulatory framework that lays the foundations of the current education system. The 1964 Education Act regulates the levels of education, and a set of decrees defines the institutional structure of the sector. Education is managed by three ministries. Pre-basic, basic, and general secondary education is managed by the Ministry of Education (MOE). Post-basic TVET and post-secondary TVET are managed by the Ministry of Technical and Vocational Education and Training (MTVET). University education is under the mandate of the Ministry of Higher Education and Scientific Research (MOHESR). Literacy is the mandate of the Literacy and Adult Education Organization (LAEO), as supervised by the Minister of Education. The Supreme Council for Motherhood and Childhood (SCMC), established in 1991, has the mandate to develop country strategies and promote policies aiming to improve the situation of motherhood and childhood in Yemen. The Supreme Council for Education Planning (SCEP), chaired by the Prime Minister and including eight ministers with leverage over education policies, has a coordination and oversight role, and has been instrumental in consolidating education data over the past years.

Yemen's current education structure is dominated by general streams with a very low level of professionalization undermining the quality of education services. Yemen's current formal public education system comprises nine years of compulsory basic education followed by three years of general secondary education. In grades 11 and 12, enrollment is diversified into the science track and humanities track, although in practice many rural schools are not able to provide both options. Students can enter secondary school, if they have a Basic Education Certificate (BEC), which requires passing the ninth-grade examination. Vocational schools and community colleges offer two- and three-year post-basic and post-secondary programs, respectively. After a one-year waiting period, secondary school graduates can enter universities. The government also provides adult literacy programs. Kindergartens are mainly run by the private sector, which also plays a growing role in other levels of education (two percent of basic and secondary enrollments, and 15 percent of higher education enrollments).[135]

The following table provides enrollment data, and the number of teachers at each level of education for the academic year 2010/11 or earliest available:

5.4.2 Preschool Education

According to the MoE, enrollment in Kindergarten increased by about 140 percent over the past ten years to a total of 30,100 in 2010/2011. The number of kindergarten schools also increased from 181 in 2001/2002 to 549 in 2010/2011, and the number of teachers increased from 886 to 1997. It is noted that kindergartens are primarily in the main cities of Yemen and rare in rural areas. The enrollment in kindergartens is low in cities and almost absent in the rural areas.

[135] World Bank Education Sector Note, 2010.

Table 20: Overview of Education Services

	Number of students	Number of teachers	Number of institutions
Early Childhood Education	30,100	1997	549
Basic education	4.7 million	120,339	12,376
Secondary education	615,600	6891	331
Post-basic TVET	7,653	3,525	85
Post-secondary TVET	19,376		
University	331,738	8,897	30

Sources: MOE, MTVET, Supreme Council of Education Planning.

- Most of those institutions are private (66.21 percent) which makes them less accessible to most children, given the limited low financial abilities of many families to pay for this kind of education, and the low priority given by families to this level of education in general.
- The quality of education in private institutions is also questionable. There is no standard curriculum and no monitoring and evaluation of the quality of services provided in these institutions. Often, private preschool institutions are located in private houses and thus do not offer a suitable environment. There is no certification for teachers; most of them are either former basic education teachers or women who are jobless and available for such a market.

5.4.3 Basic and Secondary Education

Access has improved but the completion rate is still poor. Yemen has made impressive gains in gross enrollment ratios (GERs) for all levels of education, especially for girls. However, despite the remarkable expansion of its education system, GER for basic education remains low at approximately 76 percent in 2010/11. According to the 2005 Household Budget Survey, there were 1.8 million out-of-school children in the 6–14 year age bracket. School survival rates are low: only half of those who enter Grade 1 reach the end of the basic education. The Grade 6 Completion Rate in 2009/10 was 61 percent (51 percent for girls, and 71 percent for boys). Given that many children never enter school, many others drop out of school early, and that population of school-age is expected to rapidly increase, Yemen is unlikely to achieve the goal of *Education for All*, one of the Millennium Development Goals—to ensure that all boys and girls complete a full course of primary schooling by 2015. Some of the structural challenges that the sector faces include lack of school buildings, lack of teachers in remote areas where communities live in scattered settlements, poorly trained and uncommitted teachers, absence of female teachers in rural areas, as well as low awareness of the importance of education within communities, especially those living in remote areas and within marginalized groups.

Equity in education has made progress, but girls are still at a disadvantage, especially in rural areas. Despite the substantial increase in girls' enrollment in basic education (from 42 percent in 1997/98, to 66 percent in 2010/11) and in secondary education (from 16 percent to 23 percent), gender gaps are still large and vary from one governorate to the other. While boys' enrollment rates are relatively similar across Yemen's governorates, the difference in girls' enrollment reaches 52 percentage points between Sana'a (84 percent) and Sa'ada (32 percent). Administrative data show that gaps in enrollment rate within some governorates are also large. There is also a growing community of marginalized children who tend to be at a higher risk of exclusion from the traditional education system, including the African-descended Akhdams and rural migrants to urban areas as well as migrants who returned to Yemen after the Gulf War.

Quality remains the area where progress has been most limited. Education quality faces major challenges. Only 40 percent or teachers hold a bachelor degree, and most students and teachers do not receive textbooks or learning materials until close to the end of the school year. Yemeni Grade 4 students ranked the lowest among 36 countries participating in the Trends in Mathematics and Science Study (TIMSS), 2007, primarily because they could not read the narrative-based test questionnaire. There is a risk that the planned expansion in enrollment could further reduce quality if not adequately planned and resourced for. The health and nutritional status of Yemeni children and adults poses serious threats to achieving access to quality education given that almost 50 percent of the children under age five are malnourished.

5.4.4 Technical and Vocational Education

Access to Technical and Vocational Education Training (TVET) remains limited due to small and geographically imbalanced numbers of seats offered by training centers. While TVET enrollment has been progressively

increasing during the last decade, the current program framework is responsive only to a limited number of citizens and for limited employment opportunities. Total number of students enrolled in TVET programs is about 24,000 with enrollment rates for relevant age groups below one percent for both post-basic and post-secondary programs. There is an evident need for the TVET system to increase public and private training capacities and to be more responsive to the needs of other target groups. The ability to be more responsive is currently constrained by: (i) the small number of TVET institutions; (ii) institutional constraints regulating student flows between general and vocational and technical education; (iii) an imbalance in terms of geographic distribution of training opportunities; and (iv) low utilization levels of existing TVET institutions.

Quality, relevance, and linkage with employers are weak. The predominant characteristic of the Yemeni TVET sector is its strongly supply-driven approach. Linkages between the TVET system, labor markets, and private sector enterprises continue to be weak. There is a lack of cooperative training and low use of potential training opportunities (internships) in enterprises. Despite initiatives to upgrade curricula, many weaknesses persist. The training capacity and quality of programs is constrained by the lack of tools and equipment required to develop graduates' competencies that are mandatory for employment in the respective occupational areas. Staffing is a major problem: instructor qualifications are poor and wages are too low to attract trainers with enterprise-based work experience. Dropout rates in all TVET programs are high, particularly among female students. According to latest available data (2006–07), only 57 percent of the students graduated who had entered two-year post-secondary TVET institutes competed the full two years.

The institutional capacity needs to be developed. The Ministry for TVET (MTVET) was established in 2001but the capacity in the new ministry to manage its task is still weak. The current structure of the MTVET shows weak linkages between the different departments. The organizational and regulatory structure for institutes—budgets, programming, enrollments, staffing, operational procedures—are determined by the MTVET, allowing little means or incentive at the institute level for innovation to improve quality or efficiency.

5.4.5 Higher Education

Increased access to higher education over the last decade was, to a large extent driven by the private sector and "parallel programs." Higher education enrollments have increased rapidly in recent years; from 190,200 students 2002/03 to about 300,000 in 2010/11. The private sector accounted for a large part in the increase in enrollments and makes up about 20 percent for total enrollment. The GERs increased as the system expanded, with an overall GER for higher education estimated at 13 percent in 2006/07. Despite modest increases in their participation over the last 10 years, girls remain vastly underrepresented in higher education with a GER of eight percent compared with 18 percent for males. In 2004–05, given the growing demand for higher education, public universities began to accept students into parallel programs. These fee-paying programs' are offered in the afternoons to students who do not qualify to enter the regular programs. The limits have been set by the Supreme Council of Universities on the proportion of students in parallel programs. However, these limits have not been adhered to, and across all public universities in 2007–08, 14 percent of enrollments were in parallel programs. Students in parallel programs have fewer teaching and learning materials available to them because most facilities on campus are closed in the afternoons.

Quality and relevance have deteriorated. The rapid increase of enrollment in public universities has hampered the already poor quality and relevance of the higher education sector. In particular, the expansion of parallel programs has caused a severe deterioration in the quality of higher education. Also, limited and unbalanced program offerings in public universities is creating an excess supply of graduates in social science, and a shortage of science and technology graduates, which makes it difficult to meet the human resource needs of the economy and the society. Poor

quality and relevance in the higher education sector are indicated by: (i) low internal efficiency (as evidenced by high repetition rates); (ii) a lack of competitiveness among Yemeni university graduates and employers' dissatisfaction with them; (iii) insufficient quality assurance mechanism in universities; (iv) a dearth of teaching and learning resources in universities; (v) high academic staff-student ratios and low qualification levels of academic staff; and (vi) a poor work environment, non merit-based career ladder, and limited professional opportunities for academic staff in universities.

5.4.6 Impact of the Crisis

Impact on the Provision of Education Services

Part of the educational infrastructure was damaged by the fights or occupied by armed forces and Internally Displaced Persons (IDPs). According to the MOE about 810 schools have been more or less severely damaged by the armed conflict, with buildings completely destroyed in some cases. During its Back-to-School campaign in September 2011, UNICEF found that more than 150 schools were occupied by either armed forces (34 schools in Sana'a) or IDPs (76 schools in Aden and 43 in Abyan).[136] Displacement was mainly due to the conflict in Abyan which led thousands of families to move to a safer area within the governorate or to Aden. Also, the MTVET reported that eight institutes in Zinjibar and Abyan have stopped operating; for six of them this was due to partial or total destruction of their buildings and looting of their facilities' equipment, while the two others were occupied by IDPs.

Some schools remained inaccessible due to the insecurity generated by the conflict. In the affected areas (mostly in Sana'a, Aden and Ta'iz), some schools were closed while in others, attendance decreased significantly due to parents keeping their children at home for safety. In Sana'a, about 46 schools were closed in September 2011 due to insecurity, according to UNICEF B2S report. In total, 80 schools were not operating, in Sana'a, due to either occupation or inaccessibility with 100,000 children affected. The MTVET also reported a rise in students drop-out because of the insecurity and overall instability in the country.

Teacher and administrative staff absenteeism increased in 2010/11 due to strikes and weak institutional monitoring at both centralized and decentralized levels. The MOE estimates that about 10 percent of the total number of teachers have been temporarily absent from schools and that about 3,200 teachers from Sa'ada and Abyan have sought refuge in neighboring governorates.

The curricula in 2010/11 were not completed. The second semester of the school year for basic and secondary education was shortened by about two months in order that schools could close early in anticipation of escalation of the conflict, and in an effort to limit any impact from the same for the school year. Although the school year was completed and national examinations took place, study content received by students was likely reduced by about 25 percent, in average. There were delays in the completion of academic programs in universities and technical institutes in the affected areas.

There were also delays in the delivery of school buildings, equipment, and material due to the slowdown in project implementation as a result of the insecurity situation and the precautionary measures taken by most Development Partners (DPs).

Impact on Stakeholders

According to a summer 2011 account,[137] about 390,000 newly displaced added to the stock of about 214,000 IDPs resulting from previous conflicts. About 30 percent of the IDPs are estimated to be within the school-age range (6–18). Despite MOE efforts to accommodate some of the displaced children within existing

[136] The Back-2-School Campaign report, UNICEF, October 2011.
[137] Conflict, Displacement and Development: A Political Economy Perspective on the Current Crisis in Yemen, World Bank brief, August 2011.

schools in host communities and assistance provided by UNICEF and other DPs through the provision of temporary learning spaces and teachers, it is likely that a large number of IDPs do not have access to educational services.

Students and their families gave less importance to education during the crisis due to insecurity and hardship generated by the crisis. Price increases for basic commodities such as food and energy left little or no room, particularly for poor families, for education related expenditures. Also, electricity shortages and overall distraction by the events taking place in the country prevented students from spending time and effort on study, and parents from monitoring and supporting their children. This adds to considerable amounts of distress in children caused by the tensions, making them less receptive for learning.

The impact of the crisis on psychology and attitudes of students, teachers and staff was alarming. In addition to the psychological trauma observed in similar conflict situations, the crisis has resulted in changes of attitudes from key players in the education field. Feedback from the MOE indicates that they feel weakened as the authority of the ministry is now continuously challenged by teachers who are often on strike, participating in demonstrations or just taking opportunity of the fluid situation to not fulfill their duties. The same applies to non-teaching MOE staff. There is also a trend for students to lose the sense of discipline and to not abide by the rules governing the school. Overall, the MOE reported an increased use of verbal and physical violence to deal with differences in views and opinions instead of dialogue. A recent assessment has shown that the rate that children actively participate in violence is on the rise. [138] This is in addition to their exposure to extreme violence due to the conflict, political instability, and their consequences.

Institutional Impact

Because of the recurrent strikes and demonstrations since 2011, overall demobilization of staff and disruption in communications, line ministries lost part of their capacity to monitor the provision of education services during 2010/11. However, because of an emerging more decentralized approach due to the prevailing circumstances in 2011, and as a result a stronger community involvement in the functioning of schools, the completion of the school year in 2011 became feasible nonetheless, albeit it was cut short by two months.

Capacity to deliver was further weakened by budget constraints due to the crisis situation and the resulting overall tight fiscal situation, which led to reduced operational budgets. This particularly had an impact on the implementation of tests and examinations and on supervision, given the associated costs (photocopy, incentives for staff, overtime etc.). The MTVET reported delays in completing tests and delivering certificates to students in most institutes. In addition, universities were also financially affected by the general suspension of tuition fees, a decision that was made based on instruction by the former President. This decision deprived universities from the income gained from "parallel programs," which represented an important source of revenue for most universities. This policy has not yet been repealed.

Growing demand for better governance. The crisis created a new situation where stakeholders (students, families, local communities, and staff) are less hesitant to contest the authority of local and central administrations, request more transparency and denounce corruption and patronage. This trend has materialized at the university level where the MOHESR, under pressure from stakeholders, has started changing universities' leadership through establishing university boards and organizing elections for university presidents, which use to be appointed.

[138] Initial findings of the Interagency Child Protection Rapid Assessment conducted in 6 conflict affected governorates (Aden, Abyan, Lahj, Shabwa, Al Dhale and Taiz), April 2012. See also http://www.humanitarianinfo.org/iasc/; the Interagency Standing Committee is a consortium of UN agencies and Non-UN agencies engaged in humanitarian affairs.

5.4.7 Recommendations

Short-Term Actions

School Infrastructure. Destruction of buildings and looting have primarily affected MOE and MTVET institutions. The initial estimate for the cost of constructing, rehabilitating, and equipping the affected buildings is US$32 million for the MOE and US$24 million for the MTVET.

Dealing with Displacement. Given the still-fluid situation in Abyan and the overall fragile transition period, it is expected that there will continue to be a relatively high number of IDPs requiring the provision of basic services including education. The MOE should be requested and supported to facilitate the registration of displaced children in existing schools in host communities. Whenever such schools are unavailable or already saturated, temporary schooling facilities and resources would be needed.

Strengthening Capacity to deal with the Crisis. Line ministries (particularly MOE) central and decentralized staffs need to be trained on crisis management. Teachers and school administrators should also be trained and supported to deal with conflict post-traumatic stress issues, including psychosocial and protection activities to respond to the specific needs of children, increase their resilience, and encourage them to go to school.

Developing Advocacy Programs. Yemen is at risk of losing part the impressive achievements capitalized over the past 20 years in terms of access to basic education. The case of Iraq, which is now among the lowest performing countries in the region despite the fact that it had achieved universal access in the 70's, is a warning. Communities and families are under unprecedented stress due the current economic situation and are tempted to put less priority on children's education in light of competing demands. Therefore, there is a need to strengthen and generalize awareness campaigns for psychosocial support, protection, and community work, such as what is done through the Back-to-School program.

Support to Fragile/Poor communities. The risk of losing ground on education gains is even higher for children from poor, disadvantaged communities and particularly girls in rural areas. Strengthening of demand-side interventions such as Conditional Cash Transfer and school kits distributions should be considered. The increase of children malnutrition also calls for improving and developing school feeding programs, at least temporarily.

Better Use of Available Resources. Despite the current difficult fiscal situation, there is some room to improve the use of existing resources to better respond to the social demand for education and the needs of the economy. One example: about one third of higher education budget is being used for granting of scholarships for studies abroad (benefiting about 6,000 students), while only half of this amount is going to the operational budget of public universities (hosting about 250,000 students). Maintaining this policy is highly questionable, particularly at a time when Yemeni public universities are subject to a reduction in their budgets and have serious quality issues. The current country context offers a unique opportunity to start phasing out this costly and inequitable program. Another example is the Skills Development Fund (SDF), which is sitting on substantial resources but lacks a clear strategy and the implementation capacity. An appropriate technical support could help the SDF to better respond to the much needed skills development of young unemployed Yemenis and partially compensate for the current inefficiency of the TVET system.

Opportunities for Longer Term Policy Change

The wind of change brought by the Arab Spring opens a window of opportunities to engage in key reforms that have been resisted over the past years. Among the key issues to be addressed: governance and reform of academic programs and curricula.

Governance. Key governance reforms recommended by the various subsector strategies have been delayed or simply not implemented due to resistance from the line ministries and lack of political will. This applies, in particular to: (i) the restructuring and decentralization of the MOE to improve efficiency in the delivery of education services; (ii) the involvement of employers

in the management of the TVET sector; and (iii) the autonomy and financing of universities. In addition to such sector reforms, there is clearly a need for more substantial reforms at the broader public sector level (particularly public service and finance) for more transparency and accountability in the allocation and management of human and financial resources.

Strengthening the Role of Local Communities. Schools with stronger community involvement (e.g., with active parents councils) showed more resilience to sustain normal operation during the 2011 crisis. This was well understood by the MOE which is planning to develop and strengthen the councils of fathers and mothers.

Given the high return on early childhood education, the increase of funding to expand this sector should be considered. However, effort should be made to develop low cost, community based models and focused on disadvantaged areas and communities. There is also a need to develop a regulatory and institutional framework to facilitate the development of early childhood education and introduce quality standards.

Develop Second Chance Programs for Out-of-School Children and Adults

Address the Quality and Employability Issues with Persistence. Key reforms would include: (i) greater focus on learning outcomes particularly reading, math and sciences skills at the general education level, through revision of curricula and improving teacher training; and (ii) improving the quality and relevance of TVET and university programs.

Develop a holistic vision for the education sector aiming at better responding to the economic and social needs of the country through increased professionalization and improved regulation of students flows between general education, on one hand, and TVET and higher education on the other hand.

5.5 Urban Infrastructure

This assessment covers—in a summary form—two key issues. First, an assessment of the damages caused by last year's uprising and secondly, a brief description of the underlying causes of the limited success of the GoY to provide sufficient urban services to the Yemeni population.

5.5.1 Assessment of Damages

Infrastructure Services

Private and Public Assets. There is no doubt that the impact on private and public assets during the political crises that swept the country in 2011 varied from one city to another. Based on assessments made by the concerned municipalities it is clear that the cities that were most affected are Sana'a, Ta'iz, Hodeidah, Aden and Mukalla. The total cost of the unrest in these five cities is YR 18,861 million (US$88.10 million). Other cities such as Ibb, AlBaidha, Seiyun, and others were less or least affected by the crisis and hence, this assessment covers only the five most affected cities, indicated previously cities. Detail breakdown of the YR 18,861 million is given in Table 21.

Background on the five cities: Despite a reduction in urban poverty in Yemen over the past decade, 21 percent of urban households still fall below the poverty line. Close to 75 percent of all urban poor are concentrated in the cities of Sana'a and Aden (1,800,000 and 600,000 inhabitants respectively) and the Governorates of Hodeidah, Ta'iz and Hadramout, where they are primarily concentrated in Hodeidah, Ta'iz and Mukalla cities (respectively with 450,000, 540,000 and 200,000 inhabitants). Ta'iz, Mukalla and Hodeidah cities suffer from extreme urban poverty, reflected by high urban poverty gap index levels. Nearly 42 percent of population in all these cities lives below the poverty line.

Assessment:[139] Immediately upon receiving letters from the Ministry of Planning and International Cooperation dated February 6, 2012 and following Cabinet Decree No. 42 for the year 2011, municipalities which

[139] This assessment is based on reports prepared by the Office of Public Works and Highways, Sana'a Secretariat and the Office of Public Works and Highways in the city of Ta'iz.

had been affected by the unrest deployed their teams of engineers and technicians in addition to other support staff in assessing the damages, loses, and needs inflicted by the unrest.

Damages: Damages inflicted to private and public assets, particularly in Sana'a and Ta'iz were primarily caused by artillery shells fired from heavy and light weapons, which resulted in most of the cases in partial destruction of external walls, windows, etc. Some buildings were set ablaze as a result of the shelling. Other types of public assets damaged include street lighting and fixtures, recreational facilities, traffic signs, street posters and advertisements, and pavements and sidewalks. Based on the assessments the total cost of damages is close to YR 4,661 million (US$21.80 million equivalent).

Losses: Losses sustained to private properties were mostly attributed to the loss of rental income and revenues due to closure of business. It is estimated that the total loss by private properties is YR 4,000 million (US$18.7 million equivalent) divided between YR 1,600 million losses in rental income and YR 2,400 million as a result of temporary closures of businesses. Another loss category was borne by the five cities and this includes losses in revenues. The total loss in revenues including but not limited to issuance of building permits,[140] Street Posters/Advertisements, and Cleaning Fees[141] is estimated at YR 1,106[142] million.

Needs: In addition, the affected municipalities need an estimate of YR 9,094 million (US$42.5 million equivalent) to rehabilitate the damages to private and public assets to its original condition or better and for carrying out emergency works to damaged streets; street lights and traffic signs; sidewalks, restoration of public recreational facilities, etc.

5.5.2 Institutional Services

Labor Force and Staffing. The capacity of the affected municipalities to provide services was negatively impacted during the unrest for a number of reasons, primarily security concerns and lack of mobility caused by the absence of fuel from the local market. This was exacerbated by the declined in the resources, mainly operating expenditures, and hence minimizing staff mobility and presence in the field and or where they were needed. The Ministry of Public Works and Highways

[140] People took advantage of the crises and built without obtaining building permits.

[141] Includes in water and electricity bills.

[142] Average from the years 2008, 2009, and 2010.

Table 21: Detail Breakdown of the Costs of the Unrest

	Damages						
	Private	Public	Other	Losses	Needs	Total	
City	(in million Yemeni Riyal)			(in million Yemeni Riyal)			US$ Million
Sana'a Secretariat	3,445	207		313[a]	2,561	6,526	30.45
Ta'iz	471	32	38*	640[b]	4,085	5,266	24.61
Hodeidah	0	0	156	51	816	1,023	4.78
Aden[b]	—	—	156	51	816	1,023	4.78
Mukalla[b]	—	—	156	51	816	1,023	4.78
Total	3,916	239	506	1,106	9,094	14,861	69.40
Other Losses[c]	—	—	—	4,000	—	4,000	18.7
	—	—	—	—	—	18,861	88.1

Source: Government of Yemen and JSEA Staff.

[a] *Stolen* and damaged vehicles.

[b] *Losses* as a result of reduced revenues from building permits, street advertisements, rents of public buildings, etc. plus Cleaning Fund.

[c] Estimated losses in rental income and stoppage of businesses to private sector.

and its branch offices, including its department in the Sana'a Municipality, have lost between 150–200 professional staff to private sectors and to the neighboring countries because of these events.

Apart from municipalities, the impact of the unrest on economic activities, especially in the manufacturing and construction sectors, has had a negative impact on both private and public institutions. The main problems encountered during 2011 were deterioration of security, continuous power blackouts, shortage of water supply, absence of fuel (diesel, petrol) street blockages, armed car robberies, reduced purchasing power of the citizen, and so forth. In the first four months these problems resulted in an approximate 30 percent reduction in economic activities resulting in 15–20 percent redundancies in labor and professional staff. In the second four months period, activities were reduced further to up to 50 percent bringing the number of redundancies to 30–40 percent of the labor force. In the last four months of the unrest, economical activities were brought to a standstill bringing redundancies to an unprecedented high level. As a result, job opportunities were limited and the number of unemployed—skilled and unskilled labor—increased to about 80 percent. Organized crimes and vandalism to private and public properties increased to unprecedented levels. All of these factors plus others encouraged the departure of specialized labor forces, in particular young graduates, to the neighboring countries, taking advantage of the available communication technologies to communicate with the job markets in those countries.

City Administration: Except for Sana'a, which the law had accorded a special status, fragmentation and absence of coordination in planning, service delivery, and other municipal matters was clearly demonstrated during this assessment. Due to fragmentation of responsibilities at the city level, gathering information for the assessment in the affected cities was tedious and time consuming despite the fact that this information was readily available at the various entities. An enormous amount of time and effort and sometimes pressure were exerted in order to get the information released, and in many cases this release required special clearance from a central body.

In addition to fragmentation and absence of coordination at higher levels, branch offices of the line ministries and central agencies implement most local decisions. An absence of transparency and accountability to local citizens coupled with limited capacity to monitor local and central revenues are added constraints to city management. These administrative challenges are major constraints to the implementation of Decentralization Law No. 4 of 2000 and need to be addressed to allow for direct involvement of local governments in the management of their governorates in an effective and responsible manner. Readiness and having the right tools and systems in place are additional constraints to implementation of the law at the local level.

5.5.3 Broader Context on Urban Service Delivery

Since unification in 1990, the Yemeni state has been grappling with establishing viable central authority and creating a pluralistic political system within the framework of a unified nation-state. Overlaying a modern state upon Yemen's traditional governance system has proved challenging and both state formation and nation building remain works in progress. Meanwhile, to ensure its survival, the government had created informal political alliances with a number of powerful interest groups through extensive patronage networks outside the formal state structures—which had given rise to somewhat of a parallel state. As a result, even before the current crisis, urban service delivery and economic development were seriously affected in many parts of the country. One of the key underlying causes is the lack of accountability (coupled with limited capacity) for service delivery by the government (at the local and national level) vis-à-vis the Yemeni population.

In this context, strengthening local governance, including decentralization of responsibilities of service delivery to local governments, could help improve local urban service provision—and will need to be

addressed over the medium term after the current crisis. Improved local governance could improve service delivery by making sure local preferences, endowments, and capacities are taken into account. Furthermore, cities will need to be equipped with a fuller range of responsibilities, including in the areas of local fiscal policies (i.e., local taxes/fees etc.), local government staffing, including remuneration levels, as well as independent decision-making authority.[143]

Decentralization is actually not new to Yemen. Decentralization became a priority policy for the government after the civil war in 1994. The Ministry of Local Administration was created in 1995 and the first Law on Local Administration was enacted in February 2000, following about six years of public debate. It provides Yemen's basic legal framework for decentralization and contains important provisions for local elections—which took place in 2001 and 2006. The Law was a major step in imparting Yemen's lowest level of government, the Local Councils, with significant control over budgetary allocations and over local branches of key ministries. This law provided the legal foundations for the functioning of the local authorities based on four pillars: broadening popular participation through elected local councils; financial decentralization; administrative decentralization; and decentralization of service delivery functions. However, actual progress with decentralization has been slow so far. The credibility and effectiveness of Local Councils have been undermined due to capture by either the central government or tribal elites, or by highly constrained fiscal autonomy, severe shortage in capacity and lack of institutionalized avenues for accountability to citizens. The decentralization process in Yemen, while delivering some improvements in terms of capacity building for local government and delivery of services to some districts, has been largely stalled.

In addition to creating conditions for greater local accountability, there is a major need for improved transparency. It is important for the citizen to have access to information concerning their city, for example through the installation of computerized data management system and corresponding access to government data. Having such a system accessible to the public will help improve transparency in revenue collection, hiring of staff (civil and non-civil servant), planned investments, expenditures, greater autonomy for local government in introducing changes to local taxes and fees, and so forth. Revenue collection methods also should be revisited. The current methods of tax collection, for example, whereby a tax authority will send someone to bargain how much a citizen is to pay provides opportunity for bargaining and wrongdoing. Greater transparency also could help reinforce accountability at the local level.

5.5.4 Recommendations

To respond to the damages caused by the current crisis, there is a need to mobilize resources to address all the urban service damages caused by the crisis. The initial estimate of required incremental financial investments is US$43 million. However, it is important that, beyond simply responding to the need to address the physical damages, some of the underlying causes of poor urban service delivery—even before the crisis—be addressed. Some of the key recommendations are as follows:

[143] These would be extensive changes and as a result would need to be implemented in a gradual way. One possibility is to pilot a reformed approach in one city, such as Ta'iz that has relatively strong local capacity and reform willingness. The Bank also is deeply engaged through the ongoing Ta'iz Integrated Urban Development Project (and many other projects over the past 20 years). With regard to procurement, for example, the city can adopt the model of the Public Works Project-PMU structure to implement all projects, including procurement related activities financed by the different line and central agencies in the city and governorate as a whole. Staff of this unit should be lean and recruited competitively and be paid remuneration compatible to the private sector. This would help in sustaining the quality of operations and at the same time replace the current practice of each represented office of a line ministry or central agencies having its own technical unit to carry out and implement projects, which has proven to be not cost effective and to deliver sub-standard quality works/assets. Under one implementation agency, the standard could be maintained and improved over time.

- *Greater Empowerment and Accountability*. As mentioned, local governments are currently not fully empowered to respond to the local population needs because of the highly centralized nature of the Yemen state and corresponding centralized decision-making processes. In addition to the limited empowerment of government at the local level is an inherent lack of accountability for delivering local urban services to the Yemeni citizen. Therefore empowering local governments to improved accountability and service delivery is a high priority post-crisis reform agenda.
- *Improve Transparency*. Improving local governance through promoting transparency in revenue collection, budgeting, staff appointments, and other related matters is also required. As a minimum first step, improved computerized management information systems would need to be installed and the resulting data gradually made open to the public. Absence of transparency to local citizens coupled with limited capacity to monitor local and central revenues are added constraints to city management. These administrative challenges are major constraints in the Decentralization Law No. 4 of 2000 and need to be addressed to allow for direct involvement of local governments in the management of their governorates in an effective and responsible manner.
- *Improved Coordination*. Fragmentation and absence of coordination in decisions making at the city and governorate level are added constraints to city management. Some local government officials would like it to stay that way so that accountability is diluted. By having a management information system in place, city officials and citizens can monitor performance of the different entities in their city. Non-performing entities or individuals could be singled out and supported to improve their performance or removed if performance remained unsatisfactory. Citizen satisfaction surveys would be conducted on regular basis to measure improvements in the performance of the governorate/city.
- *Fragmentation*. There is a need to establish a single responsible agency to manage and implement basic infrastructure services in the governorate, thus moving away from the current fragmented practice whereby each branch office of a line ministry or central agency does its own procurement, contracting, construction supervision, and so forth. Apart from not being practical and cost effective, effective responsibility for delivery of quality products across the board could not be secured for a number of reasons including: lack of accountability to the local government, conflict of interest (same unit manages and supervises contracts), absence of cost and quality control, breeding ground for collusions, and others. Another weakness in the current approach is that it provides opportunity for corruption, accepting sub-standard quality works, lower productivity but with higher operating costs, and other related concerns.

5.6 Electricity Sector

5.6.1 The Impact of the 2011 Crisis

The political and social event in 2011 had a major adverse impact on the electricity sector. Physically, frequent and sustained damages were made to the 400 kV transmission lines that transmit electricity generated by the 340 MW gas-fired Mareb I power plant to the load center in Sana'a area. The transmission lines were damaged over 100 times in 2011, most through shooting or metal crossing to cause short circuiting. On three occasions, one or two of the transmission towers sustained damages that took weeks or even several months to repair. The damage resulted in the failed operation of the transmission lines for most of the year. There were some damages to other transmission lines and the distribution system in major

cities like Sana'a. Although most of the HFO and diesel fired power plants were not physically damaged, the lack of fuel due to the damage to the oil pipeline from Mareb oil field to the refinery in Aden seriously disrupted the operation of most power plants. As Sana'a was mostly supplied by Mareb I power plant, the disruption in electricity supply for Sana'a area was the most significant. The supply disruption in other major cities like Aden was less serious compared with that in Sana'a.

As a result, the monthly electricity supply by the Public Electricity Corporation (PEC) to non-government consumers declined steadily between May 2011 and December 2011, from the peak 322,629 MWh in May to 177,231 MWh in December. This resulted in the decline of sales revenue from YR 48.4 billion in May to YR 33.2 billion in December. The conflict also caused a significant decline in the bill collection rate from 96 percent in January to the lowest of 57 percent in June. The collection rate hovered between 60 percent and 70 percent during the July-November period. The sales revenue to the government, which pre-crisis accounted for about 10 percent of the total, declined sharply as the electricity sold decreased by 25 percent for most of the year and the collection rate declined to just over 10 percent for several months. PEC managed to collect enough revenue to pay for the staff salary and part of the fuel cost.

5.6.2 The Recovery in 2012

The damaged 400 kV transmission line was repaired in February 2012. The fuel supply was largely restored. As of early March 2012, a total of about 835 MW generation capacity was operational, including about 360 MW gas-fired capacity (for Mareb I which de-rates to 340 MW for operation in summer), 242 MW HFO-fired capacity, 168 MW diesel-fired capacity, and 65 MW rental diesel-fired capacity. This is the current available capacity in the integrated power system of PEC before new power plant construction or existing power plant rehabilitation. It is still less than the about 1000 MW capacity operational at the peak in 2010. The reduction in the total available capacity is the reduction in the signed rental diesel capacity. As the cost of the rental diesel power is so high, it is the correct decision by the government to significantly reduce the rental contracts for diesel power. The next major power plant to be commissioned is likely to be the Mareb II, which will be operational in about three years. Except the Mocha wind power project, which has yet to secure financing, there is no other major power plant under development that could be completed before Mareb II at this stage. The power supply situation is likely to get worse before it gets better in once Mareb II comes on line.

5.6.3 The Physical Damage

5.6.4 The Impact

The impact of the conflict on the power sector is significant, but very difficult to quantify. Construction and implementation of all ongoing and planned generation, transmission and distribution projects are on hold because all such work is being done by international contractors—and there is no sign yet when international contractors will resume normal work in Yemen. The impact on these projects is a delay in completion of at least one year. The most significant is the 400 MW Mareb II gas-fired power plants, which is urgently needed to replace some of the expensive diesel units and fill part of the demand gap. The EPC (EPC: engineer, procure, construct) contract was awarded and signed in early 2011. The plant was expected to be put into commission before end of 2013. Now the earliest possible date for commission is end of 2014, if the contractor is ready to resume normal work soon. In addition, the proposed power generation plants involving the private sector will be significantly delayed or may never materialize—at least for the foreseeable future. Two 60 MW HFO-fired power plants and a 220 MW rental gas-fired power plant were bid to select private developers prior to the crisis. The selection process was put on hold. Even if the process resumes, it is unknown whether the original firms would be

interested and whether they would be in a position to mobilize commercial financing for projects in Yemen in the near future. There were other power generation projects, including wind power, being discussed with private firms prior to the crisis. None are likely to materialize now.

In sum, the major impact of the 2011 crisis on the power sector is in the medium/long term rather than in short term. The delay in the implementation of ongoing and planned power generation, transmission and distribution projects will further worsen the already acute power supply situation in the coming years. Already connected consumers will continue to suffer from frequent and long hour of power shedding. New connections to areas and consumers which have no electricity access will have to be postponed. The delayed commission of gas-fired and HFO power plants is likely to further boost the use of diesel units by the consumers and revitalize the rental diesel units by the government. Such actions would further increase energy subsidy by the government and limit its fiscal space.

5.6.5 The Institutional Challenge

Although the conflict created a serious power crisis in 2011, the poor performance of the electric power sector is not a product of the conflict and crisis in 2011. Over the last decade, the electric power sector in Yemen has been characterized by little progress in expanding electricity access to the more than half of the total population without access, inadequate capacity addition to meet the growing demand by new industrial and commercial establishments in the grid-connected areas, and the frequent power shedding and extremely poor quality of services experienced by already connected consumers. In addition, the Government's subsidy to the electricity sector has continued to be a big drain on the country's limited fiscal capacity and has required diverting significant budgetary resources from other critical growth and poverty alleviation needs.

Such a situation is a result of the chronic setting of low electricity prices by the government and the monopoly of the sector by the poorly performing state-owned integrated power company, the Public Electricity Corporation. Well-intentioned Government policies to protect the poorest members of society and promote more equitable income distribution, in part through subsidized power tariffs, has contributed to the severe financial deterioration of the power sector. The across-the-board low tariff actually benefits more of the rich than the poor as they consume the overwhelming amount of the electricity supplied.

The PEC is not charged with the autonomy and responsibility for managing power development and operations according to commercial business principles. Instead, capital investment and operating decisions have often been made on political, not commercial or economic grounds. The planning, investment, tariff, and procurement decisions are made by a number of government bodies, including the Ministry of Planning and International Cooperation, the Ministry of Finance and the Ministry of Electricity and Energy. In fact, many of the key decisions are subject to approval by the prime minister, the president or even the parliament.

PEC is a large vertically integrated monopoly responsible for the generation, transmission as well as distribution of electricity in the country. It has 15,500 staff and hundreds of branches and units all over the country. However, PEC is poorly organized and all the managerial power concentrated in the hands of the top management in Sana'a. As a whole, PEC is not fully accountable for operation and business and has no incentives or pressures to improve its technical and financial performance. There is no clearly defined authority and responsibility among the various parts and units. There is no accountability and incentive for each of the business lines or units or branches to perform to a set standard. PEC has not been a commercially viable business enterprise for a long period time. Its technical performance has been poor by any standards, to the point where power outages, load shedding, and substantial voltage irregularities are common and widespread. Transmission and distribution losses (commercial and technical) are as high as 29 percent.

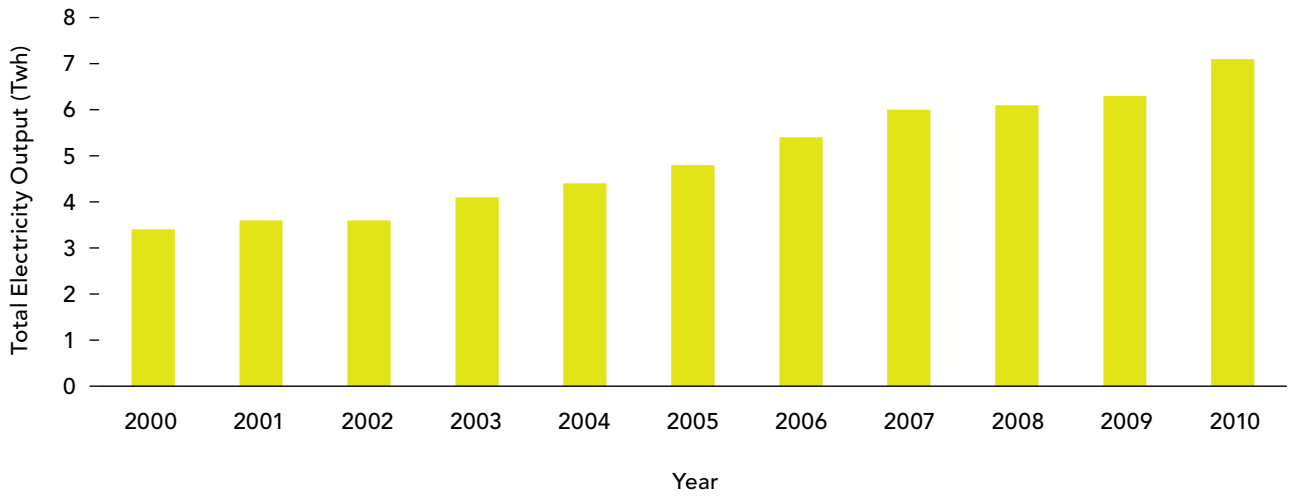
5.6.6 The Development Challenge

Low Access Rate: Despite the rapid increase in total electricity consumption over the past decade (Figure 13), the per capita electricity consumption was at 256 kwh in 2010, compared with the world average of about 2,800 kwh. Yemenis have the lowest access to electricity in the Middle East and North Africa region with about 50 percent of the total population having access, compared to a regional average of 90 percent. Rural areas are particularly disadvantaged, with only 20 percent of the population having access to electricity. Yemen's economy and citizens will need more modern energy to run their homes, offices, and factories, and their appliances and transportation needs. These developments will reduce poverty levels and improve the quality of life, a legitimate aspiration that would need to be accommodated. Yemen's electricity consumption is set to continue growing rapidly in tandem with economic and population growth once the country stabilizes.

Massive new investment in the power sector will be needed to satisfy continued rapid growth in the next two decades. The latest Power Development Plan (2009–2020) forecasts a total capacity demand of 3,102 MW, at an annual growth rate of 10 percent over the next decade (Figure 14). New capacity of 3,538 MW by 2020 will need to be added to the grid to replace the retiring units and accommodate this growing demand with sufficient capacity margin. The total investment required for building the needed generation capacity and the associated transmission and distribution facilities is estimated to be over US$5 billion. Demand projections are based on an average GDP growth rate of 6.5 percent up to 2020, the minimum required for Yemen to maintain current employment.

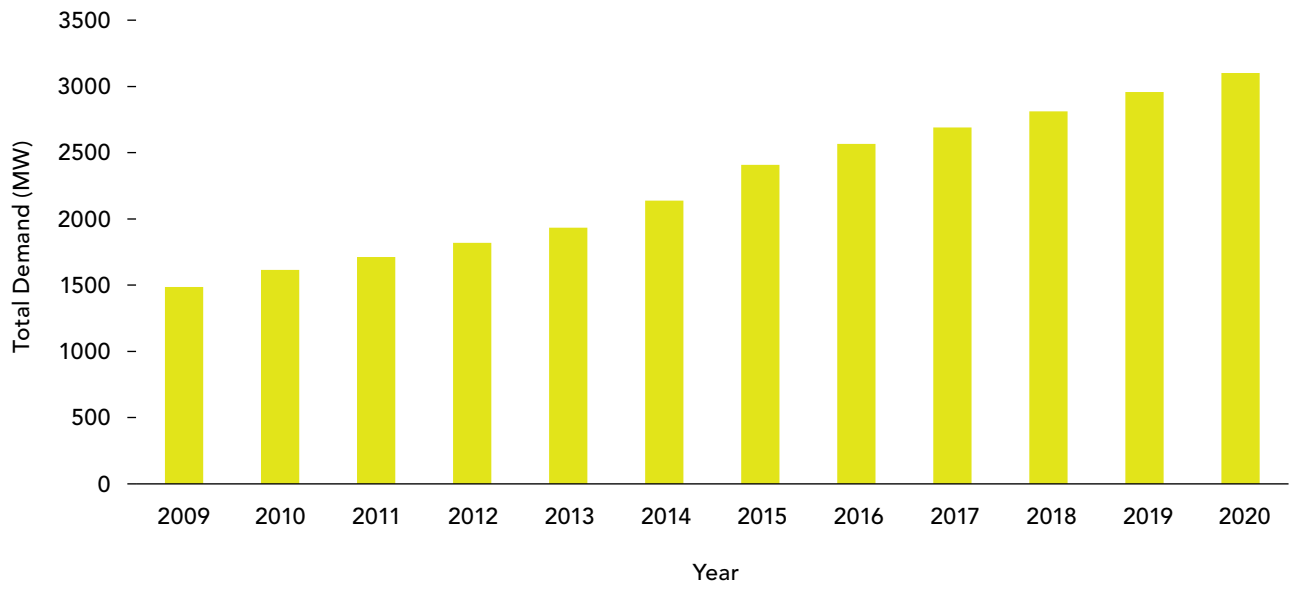
Dominance of Liquid Fuel: In 2010, electricity in Yemen was generated by the combustion of heavy fuel oil (45 percent), diesel (28 percent) and natural gas (28 percent). As a result of the dominance of liquid fuel in power generation and the relative low efficiency of many power plants, the economic and financial costs of electricity generation and supply are extremely high. In contrast, the average level of consumer tariff is very low. The electricity sector is heavily subsidized through direct government subsidy for fuel and indirect subsidy through investment. It is estimated that total fuel subsidy alone to PEC in 2010 was as high as US$330 million, and total subsidy to the power sector was about US$550 million, about 14 percent of the

Figure 13: Yemen's Electricity Output Growth



Source: Public Electricity Corporation, Yemen.

Figure 14: Forecast Power Demand in Yemen



Source: Public Electricity Corporation, Yemen.

total government budgetary expenditures. This put a major burden on the government's fiscal balance and crowded out social expenditures.

The Government planned to move towards a gas-fired power generation system and put the first gas-fired power in operation in 2009. However, as of 2010, certified gas reserves is reported to be 10.2 tcf, of which about 9.2 tcf has been committed for exports as Liquefied Natural Gas (LNG). The government has allocated 1 tcf of certified gas reserve for power generation. The amount is only sufficient to support the operations of the Mareb I power plant at 80 percent capacity factor for 25 years. There are other proven reserves which are not yet certified. But the total current uncommitted proven reserves are reported to be only sufficient to support Marb I and II, which are either in operation or under construction, with a total capacity of about 1000 MW for 20 years. They are far from sufficient to meet the required fuel demand for power generation expansion. There are other reserves which are yet to be proven before a firm power generation plan could be developed.

Renewable Energy: Clearly the diversification of energy supply away from petroleum products and gas, and introduction of new generation technologies is vital to the long-term sustainable development of the energy sector. Yemen is endowed with significant renewable energy resources such as solar, geothermal energies, and particularly wind (Figure 15). These resources are capable of sustaining large-scale commercial power development as well as small-scale decentralized systems to meet the energy needs of rural and remote communities. Supported by a Global Environmental Facility grant implemented by the World Bank, a detailed assessment was made of renewable energy resources potential in Yemen that could be exploited for grid and off-grid electrification. The resources assessed include wind, solar, geothermal, small hydropower, and biomass energy resources. The estimated theoretical and technical potential of renewable energy resources are shown in Table 22.

The competitiveness of generating electricity using renewable resources was examined against other options available in Yemen. The preliminary estimation is that the gas-based Combined Cycle Gas Turbine (CCGT) using locally produced natural gas is the

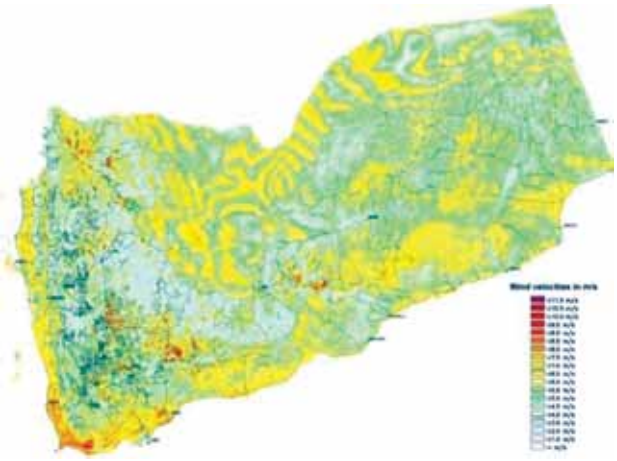
most cost effective option. Except concentrated solar power (CSP), all other renewable technologies have lower dynamic unit cost than diesel power generation. However, wind power could only provide intermittent electricity; its real value to the power system decreases when the wind capacity in a system reaches a certain percentage of the total system capacity. A detailed economic analysis will be needed that takes into account all factors, including the characteristics of the demand carve in the power system, transmission system, and the expected supply curve of wind power and the locations of the wind farms.

Rural Electrification: In its Power Sector Development Strategy Note of 1997, updated in 2006, the Government committed to a nationwide rural electrification program. It is generally considered that electricity supply is an essential service, which should be extended to all citizen of a country. However, there are a issues concerning this goal that must be taken into consideration. Electrification of a country with universal access is a gradual process that typically takes several decades to complete. The speed at which universal access is achieved needs to be compatible with the speed of industrialization and the growth rate of the economy in a country. Therefore, in any country at the developing stage, only a portion of the population will have access to electric service. Yemen should be with no exception that the progress in rural electrification should be compatible with the size and strength of the country's economy.

The inequality in electricity access is significantly increased if electricity service is heavily subsidized and priced at only a portion of the supply cost. The effect of this policy is that the portion of the population with access to electricity receives a subsidy from government budget that is not available to the portion of the population without access. Heavily subsidized prices also deprive the sector of generating revenue for investment and impact the government budget. Both of these outcomes ultimately slow down the electrification process. The poorest group in the most remote areas would be most affected. If electricity service is, rather, treated as a commodity to be provided at full cost to those who can afford it, the extent of inequality would be significantly reduced.

Physically, rural electrification can be achieved through a combination of extension of the main grids

Figure 15: Wind Resources of Yemen at 50 m above Ground Level According to Mesoscale Model (2006)



Source: Government of Yemen and JSEA Staff.

Table 22: Grid-based Renewable Energy Potential

Resource	Theoretical (MW)	Gross Technical (MW)	Practical Technical (MW)
Wind	308,722	123,429	34,286
Geothermal	304,000	29,000	2,900
Solar Electric (CSP)	2,446,000	1,426,000	18,600
Biomass	10	8	6
Hydropower	12–31	11–30	—
Solar Thermal (SWH)	3,014 MW thermal	278 MW thermal	278 MW thermal

Source: Renewable Energy Development Strategy, prepared by Lahmeyer International for MoEE, Yemen.

and development of isolated grids in remote areas as is currently the case in Yemen. The factors that affect the decision include the size of the main grid, available generation options, geography, and detailed study of the country. Ultimately, however, the decision depends on the economics of available power supply and delivery options. In a country where power is primarily generated by large power plants with economy efficiency of scale, with ample resources such as coal, nuclear, natural gas, then extension of the grid to most regions, except the isolated remote areas, is normally the more economic choice. In a country where power is primarily generated by HFO and diesel with little economy and efficiency of scale in power plant operation, local and isolated grids to serve many regions may be more economical, particularly when the terrain is very difficult and population is sparely located. For isolated grids, there is also the issue of whether home-based renewable energy systems are more economical than diesel or HFO generated power. Currently in Yemen, it is not very clear how the decision is made when a certain area is electrified. Renewable energy is difficult to promote as petroleum products are heavily subsidized.

Institutionally there are the choices of the main power companies, such as PEC, to be fully responsible for a country's rural electrification program, or many entities, including dedicated government agency, the private sector, local communities and cooperatives, to participate in rural electrification program. Until 2009 PEC was the principle entity to implement rural electrification program in Yemen. Then the General Authority of Rural Electrification was created to be responsible for rural electrification. The intention was to mobilize additional financial resources and create financial viable rural electricity service providers in newly electrified areas. But it is questionable whether new consumers in these areas are willing to pay cost-reflective tariffs when the existing consumers are paying heavily subsidized tariffs. Without cost-reflective tariff, it is difficult to mobilize additional financial resources. If electricity prices fully would reflect the cost of supply, the private sector or any investor could develop and provide electricity service anywhere the consumers are willing to pay. Otherwise, the rule of subsidy needs to be very clear and transparent to encourage investment and private sector participation.

5.6.7 Proposed Sector Reform by Government

The GOY has fully realized that it could not afford to continue the subsidy policies as it has followed in the past and it needs a financially sustainable and technically sound power sector to support the GOY's twin objectives of high economic growth and poverty reduction. For a decade prior to the political crisis, the Government, assisted by donors and international consultants, had been developing a power sector development strategy and preparing a plan to restructure the power sector that would provide the principles to be followed and key actions to gradually put the sector on sustainable footing. The key elements considered include:

- Fully separate the policy making functions of the government from the business operations of the power entities so that the government ministry is no longer involved in the operation of the power companies—publicly owned or privately owned.
- Create an independent regulatory body to provide sector regulation and promote competition.
- Unbundle the vertically integrated PEC into legally and financially independent power generation, transmission, and distribution business entities.
- Corporatize the power generation, transmission and distribution entities and operate them according to commercial principles.
- Significantly improve the technical performance of the sector through reduction of technical and non-technical losses, increased investment efficiency, and increased system availability and reliability.
- Develop separate generation tariffs, transmission tariffs and distribution tariffs and price

each one to ensure recovery of prudent costs and earn a reasonable rate of return so as to improve the financial viability of the sector.

- Promote diversification of financing sources and encourage entry of new participants, including private players and financing.
- Promote competition in the generation segment and power supply business.

A first, but very important step was taken by GOY to implement the proposed power sector reform strategy and plan. A new Electricity Law, which embodies most of the above principles and elements, was approved by the parliament in February 2009. The plan was to implement the reform as articulated in the Law within three years of its approval. But so far, no steps have been taken and nothing has happened.

5.6.8 Structural Change: A Means not an End

It is a common practice for countries pursuing power sector reform to start by unbundling vertically integrated power entity into generation, transmission, distribution, and even supply business entities. In the generation segment, a number of generation companies are created to own and operate the generation capacity previously owned by incumbents. The distribution activity is also divided into several franchise areas run by different companies. Although the unbundling and breakdown create the conditions for better cost accounting according to business activities and are essential to introduce competition, directly or indirectly, they themselves do not generate efficiency improvement. In actuality, they could contribute to increased transaction and administrative costs as more management teams are created and the command and orders between business activities are replaced by contracts. Particularly, the Yemen's power system is very small with a total installed capacity of less than 1000 MW and Yemen has a very limited number of high caliber managerial staff and technical experts. Therefore, care should be taken to avoid fragmenting the sector too much and further stretch the limited human resources during unbundling.

More importantly, unbundling the sector and creating more companies does not automatically lead to increased competition and improved sector performance. Actually it is unlikely to have genuine competition in such a small power system for decades to come. But it would create the conditions for entry by equity and debt participants other than incumbents. For this to happen, the assets have to be clearly separated and defined. Even if all the companies are still owned by the government, there need to be separate boards and management teams for each company. There must be clearly defined contractual relationships among the participants in the different segments. Having a large number of companies would not bring any benefits if all the companies are under the same management—there is no autonomy and accountability, and there is no clear contractual relationship among them. International experience that it is corporatization and full commercialization of the power sector, rather than simply unbundling, that brings efficiency improvement and increases sector financing.

5.6.9 Reforms are Critical – Recommendations

The government's involvement in the power sector is pervasive. Without fundamentally changing the roles played by the government and the manner in which these roles are played, any reform of the power entities will likely only yield marginal benefits. At the best, the unbundling of the sector and improvement in management practices would reduce electricity loss, improve collection rates, and reduce fuel consumption and other operating costs to some extent. But key issues such as financial viability, adequate financing, timely investment decisions, and adequate power supply capacity would hinge on changed behavior and actions by government.

The Short-Term Actions

Consensus on Direction and Strong Leadership for Change: The Electricity Law provides a clear direction and guiding principles on how the sector should be

restructured, but whether the restructuring will deliver the expected outcomes will depend on what and how the law will be implemented. Therefore, it is critical for the Yemen government to have strong leadership during the entire reform process. Strong leadership will ensure critical issues are resolved and required decisions are made in a timely fashion. The high-level government leading group should be supported by a working group consisting of a diverse group of high caliber experts covering all major aspects of power sector reform. The communication channels between the leading group and working group should be smooth. As the restructuring is likely to redistribute the power and interests of existing stakeholders, it is important that the decision makers are independent and have no vested interests in the sector. Currently the government leaves the implementation of the reform in the hands of MOEE. This is not likely to work as the power sector involves many other government bodies and MOEE itself should be in the center of the restructuring and reform.

Focusing on Institutions. In order to put the power sector on a sustainable development path, there needs to put in place an accountable institutional framework. It is very important that the institutions are equipped with capable technical and managerial staff to carry out their duties and responsibilities. But it is much more important that each institution, manager, and staff is given clear rights and responsibilities and is made accountable for their performance. Broadly, there are two categories of institutions: the government bodies which make sector policy, provide sector regulation and excise the ownership rights; and the public power entities which mange the investment and operate and maintain the assets. The key issue for the government bodies is to clearly define each actor's rights and authorities, make each act only within its own power sphere and improve the effectiveness and efficiency of their decision making. The key issue for the public power entities is to make them run as efficient commercially oriented business, have autonomous management. and clear procedures to ensure accountability.

Reducing Power System Losses: Some 30 percent of Yemen's power generation is lost in the transmission and distribution system, compared to losses of less than 10 percent in developed countries and of less than 15 percent in most developing countries. The main cause of high losses is the prevalence of old, out of date equipment and increases in system load well over the carrying capacity that they were originally designed for. In the distribution system, high loss transformer models still dominate in most areas. An international consultant carried out a loss reduction study recently and a number of ways for loss reduction were identified. The study also showed that the unit investment cost for reduction of losses (per kwh reduced) is much lower than the unit cost for electricity generation. It should not be a huge challenge for PEC to reduce distribution losses in cities like Sana'a to below 20 percent.

Increasing the Efficiency and Availability of Existing Generation Capacity: More than 20 percent of PEC's existing power generation capacity is not available due to the lack of spare parts and inadequate maintenance. The fuel efficiency of both HFO fired power units and diesel powered units are very low by international standards. PEC fuel efficiency ranges from 0.426 liter/kwh to 0.323 liter/kwh for HFO units, and from 0.298 liter/kwh to 0.231 liter/kwh for diesel units. There appears to be quite a bit room to improve the generation efficiency of existing power plants.

Increase Bill Collection Rate: PEC continues to suffer from a low rate of bill collection. Although the overall bill collection rate reached 94 percent in 2009, it declined to 86 percent in 2010. An 86 percent bill collection rate effectively reduces PEC's average consumer tariff from 17.34 YR/kwh to about 13 YR/kwh. PEC's average age of receivables for non-government consumers and government consumers stand at about four months and nine months respectively in 2010. PEC should aim to achieve a bill collection rate of 95 percent and an average age of receivables of three months in the next couple of years.

Box 17: Distribution Improvement and Loss Reduction

The total amount of electricity in the transmission, distribution and consumer chain which was not metered and billed is reported to be 29 percent of the total electricity delivered from the power plants countrywide in 2010. The 29 percent consists of both technical loss and non-technical (commercial) losses. At a collection rate of 86 percent in the same year, the percentage of electricity that was not billed and paid is 33.7 percent. This represented the loss of just more than one-third of PEC's total revenue. The electricity loss was the highest in Sana'a area, at 37 percent as compared to the national average of 29 percent. This illustrates the factor of high commercial loss because technical losses are normally much higher in sparely populated rural area than in populated urban area. However there are no specific data on the portion of technical loss and commercial loss. Among the total 29 percent losses, PEC's estimated technical losses are around 19 percent and commercial losses around 10 percent. An international consultant estimated technical loss in Sana'a area at only 12 percent and commercial losses at about 25 percent.

The main causes for high technical loss include: inadequate size of conductors, lengthy overhead HV/LV lines, low power factor, overloading of lines and substations, poor standards of construction, voltage drop in LV networks, and inadequate feed arrangement. The primary reason for the high commercial loss is the lack of management in the power utility. The other reason is the lack of IT support and quality meters to measure and bill consumers' consumption.

The technical loss can only be reduced by making investment in rehabilitation of the network. PEC's preliminary study of the entire distribution network would require a total investment of about US$130 million over a three-year period. The investment would cover the rehabilitation of low voltage network, medium voltage network, and 33/11 kV substations in 24 governorates. Upon completion of the investment program, the average technical losses could be reduced by four percent. This would be about 250 Gwh per year, equivalent to the annual output of a 60 MW power plant operating at 50 percent capacity factor. The construction of a 60 MW HFO/diesel power plant would cost about US$30 million. In addition, the reduced amount of electricity loss would help decrease the operating and fuel costs, at about US$70 million annually, of the plant to generate the same amount of electricity. The preliminary study by the international consultant {Mercados) in a pilot area of Sana'a indicates that a total investment of US$13.6 million over a five year period would reduce technical losses by 5.43 percent, the equivalent of about 101 Gwh of electricity annually.

Commercial loss reduction is much different from technical loss reduction, which mainly relies on extra investment. Commercial loss reduction relies primarily on improvement of the company's management. Areas for management improvement include: meter reading and billing process for all customers, revenue collection and recovery, the creation of dedicated energy accounting and audit cells, and organization restructuring to address its current weakness. Above all, the success of commercial loss reduction initiatives is contingent on the commitment and dedication of the entire organization. These organizational improvements will require a small amount of investment. But such improvements must be accompanied by replacement of all outdated meters and installation of meters for un-metered customers, which require more investment. Mercados's preliminary study in a pilot area of Sana'a indicates that a total investment of US$7.6 million for management and metering improvement over a five year period would reduce commercial loss by 20 percent, equivalent to about 373 Gwh of electricity per year. Such an amount of electricity would be equivalent to the annual output of a 90 MW power plant operating at 50 percent capacity factor. The annual fuel and operating cost to generate the electricity would be over US$100 million at current oil price (US$100/bbl).

Source: Feasibility Study for Distribution System Improvement and Loss reduction project by PEC, Consulting Services for Loss Reduction and Energy Audit, Mercados/NDPL/SyT, and PEC Annual Report 2010.

The Mid-Term Recommendations

Least Cost Generation Expansion: The current generation capacity consists of costly diesel-fired and heavy oil-fired units, and the 340 MW Mareb I gas-fired power plant consists of open cycle units instead of the more efficient combined cycle units. The ongoing Mareb II is planned to be constructed as 440 MW with open cycle units first and then be increased to 660 MW thorough converting to combined cycle units. The Master Generation Plan prepared five years ago envisaged that the generation mix would consist of more than 95 percent gas-fired capacity by 2025. It was recently discovered that Yemen is unlikely to be have with the natural gas resource to support such a large generation capacity. Actually, it is yet to be determined whether Yemen has additional gas resources to support new gas-fired power plants beyond Mareb I and Mareb II. With a gradual decline in oil production, it is also unlikely that Yemen could afford to further expand its HFO and diesel fired generation fleet. The other technical available options to meet Yemen's increasing electricity demand include the development of nuclear power plants, coal-fired power plants with imported coal, gas-fired power plants with imported natural gas or buy-back LNG, as well as renewable-energy-based power generation.

Several preliminary estimates were made in recent years on the relative cost ranking of the various power generation options available to Yemen (Table 23). Gas-based Combined Cycle Gas Turbine (CCGT) appears to be the most cost effective option. Therefore, both CCGT based generation capacity and their hours of operation should be maximized, up to the limit that sufficient gas is available and could be economically extracted. Coal-fired power generation is internationally quite competitive, particularly in regions where coal is produced locally. Yemen may take proactive steps to investigate and explore the option of meeting part of the future electricity demand through coal-based power generation plants. Renewable-energy-based generation, particularly wind-based power, may be competitive and could play a significant role in helping resolve the energy supply constraints and meet increasing demand. There is an urgent need for Yemen to develop an updated master generation plan which should determine the least cost generation mix to meet the country's power needs in the coming decades. Since both oil products and natural gas are internationally tradable goods, even for locally produced oil products and gas, their full economic prices, rather than the cost of production in Yemen, should be used in determining the least cost generation mix of meeting Yemen's electricity demand.

Update Rural Electrification Strategy: Although a rural electrification program was developed in 1997 and updated in 2006 as part of the Power Sector Development Strategy, it needs to be updated to take into consideration of the changes in the sector and implementation experiences in the last few years. The rural electrification strategy needs to make careful trade-offs between the extension of the main grid and the development of local grids by taking all possible factors into consideration. The strategy also needs to examine and review the development of renewable-energy-based electricity against liquid-fuel-based electricity by accounting for the full economic costs of power generation and delivery. Institutionally, the proposed arrangement and framework needs to fully consider the overall sector-restructuring objective, the social and political context of the local communities, and the lessons learned in recent years. The implementation schedule needs to be compatible with the affordability and willingness-to-pay of the consumers if tariffs reflect supply cost, and the status of the economy and fiscal constraints if price continues to be heavily subsidized.

Steps toward Financial Viability: Financial viability of the power sector means that the operating power entities are able to generate adequate revenue to meet all operation expenses and to finance capital investment needed for rehabilitation and expansion from their own resources or to attract sufficient external capital for this purpose. This would require the average consumer electricity tariff to adequately cover the full cost of power supply.

Table 23: Indicative Costs of Electricity Production by Technology Types

Technology	Levelized cost ($ cents/kwh at 15 percent WACC[a])	Technology	Levelized cost ($ cents/kwh at 2 percent WACC)
CCGT conv.	3.1[b]	CCGT conv.	1.2
Coal	7.7–8.9	Wind	4.3
Gas CCGT	10.5[c]	Coal	5.2–5.5
Wind	10.8	Solar PV 2015	7.6
Gas CCGT (LNG buyback)	12.9[d]	Geothermal	3.9–8.6
Gas OCGT	13.9	Gas CCGT	7.4
Geothermal	9.4–20.4	Solar PV	10.0
HFO	16.1[e]	Gas CCGT (LNG buyback)	11.2
Gas OCGT (LNG buyback)	17.4	Gas OCGT	12.3
Diesel	19.3[e]	HFO	13.7
Solar PV 2015	21.6	Solar CSP	14.6
Solar PV	29.6	Gas OCGT (LNG buyback)	15.8
Solar CSP	34	Diesel	17.8

Source: Mackenzie: Creating an Executable Roadmap for the Power Sector in Yemen, provided by Ministry of Electricity and Energy, Yemen
[a] WACC= Weighted Average Cost of Capital
[b] Gas accounting cost of US$2/mmbtu
[c] Gas export opportunity cost of US$10.5/mmbtu
[d] YLNG buyback price of US$13/mmmbtu
[e] Average crude oil price of US$10 0/bbl.

In view of the current financial position of PEC and the planned power sector restructuring, it is likely to take quite a few years to bring the financial position of PEC to a sound footing through tariff increase and performance improvement because this would mean a significant tariff increase for the residential consumers. Therefore, the following approach is proposed to gradually achieve sector financial viability. Once generation is separated from transmission and distribution, it is suggested that all power plants be corporatized and commercialized. Each of them will sell their outputs to the transmission company at pre-determined tariffs that are adequate to cover the cost of generation. For all new power plants, the wholesale tariff should be adequate to cover the capital costs of constructing the plants as well as the operating costs. For existing power plants, the tariff should be adequate to cover the cost of serving remaining debt, if any, and the cost of operation. But an incentive system should be built into the tariff formula to encourage least-cost investment and efficient plant operation.

Once the distribution business is separated from the transmission activity, it is also important to ensure that the distribution companies are financially viable. If the consumer prices continue to be subsidized, they should be subsidized through low prices from the transmission company. The distribution margins charged by the distribution companies should be adequate to cover the costs of distribution services. But adequate incentive mechanisms should be built into the pricing system to promote the gradual reduction of distribution losses and increase distribution efficiency.

Once the vertically integrated PEC is separated into generation, transmission, and distribution businesses, initially it is probably better to put all the financial loss of the sector in the transmission company, rather than have all the companies share the losses. This would facilitate the discipline of the generation and distribution companies from the beginning, and make them operate on fully commercial principles. The transmission company could have a separate account for the

loss so that it could show clearly to the government what amount of subsidy it would require.

If PEC is not going to be unbundled very soon, it should financially ring-fence its different business activities, so that PEC's management is very clear how its different businesses are operating and where the inefficiencies are. Then it should develop detailed performance indicators for its business units to gradually improve performance within a limited timeframe. Once the various business activities are vertically and horizontally ring-fenced, PEC management can benchmark the performance of the various business units.

Financing the Expansion: Currently all PEC's power generation, transmission and distribution projects are financed through allocations by the government, which either borrows from multilateral/bilateral institutions or uses its own fiscal revenue. PEC's internal revenue from the sales of electricity is barely adequate to finance the maintenance and operation of its existing assets. Because PEC's financial position is so poor and the domestic banking and capital markets are underdeveloped, they are unable to intermediate domestic and foreign savings into the power sector. Under the current industrial structure and electricity tariff regime, no other domestic or foreign investors are willing and able to channel equity funds into PEC's generation, transmission, and distribution business.

The power sector in Yemen is faced with a huge investment requirement in the coming 15 years. The traditional approach—to rely solely on government funding—is unlikely to meet the sector expansion needs. Various options to mobilize domestic and foreign capital to meet these important needs must be considered.

Mobilize Domestic Finances: As the power sector does not generate foreign currency directly, it is always more difficult to attract direct foreign investments into the sector since they require a creditable guarantee of both the convertibility and availability of foreign exchange. However, the power sector is considered one of the most reliable sectors for domestic long-term investment under the right policy and regulatory environment, particularly tariff policy. The prerequisite for the forthcoming of domestic debt and equity funds are the commercialization and corporatization of the sector and the implementation of cost recovery tariff system.

In view of the current status of the power sector, it would take some time to fully commercialize and corporatize the entire power sector and put PEC onto a financially viable footing. A gradual and more practical approach is to structure new investments as financially independent entities and to allow them to charge cost recovery tariff on prudently incurred costs and to earn a reasonable rate of return on equity. Based on international experiences, new generation power plants are usually easier than other segments to open to and attract new equity investment and debt finance.

Initially, the equity investors could be large industries that are looking for reliable electricity supply, local infrastructure developers, and overseas Yemen entrepreneurs that are willing to take local currency revenues. The lenders could be local pension funds and banks, which do not look for high, but rather stable earnings. Currently, the large industry consumers often build their own small, but costly diesel generators to meet their electricity needs. One way to encourage them to contribute to new big gas-fired power plants is to allow them to have an equity share in these power plants. Through equity participation, they could be guaranteed the supply of electricity proportional to their share even in power-shedding situations.

Encourage Foreign Financing

To encourage investment by independent power producers (IPPs), the government need to formulate a basic policy framework that would provide for competition at entry on the price of power supplied, mitigate investor concerns on country and policy-based risks, and adequately assign commercial risks to prospective investors. The success of the LNG project shows that international investors and lenders are willing to take the political and country risk of Yemen. But the difference for power plant is that it does not generate products which could be sold directly in the international market to earn hard currencies. The critical additional

risks that the investors and lenders will face are the electricity off-take and revenue payment by PEC, the foreign exchange fluctuation, the convertibility of local currency, and availability of hard currencies risks. In view of the very poor financial position of PEC, all these risks need to be borne by the Yemen Government. It is yet to be tested whether and what risk mitigation measures and arrangement could be made to attract the interests of international investors and lenders to a Yemen power project. The best way to do it is put a real project into the market.

Benefits of Private Financing

There are a number of benefits associated with the introduction of private sector financing for power projects: (i) it will bring a large of amount of financial resource to the sector in addition to the funds provided by multilateral and bilateral donors to fill the funding gap to meet the sector's huge financing needs; (ii) it will bring the most advanced technologies, skills, and technical and managerial know-how for power project construction and operation to drive change in the sector; (iii) it is likely to significantly improve efficiency in construction and operation and thus reduce the cost of capital construction and power system operation; and (iv) it will shift most of the commercial risk—such as cost overrun, construction delay, and operation failure—from the government to the private sector. There are also some costs associated with private sector financing. The most obvious is that the cost of private capital is likely to be much higher than the cost of donor funding as both loans and equity funds will charge market rates plus risks premiums. But the additional cost is likely to be offset by efficiency gains in construction and operation activities. It should be noted that the private sector will not take risks beyond its control such as the political risk, the power demand risk, or the currency risk. These need to continue to be shouldered by the government through government guarantee.

It should also be noted that the introduction of private investment does not need to be associated with the full privatization of the sector and/or the implementation of full cost-recovery electricity pricing. It does not necessarily disadvantage rural electrification programs or electricity supply to remote areas. But the government subsidy policy needs to be clearly defined and made transparent. Yemen is unlikely to have a competitive power market for many years to come, so there will be no real competition in the market. But a transparent competitive process can be developed for entry into the market (competition for market), either in developing distribution and generation projects or in operating and maintaining distribution and generation assets.

Increased Self-Financing by PEC

Adequate sector self-financing of new investments is vital for the sustained development of the industry. This means that power companies require a market-determined rate of return on assets. Increased power sector financing requires pricing reforms based full recovery of supply costs. These measures will be essential if power companies are to become financially viable entities, able to access funds from capital markets on commercial terms based on their own financial performance and the strength of their balance sheets. To avoid one-time price hikes, pricing reforms can be implemented in stages. First, the price level should ensure adequate revenue to fully cover the maintenance and operation costs of existing assets. Second, the price level for new investments should be adequate to cover both the capital costs and the operation costs.

New Pricing Regime Critical

As PEC is a vertically integrated utility which owns all the grid connected power plants as well as the transmission and distribution facilities, and there is no financial separation or ring-fencing of the different business activities, Yemen does not have a complex electricity tariff system made up of wholesale price, transmission price and retail tariff as in many countries. Instead, Yemen has only one type of price, which is the retail

tariff charged by PEC to its final consumers and includes six rate classifications defined by customer class. The current pricing system is far from adequate to serve the needs of the sector. The average retail tariff level is well below the cost of supply and could not recover adequate revenue to maintain the financial viability of the sector. Both the tariff level and structure do not encourage sector investment and efficient use of the limited electricity resource. Major efforts are required to rationalize the power pricing system so that it can meet the financial needs of the expanding sector as well as promote investment, allocation, and consumption efficiency. Any attempt and efforts to restructure the power sector will fail without getting the price regime right. In a commercialized power sector, pricing should help achieve the following goals:

- Mobilization of adequate funds to ensure that investments are financed by revenues generated by the sector and commercial loans rather than government allocations.
- Rationing of the available supply among potential users to ensure that electricity is assigned to consumers that will generate the highest economic benefits.
- Optimal use of the electricity sector's capital, fuel, and labor to maximize output at lowest cost.

Depending on the structure of the electricity industry, the electricity pricing system could be very complex and consist of many types of prices. But retail consumer price exists in all electricity systems. In a regulated power industry, retail tariff should be based on marginal-cost principles to ensure adequate allocation of supply among end users and efficient use of electricity. The application of marginal-cost principles implies that tariffs distinguish between customers with different demand characteristics and cost of service. The current tariff for the different categories of consumers in Yemen is determined according to perceived affordability rather than the cost of supply. A rationalization of the tariff system would imply major price increase for residential consumers, but probably price reduction for the large industrial consumers. The adoption of "lifeline" tariffs for residential consumers is common in many countries. These tariffs are intended for low-income households. Under such a scheme, households would pay full cost for electricity consumption over a basic lifeline level, which could be about 50 kwh per month. This type of tariff would avoid subsidizing high-income households, which usually account for the largest share of household electricity consumption.

In view of the planned sector reform, future electricity prices in Yemen are likely to consist of three types of tariff: generation tariff at which the power plants sell their outputs to the transmission company; transmission tariff at which the transmission company charges for transmitting the electricity from the generators to the distributors; and the consumer retail tariff. It is important that the tariff level at each stage is adequate to fully recover the costs of the services and the tariff structure is designed to encourage efficient investment in generation, transmission, and distribution.

Areas for Donor Support

Donors' continued strong support to Yemen's power sector is critical during the coming three to five years if the sector is going to experience the key transition and changes required. Building upon the strong relationships developed over the past decade, carefully targeted donors' financial assistance and advice on sector investment, institutional, regulatory, policy, pricing, and financial issues can play a key role in assisting Yemen to implement a much needed restructuring program, alleviate electricity shortage, and expand access—the lack of which hinders economic growth and poverty alleviation. The donors can help speed the restructuring program and reduce sector inefficiencies, helping Yemen to avoid the mistakes experienced in some countries during the transition from a vertically integrated sector run by government command as a political and control as a political tool to an unbundled sector structure operating on commercial principles with participation of private sector.

Yemen will depend on donors for financing in the foreseeable future for all its investment in major power generation, transmission, and distribution projects as well as rural electrification programs. It will take several years or even longer for the power sector to meet a significant part of the financing needs from either its own revenue or the private sector. In the medium–to long-term horizon, donors are expected to continue to focus on major power generation and transmission, and rural electrification projects. In the short term, donor financing in the following areas may yield better economic and financial returns for the country:

- Repair and rehabilitation of electricity distribution infrastructures damaged during the conflict, including spare parts for Mareb I power plant.
- Rehabilitation and renovation of existing generation plants to increase capacity and availability, and improve generation efficiency;
- Rehabilitation and strengthening of the distribution network in major load centers such as Sana'a city (accounting for 40 percent of the total distribution system loss) to reduce distribution losses.

Technical assistance by the donors in the power sector could be focused on the following major areas. The specific work at a given time would depend on the pace of the reform and the issues that arise:

Short-Term

- Develop and establish clear contractual relationships based on commercial principles between different generation, transmission, and distribution business units entities, even still owned by the government.
- Develop and apply sound management practices to make each business unit fully accountable for performance, including clear performance indicators and incentives to improve.
- Develop and implement sound accounting policies and practices for different business activities, and strengthen financial management systems.

Mid-Term

- Clarify and delineate policy-making, regulation and ownership functions of the government, and clearly separate the policy-making functions of the ministry from regulatory functions of the regulator, the oversight functions of the owner, and the management functions of the power companies.
- Corporatize and commercialize state-owned power entities, so that the companies will have the autonomy to make investment and operation decisions, but will be fully accountable to the shareholders for the performance and results.
- Rationalize electricity pricing, which would promote sector development to meet growing demand but also encourage efficiency and protect consumers from monopoly abuse. Develop and implement efficient generation, transmission, and distribution prices if the sector is going to be unbundled.
- Promote of new sources of financing and increase involvement of domestic and foreign equity investors and debt lenders in the power sector.
- Improve investment planning and technical capacity of state-owned power entities, and reduce losses and improve overall efficiency in the power system.
- Build capacity for the policy ministry to improve sector planning and sector policy development and implementation.
- Develop and implement the new regulatory system and build capacity so that the regulator can provide light-handed supervision of autonomous commercially oriented power entities.

Going Forward: Supporting the Transition Phase in Yemen – Emergency Response and Setting the Stage for Economic Development

6

6.1 Introduction

Against the backdrop of an overall difficult political and social context as well as the long standing development challenges Yemen faces, the JSEA sought to identify key enablers for restoring economic growth, measures and mechanisms to improve livelihoods, create jobs, strengthen food security, expand social service delivery, and propose ways to restore and broaden vital public infrastructure. There is a short-, medium-, and longer-term dimension to all these considerations.

The political events of 2011, which allow for an opportunity to change and improve Yemen's development path, challenged the fragile socio-economic balance and conditions in Yemen, especially for the short term. In response to such challenges, the preceding chapters analyzed the following four major themes: (i) how the political events of 2011 impacted the recent socio-economic outcomes and shaped the potential to overcome the crisis moment; (ii) looking ahead, what are the policies, policy changes, and resources required, as well as the time for different growth and development options to help restore the economy and to deliver the services Yemenis expect; (iii) the need for capacity building to deliver such services and improve governance, aside from reviewing policies and attract resources; and (iv) suggestions for the very short term to restore services and economic activities, including targeted emergency repairs of infrastructure (see also the Executive Summary).

In late June 2012, the Government of National Unity of the Republic of Yemen launched the 'Transitional Program for Stabilization and Development (TPSD) for 2012–2014," which was prepared by the Ministry of Planning & International Cooperation (MoPIC). The TPSD describes the challenging security environment, the precarious social and humanitarian situation prevailing in Yemen, the fragile financial position the Government faces, and it calls for an emergency response and support by the international donor community. The TPSD proposes parallel implementation of an Emergency Response (Pillar 1: short term priorities), and the initiation of a medium-term Economic Recovery Program (Pillar 2: medium term priorities, see also Table 24).

A major goal of this Chapter is to show how the analytics and insights of the JSEA can underpin the implementation of the TPSD's four priorities under the Emergency Response (Pillar 1) and the six priorities under the Medium-term Economic Recovery Program (Pillar 2).

6.2 Design Principles for Supporting the Implementation of the Transitional Program for Stabilization and Development (TPSD), 2012–2014

The analytics and insights presented in the 2011 World Development Report (WDR) on Conflict, Security and Development offer valuable lessons for designing and implementing post-conflict transitional program in Yemen. These are:

Multiple transitions. Countries that have successfully moved away from fragility and conflict have done so not through one decisive "make or break" transition moment, but through a succession of transition points—consultative conferences, peace negotiations, pre-election campaigns, post-election settlements, new governmental reform plans. Each of these plans is an opportunity to consolidate change and overcome temporary setbacks.

Table 24: TPSD Priorities and Estimated Financing Requirements	
Short-Term Priorities (US$ 4.26 billion)	
1	**Peaceful Power Transfer** (inclusive national dialogue, constitutional reforms, elections).
2	**Security Stabilization and Rule of Law** (emergency security measures, counterterrorism and counter-piracy, restructuring of the Army and security sector, enhancing the judiciary and rule of law).
3	**Emergency and Humanitarian** (basic food supplies and services, human damage compensation, service restoration and reconstruction).
4	**Macroeconomic Stabilization** (Financing SWF's households, financing ongoing foreign-funded projects).
Medium-Term Priorities (US$ 6.9 billion)	
1	**Economic Growth Sectors** (agriculture, fisheries, manufacturing, oil, gas, minerals, tourism).
2	**Improvement of Basic Infrastructure** (environment, water, electricity, transport, ICT, public works and roads, housing and urban development).
3	**Expansion of Social Protection** (social safety net).
4	**Youth Aspirations and Human Resources Development** (education, health, job creation, women's empowerment).
5	**Private Sector and Business Enabling Environment** (legislative and institutional framework, business simplification, national investment promotion strategy)..
6	**Good Governance and State-Building** (civil service reforms, judiciary, transparency, accountability and anticorruption, legal affairs, rights and liberties, local governance).

"Inclusive enough" pacts. National leadership have typically created momentum through "inclusive-enough" pacts that build coalitions, offer a narrative of change and create trust that promises will be kept, often by drawing on third parties to monitor and support key signals of change in security operations, political inclusion and justice, or financial probity.

Delivering rapid results. Efforts to build coalitions to restore confidence have worked only when they can follow through on promises by delivering some short-term, tangible results in security, justice and economic prospects. Successful country cases show that only a few visible results are needed in the short term, and that these often draw on non-governmental support for delivery.

Paying early attention to the reform of security and justice institutions, and pacing other institutional reform efforts. To consolidate successful violence prevention and make it resilient to changes in leadership and new external stresses, countries prioritize and sequence efforts to transform institutions. Early efforts to reform security and justice institutions, including budget and expenditure reform and controlling illegal financing of violence from natural resources and trafficking, can help to dismantle violent networks. Other reforms take time, with WDR research demonstrating that the fastest reformers have taken around 20 years to move from the institutional governance of the average fragile state to the level achieved by more stable countries such as Vietnam or Ghana.

Pursuing feasible reform approaches. Reforms of institutions in fragile contexts are adapted to political context rather than being "technically perfect" solutions. They may involve non-electoral consultative (participatory) mechanisms while the conditions for elections are being established; solutions for service provision than have higher than average unit costs but can operate in insecurity; or rapid action on large scale corruption while gaining time to address lower-level corruption.

Recommendations for international actors:

Invest in the prevention of political and criminal violence, including bridging crucial gaps in the international architecture in the areas of criminal justice, employment, legal and technical assistance for international resource extraction agreements, and cross-border assistance.

Move away from simply "tweaking" the regular way of doing business toward a specialized set of instruments for violence-affected situations that integrate humanitarian and development aid,

peace keeping, and mediation assistance. These can be designed to provide faster and more flexible assistance that supports national institution building consistently over a twenty-year period, while also managing domestic risk concerns for donors.

Generate renewed consensus among low, middle, and high income countries on norms and incentives for responsible national leadership, including discarding the idea that there is a single "best practice" technical solution to corruption, human rights, or political representation challenges; supporting regional recognition and sanctions processes; and increasing reward and recognition initiatives for responsible leadership in fragile situations.

Strengthen instruments to diminish external stresses. This includes investing accepting co-responsibility for trafficking issues between producing and consuming countries; undertaking joint investigations and prosecutions on corruption and money laundering; and taking integrated action to reduce the violence risk arising from resource shocks and food insecurity.

In the context of post-conflict transition scenario in Yemen, both the TPSD and the JSEA stress on the following design principles:[144]

i. "**Prioritization**" of critical conflict resolution themes (such as peace and state building efforts) and linking them to alleviating binding constraints to economic growth, livelihoods, expanding social services, and restoring infrastructure. It also means that, within reasonable bounds, supporting these programs or projects in specific regions in Yemen to support peace building;
ii. "**Sequencing**" of key activities in the TPSD and linking them with progress on security stabilization and insights from the JSEA assessment;
iii. "**Realism**" which avoids pursuing an onerous institutional and policy reforms agenda from the perspectives of both the Yemeni authorities and the donor community, but focuses on essential peace and confidence supporting issues; and
iv. "**Transitional compact**" which is understood by all internal and external parties, to mutually bind the government and donors in a web of mutual responsibilities and obligations (a contract), to (i) deliver on mutual commitments in a transparent way; (ii) provide for predictability on both sides; and (iii) ease implementation obstacles upfront. Form and mode of such a compact consider the absorptive and institutional capacity of both the public and private sectors in Yemen.

These design principles are reflected in the two pillars supported by the TPSD: (i) the four priorities under the Emergency Response; and (ii) the six priorities under the Medium-term Economic Recovery Program. [145]

By linking the TPSD priorities with the JSEA insights, the aim is to help both the Yemeni authorities and the donor community to productively engage and to develop a common understanding of TPSD or JSEA around critical needs during the transition period.

6.3 Supporting Implementation of TPSD Pillar 1: the Emergency Response Phase

The TPSD Pillar 1 (Emergency Response Phase) consists of the following four priorities: (1) finalizing peaceful transfer of power and restoring political stability; (2) achieving security and enhancing the rule of law; (3) meeting urgent humanitarian and material needs; and (4) restoring macroeconomic stability. A successful implementation of priorities 1 and 2 will set the foundations for Yemen to move towards conflict stabilization, peace, and state building. Major steps are required to restore confidence, revive economic activities, and

[144] See also Annex Chapter 1.

[145] See Annex Chapter 6, Table 1 for illustration of a possible matrix linking priorities, or prioritized programs , expected outcomes, compact arrangements and deliverables of commitments for the government and donors.

support internally displaced persons (IDPs), restore electricity, water and sanitation services, provision of care and compensation for victims of the 2011 events, provision of urgently needed food relief to alleviate widespread hunger and malnutrition of children, urgent income support for poorest households, and the mobilization of financial resources for restoring damaged public infrastructure and private properties in many governorates as well as restarting delayed or stalled Government investment projects. A successful implementation of priorities 3 and 4 will assist in the social and economic and social recovery, focus on improving livelihood conditions, and ensure macroeconomic stability.

Pillar 1 of the TPSD identifies an overall funding need of US$4,260 million[146] for the period 2012–14, which is requested to be financed by the donor community. Within Pillar 1, priority 3, which is concerned with undertaking urgent humanitarian, reconstruction and rehabilitation activities, the Government plans to provide funds amounting to US$327 million against expected donor funds amounting to US$3,215 million. For priority 4, donors are expected to provide funds amounting to US$470 million to support economic stabilization measures. Given the challenging security and macroeconomic situation, both the Government and the donors need to prioritize measures, programs and operations that provide relief during the period 2012–14 to budgetary pressures. Donors should review their programs to focus on quickly disbursing aid to meet the social fiscal challenges, and assist quickly in improving of Livelihood conditions.

Following the suggestions made in the JSEA, programs and activities to support priorities 1–4 are briefly discussed below.

Priorities 1 and 2: Linking Conflict Abatement & Political Stability to Economic Revival

The evolving and difficult security situation in Yemen is likely to limit the ability of the authorities to commit to a full-fledged macroeconomic stabilization program. Therefore, during this first phase, addressing political and economic challenges are mutually supportive in positively affecting conflict stabilization and building confidence. For example, holding a national dialogue—as foreseen in the transition agreement—is obviously a step toward national reconciliation. Lowering the conflict level in the country and facilitating restoration of transport networks and access to markets will further economic activity. In this regard, the ability to repair the Safer-Al Hodeidah and Mareb-Ras Eissa oil pipelines are seen as an early and important indicator of successful progress towards political and economic stabilization. According to IMF, current fiscal losses in foregone fiscal revenues from these sabotaged oil pipelines are estimated at US$250 million per month.

Priority 3: Addressing Urgent Humanitarian, Reconstruction, and Rehabilitation Needs

Conflict and food security are highly correlated. UNICEF has carried out high-frequency Social Protection Monitoring panel surveys to investigate the dynamics between conflict and food security in 2011. As expected, conflict and food security are highly correlated for the total sample as well as for each governorate subsample. The food security situation appears to have also drastically deteriorated in areas that are not directly subjected to violent clashes. Indirect transmission mechanisms are the influx of internally displaced people (IDPs), conflict generated price surges, and severe fuel shortages.

Mobilizing resources for delivering urgent nutrition assistance. OCHA, WFP, UNICEF, GCC and OIC based Red Crescents societies should immediately launch the "YEMEN APPEAL," separately from or as part of the upcoming CG meeting. The identified needs go beyond the regular supply of food stuffs, and should include other priorities like nutrition for women and children, clean water, and health services access, catering for the mounting and alarming food insecurity, and the resulting of severe malnutrition that worsened during 2011. Ensuring access of the poor to food

[146] This includes the Abyan Rehabilitation Plan.

in sufficient quantities is paramount to avoid a potential humanitarian crisis.

Restoration of livelihood opportunities. Almost half of the Yemeni population lives below the poverty line. Creating employment and sustainable livelihoods is critical to address acute grievances, and to avert a humanitarian emergency. With significant public and private facilities damaged by the recent unrest (especially in San'a, Ta'iz, Hudaida, Aden, and Mukella), the priority of reconstruction activities should be given to the facilities servicing health and education, in addition to the roads, power, and water networks. Such an approach will give relief to existing social security arrangements, while at the same time providing earnings opportunities to the unskilled labor force. With US$70 million estimated reconstruction costs, these facilities should be prioritized within the current year, based on the most pressing service needs, making sure that the priority projects and programs agreed upon (e.g., revival of the 124 water and sanitation projects that are implemented by the Social Fund for Development and Public Works Program) are delivered up by the end of 2014.

Social protection enhancement. Key issues to address in this regard is addressing the immediate needs of vulnerable groups (women, children, the elderly, the disabled), including enhancing food security, as well as urgent actions for a rapid and equitable increase in jobs. Investing in women's employment and capacities is a fundamental cross-cutting issue for transitional development in Yemen, and is crucial to address issues of food security and nutrition. Promoting education and building skills among rural women are key to improving agricultural and non-farm productivity, hygiene practices, and food security including nutrition, particularly at a subsistence household level. The Social Fund for Development (SFD) and Public Works Programs (PWP), along with the Social Welfare Fund (SWF) are effective tools in the short term to deliver basic services and create jobs and income. These institutions assist the livelihoods of the most vulnerable throughout Yemen, in particular female-headed households, and should be supported and further scaled up.

Resettlement and/or integration of internally displaced persons (IDPs). IDP programs include quick impact projects that deliver basic services to the resettled or to the yet-to-be-integrated displaced persons as well as to their host communities. Support activities should take effect immediately with the involvement of the civil society in order to assure rapid implementation. The first year of the TPSD should lay the foundation for supporting activities, e.g., the expansion of basic vocational skill development programs on site, and best augmenting these programs with microfinance service offers. The initiation of any resettlement programs should not proceed before the de-mining activities in the affected governorates (e.g., Sa'ada, Amran, Ibb, and Abyan) are concluded.

Priority 4: Laying Foundations for Economic Stabilization

Building conditions for growth momentum. The IMF projects GDP contraction of –1.9 percent in 2012, which is a considerable improvement from a real contraction of –10.5 percent in 2011, however, continuous economic contraction cannot satisfy. Consumer inflation is expected to rapidly decelerate from 23 percent in 2011 to 14 percent in 2012. Even these modest improvements expected in 2012 are critically dependent on conflict abatement and stabilization, and on the overall investment rate doubling from 5.4 percent of GDP in 2011 to about 11 percent in 2012. Within the overall fiscal deficit target of 5.8 percent in 2012, the Public Investment Program (PIP) is projected to increase from 1.9 percent of GDP in 2011 to 4.4 percent in 2012. A gradual shifting of budget allocations from current expenditure to investment expenditure is urgently needed in combination with a focus on efficient implementation of the Public Investment Program (PIP). Such will also help to energize private sector investment activity—and ultimately leading to building an economic growth momentum of an envisioned annual eight percent growth rate under the 'accelerated transition scenario' (see Chapter 2) over the period 2014–20.

Restoration of vital energy services to ignite early growth. Restoring electricity supplies is a fundamental step to reviving economic activities in the short-run. The current operating 835MW electricity generation capacity is hampered by sabotaged oil and LNG pipelines, damaged transmission lines, and sharply lower bill collection from consumers. Overall, the net effect of these supply-side constraints is that Yemen is experiencing electricity outages of 20 hours per day. The TPSD estimates a financing requirement of US$308 million to improve the electricity generation and transmission system; however, a breakdown of major repair and rehabilitation works will be necessary for mobilizing donor support. Repairs and service improvements require, however, success in the on-going political reconciliation efforts and avoidance of renewed attacks on supply lines. In the interim, a rationing plan should be developed to supply electricity in alignment with established priorities, like support for SMEs. Even limited, announced electricity supplies to the SME sector will help to regenerate private sector activity which positively impact employment creation and improves livelihood prospects for poor and low-skilled workers.

Reviving stalled Public Investment Programs (PIP) and projects. There are various options to help restart stalled PIP programs and projects such as prioritization of those projects where the implementation rate is, say, more than 50 percent, downsizing the scope of remaining stalled projects, and cancellation of projects where warranted, e.g., due to security concerns. Overall, this engaging mix of donor support will help to build confidence in the transition authorities and the TPSD implementation. As a result, the Yemeni authorities will be able to bring to fruition development assets that were only partially completed so far, thereby reviving economic activities and generating livelihood opportunities, and giving relief to budget pressures, and supporting a low inflation policy stance, especially helping the poor.

Judicious use of financial resources. The TPSD funding strategy for Pillar 1 is to utilize own budgetary revenues for implementing priorities 1 and 2, while funds mobilized from donors are to be utilized for implementing priorities 3 and 4. In this context, priority 4, which aims at achieving economic stability, seeks to mobilize donors' funds amounting to US$470 million. These funds will be utilized to provide income support and social security (including public employment schemes) to poorest households and finance the Government share of counterpart funds to help restart stalled PIP projects after the 2011 events.

6.4 Supporting Implementation of TPSD Pillar 2: the Medium-Term Recovery Program

The TPSD Pillar 2, which delineates a Medium-term Economic Recovery Program, comprises the following six priorities (see also Table 24 above):

- Revive economic growth;
- Improve basic infrastructure;
- Expand social protection;
- Build human resources and meeting youth aspirations, including education, health, job creation, and women empowerment;
- Enhance the role of the private sector and improve the business climate; and
- Support good governance and state building.

Implementing these six TPSD priorities, the total investment costs for the period 2012–14 are estimated to amount to US$8.8 billion, and for which about 78 percent is expected to be funded from external sources.

Preparatory work for the implementation of Pillar 2 priorities needs to be carried out in parallel during the transition period 2012–14. In this regard, there are three major types of activities: i) completing feasibility studies; ii) lining up funding arrangements; and iii) completing formalities related to projects' effectiveness. Based on the insights of JSEA, the various programs and activities to support the six priorities are presented in Annex Chapter 6, Matrix Table 2 "The Medium-Term Recovery Program", and are briefly discussed below. It may be noted that Table 2

combines the six TPSD priorities and the JSEA growth strategies to ease cross-comparison of implementation activities.

Priority 1: Revive Economic Growth

Yemen needs to overcome its sluggish growth record of four percent during the last decade to meet the demand for gainful employment that played a major role in the uprisings, especially among the youth, but also to address exclusion, inequalities, and high levels of poverty. The JSEA employed a 'dynamic computable general equilibrium' (DCGE) approach to rank investment and policy led growth strategies based on agriculture-led, industry-led, services-led, and an accelerated transition scenario, which combines all three sector-led scenarios. Combining the growth acceleration in agriculture, industry and service sectors would bring Yemen quickly back to pre-crisis levels and put it on an accelerated growth path. Under this scenario, non-oil annual growth rates reach 7.6 percent on average in the first phase (2013–2016) and then 8.9 percent in the second phase of the recovery. The simultaneous investment (and policy) push in all non-hydrocarbon economic sectors would generate synergy effects that translate into a higher growth trajectory.

The JSEA approach also provides investment costing of growth strategies in terms of achieving targeted impact on poverty reduction, alleviating child nutrition, improving prospects of jobs and livelihood, expanding social service delivery, and investing in vital public infrastructure. For the period 2013–16 (4 years), the JSEA approach estimates that about US$3 billion are needed in form of foreign aid for the baseline case which was the prevailing case prior to 2011, while additional investment to implement the three DCGE growth strategies is estimated at about US$4.8 billion (accelerated scenario). Given differing technical approaches and time period covered, it is a happy coincidence that the ballpark investment requirements to implement Pillar 2 of TPSD and the JSEA growth strategies are quite close to each other. However, realizing this growth potential requires augmented external financing and accompanying economic and social policies that help to unlock this potential.

Supporting agriculture sector and the rural economy. The strategy for an agriculture led growth should focus on the development of poultry farming and fisheries sectors, and supporting the growth of coffee and high-value fruits produce. Increasing productivity of subsistence wheat farming through land (terraces) improvement and targeted government price support mechanism is a necessity for food security. By 2014, the fisheries sector modernization and value chain development should cover all nine maritime governorates, namely Hajjah, Hodeida, Taiz, Lahej on the Red Sea and Aden, Abyan, Shabwa, Hadramout and Al Mahara on the Gulf of Aden and Socotra, with relevant Ministries having established branches near to the activities to supervise, coordinate and assist implementation. Additional efforts should be made for strengthening coffee, and the high value fruits value chain, in Abyan, Amran, Dhamar, Hodeidah, Ibb, Lahej, Taiz, and Sana'a governorates, building export competitiveness', and developing off-farm MSMEs dealing with honey & horticulture. Within the decade ending 2020, growth in poultry farming, marine fisheries and aquaculture should become a noticeable part of the non-hydrocarbon GDP.

Improving the conditions for food security. Forty-four percent of Yemen's population (10 million) is food insecure and 22 percent of the population (5 million) are severely food insecure. In spatial terms, 51 percent in rural areas are food insecure with 27 percent severely food insecure while, in urban areas, food insecurity jumped from 14.5 percent in 2009 to 27 percent in 2011. WFP survey data suggests that, as a result of high food prices during 2011, about 90 percent of households became temporarily food insecure. At a macro-level, Yemen is heavily food import dependent country—57 percent of all imports are food, which arises because Yemenis spent 50 percent of total private consumption on food. Part of the reason for high food prices in Yemen is due to an oligopolistic cereals import structure. In the medium-term, there is a need for strategic action that can help to narrow the food price differentials between the domestic and international prices.

Apart of such regulatory reforms, future programs need to target productivity improvements (agriculture led growth strategy) for farmers, e.g., subsistence wheat farming through land (terraces) improvement. Taxing Qat production to compensate for the diesel subsidy (used for water pumps and irrigation systems) would be a step to address production distortion, and encourage shifting farming land to food production. However, even improved food production in Yemen is unlikely to yield enough food, neither in quantity nor in variety, to address this policy issue. Importing and storing food in an efficient way will therefore also be indispensable. Donors could support Yemen to establish strategic grain reserves, help building storage capacity (grain silos), and support participation of Yemen in GCC food imports arrangements to gain from competitive arrangements and scales.

Priority 2: Improve Infrastructure

Sourcing electricity generation from renewable sources. Yemen is faced with dwindling oil reserves and limited gas reserves. The Government is also heavily dependent on hydrocarbon exports for fiscal revenues and financing balance of payments deficits. In addition, the antiquated transmission and other distribution losses amount to 29 percent. In the medium term, electricity generation capacity could be increased by resuming work on the construction of 400MW Mareb-II, provided viable security arrangements could support construction. However, given the resource endowments, the case for long-term investment in the development of affordable wind- and solar-based electricity generation is compelling. For instance, feasible wind-based electricity generation potential has been estimated at about 34,000MW. Based on existing energy-related studies from the World Bank and other donors a blueprint for the medium term energy sector development needs to be produced, which combines a focus on institutional reform, improving the bill collection system, with new investments like (1) modernization of distribution and transmission system, and (2) new generation capacity through gas and/or renewable sources like wind.

Improving water security and expanding sanitation services. As part of economic recovery, and with population coverage of 26 percent, the improvement and expansion of water and sanitation services should score high on the priority list. The government should embark on the development of priority projects based on NWSSIP and Sana'a Declaration on Water of January 2011. Given the prevailing living style in small conglomeration of families and smaller towns, especially villages in rural areas, a viable institutional offer to facilitate decentralized water and wastewater management should be high-priority matter for research and investigation. Moreover, support should be mobilized to conduct a feasibility study for water desalination initiatives in the governorates of Ta'iz and Ibb, which could also involve the private sector in building and operating these systems.

Achieving water security needs to be underpinned by implementing major reforms in irrigation and water sourcing regulations. Operational arrangements should be adopted to scale up donor support for the National Irrigation Plan (NIP), which also includes twinning arrangements between the International Centre for Biosaline Agriculture (Dubai) and Agriculture Research & Extension Authority of Yemen. The goal of supporting such twinning arrangements will be to promote best practices in arid farming and drip irrigation system. With the water resources management plan adopted, it should be possible to have some first investments under the NIP completed by 2014. Moreover, the restructuring of the National Water Resources Authority (NWRA) should be accompanied with regulations formulated that govern access to groundwater and possibly offer targeted subsidies for farmers to install efficient groundwater irrigation techniques.

Priority 3: Expand Social Protection

Despite the fragility of the government institutions, the Social Welfare Fund, the Social Fund for Development and the Pubic Work Project appear as effective instruments to assist the livelihoods

and improve access to basic services for the most vulnerable throughout Yemen. Yemen's social protection network is, for most Yemenis, defined by the Social Welfare Fund (SWF), the Social Fund for Development (SFD) and the Public Works Project (PWP). Increased donor funding to community-based labor-intensive works will channel cash into the hands of the poor to help them to cope with the impact of the crisis. Such programs could continue even after recovering from the crisis and serve as a productive, social safety net, targeting chronically poor sub-districts and female-headed households. In addition, the limited access of poorer Yemenis to safe water sources and sanitation and hygiene facilities is well recognized. A number of social protection initiatives have been designed to address the Water and Sanitation and Hygiene (WASH) needs of vulnerable households. These schemes are mainly implemented through the Social Fund for Development (SFD) and the Public Works Project (PWP) and typically support local or community-based approaches. The current Government acknowledged both SFD and PWP programs to be important instruments to create labor-intensive work opportunities and to deliver basic services to local communities. Both programs are also good instruments to absorb donor funding. However, a high dependence on donor funding could affect the sustainability of their services.

Making social protection offers more accessible. A key barrier that discouraged poor people from applying for SWF stipends was the need for certification by community leaders, which may also be used as a political tool. In this regard, developing a civil registry system and the provision of "smart cards" for Yemenis, which also identifies poor households and IDPs, can provide multiple benefits including improved targeting of pro-poor programs. In addition, the role of Civil Society Organizations (CSOs) in providing social protection services is important. They can also play a role in enhancing positive traditional norms, social harmonization and peace building; however, close monitoring of these organizations is required to ensure good governance and transparency.

Leveraging cross-border remittances as poverty alleviation tool: In 2011, Yemen received US$1.3 billion from cross-border remittances. Given these significant household transfers, there are tremendous opportunities to leverage remittances for the development of MSMEs and sustainable poverty reduction across many governorates. In this regard, donors could support the Central Bank of Yemen to link microfinance institutions with the payments system, while also transferring best practices from the Latin American experience and the one made in Asia with appropriate savings schemes, investment products, and home town associations.

Priority 4: Develop Human Resources and Enhance the Role of Youth and Women

Delivering education-for-all. Yemen has made remarkable progress in providing education at all levels and the halving of illiteracy from 90 percent in 1973 to 45 percent in 2004 while the net enrollment rate increased further from 62.5 percent in 2004 to 75.3 percent in 2008. Despite these considerable achievements, the education sector is beset by a number of challenges: lack of quality education due to unskilled education professionals; extreme poverty, leading parents to remove students to engage in child labor; social norms that lead to higher drop-out rates for girls, especially in rural areas; inadequacies in teaching, of textbooks and other learning materials; and the 2011 events, which led IDPs to take shelter in schools in Abyan, Aden, Lahj, Haradh, Sa'ada, Sana'a and Ta'iz governorates, caused physical damages to education infrastructure, and paralyzed investment from the government and donors in the education sector. Given these multi-faceted challenges, investments need to focus on rehabilitating the damaged infrastructure in the short-term, and for the medium term the focus would need to be on improving the quality in education and the requirements to achieve quality. Such is likely only to be achievable if a special education compact can be struck between central and local levels, government and donors and their respective implementation teams, parents/parent associations, and government entities. Developing

a national curriculum, and improving teachers' training, testing, and certification standards would then become visible outcomes of such concerted efforts.

Improving the delivery and quality of education-for-employment. The number of vocational training institutions (TVET) reached 80 in 2009 with a total number of enrolled students of 25,875. In 2010, the number of students admitted to TVETs was 13,084 out of 21,706 applicants, which reflected high demand for skills acquisitions. However, there is a high drop-out rate of students in TVETs, which is mainly due to (i) a curriculum emphasizing teaching theoretical subjects rather practical skills, (ii) low budget delivery and its utilization, and (iii) the limited actual relevance of skills acquired by TVETs graduates judged by the needs of the private sector. Improving the quality of TVET institutions and upgrading the quality of their skill programs would be imperative. Specifically, a focus should be made on bridging gaps between students and industries through a skills qualification framework in sectors such as construction, renewable energy, healthcare services, fisheries, livestock, and poultry, which are estimated to offer high growth within the coming decade. In this context, donors could support private-sector-operated TVETs, which would support delivery of targeted skills development programs that are aligned with private sector needs. In addition, GCC countries could consider increasing the skilled labor quota allocation for Yemen. The employment prospects of TVET graduates can be further strengthened by imparting skills that are needed in implementing community based labor-intensive works through the multi-sector livelihood programs of PWP and SFD.

Supporting efficient and effective delivery of health services. Currently, about 68 percent of the population in Yemen has access to public or private sector health providers. The ratio of the servicing health workforce is extremely low: medical doctors are 3/10,000; nurses are 5/10,000; and midwives are only 2/10,000. Some of the major challenges in the health sectors are extremely inadequate public sector funding, lack of a gender balance in key health services, extremely low quality of child and reproductive health services, and poor information management system leading to inadequate provision of essential services and medicine. In the medium-term, reforms and resources are needed to (i) target institutional development of the Ministry of Health and Population; (ii) clarify and improve the regulatory environment for private health providers to improve quality and services; (iii) capacitate rural health units and thereby widen access to health services, and (iv) foster innovative programs to expand the delivery of basic health services to the poor through philanthropic organizations.

Launching specialized programs to reduce maternal mortality rate and improve child nutrition: Health quality improvement programs are essential in an effort to eradicate the high number for maternal mortality and child stunting (with the first estimated at 366 deaths per 100 thousand and the latter at 59 percent of children). This may include in the medium term, the launching/expansion of fully trained "woman health workers" program at the community/rural level, building on the experiences of other countries with similar demographic, geographic, and cultural conditions. The program can be part of the already existing community based initiatives supported by the WHO (*Integrated Social Development Activities for achieving better Quality of Life in Yemen)*, or expanding it to reach all governorates of the Republic of Yemen. The culmination of all these efforts should lead to fully capacitated existing health offices in rural areas, with the Government assuring reconstruction/rehabilitation of current health offices with larger quantity and better quality of health providers.

Priority 5: Enhance the Role of Private Sector and Improve Business Climate

Enhancing the quality of private sector delivery in projects' implementation. Addressing the challenge of improving the business climate in Yemen requires also building capacity in the private sector (such as consultants, contractors, suppliers, trainers etc.) to deliver high quality services during the various phases of investment planning and project implementation.

Given the experience of some donors, it is critical to set performance and accountability standards for private sector service delivery. In this context, the Government can assist in enhancing the role of private sector delivery by considering the following: (i) supporting foreign and local consultants to bid jointly with contractors for various phases of project implementation and for capacity development components. Such a measure will foster transfer of technology and skills through partnership arrangements with local private sector consultants, contractors, and suppliers, with a view to strengthening their technical skills and improving their respective service delivery; (ii) reforming of the relevant legal framework for private sector service providers with a view to fostering transparent governance standards in public procurement systems and a mechanism for penalizing delinquent delivery; and (iii) allowing the Central Procurement Committee in Yemen to determine those components within a project-cycle where joint bidding could be made the preferred mode.

Improving the investment climate and ease cost of doing business: As a result of the recent events in Yemen, including terrorist activities, the perception of risk in Yemen has increased. However, the Islamic Corporation for the Insurance of Investment and Export Credit (ICIEC) and other public risk insurance agencies continue to receive inquiries for political and commercial cover for private sector transaction in Yemen. It is important that existing arrangements for providing political and export credit risks guaranteed by bilateral, regional and multilateral export credit agencies (ECAs) continue to be exploited. Moreover, the General Investment Authority (GIA) has undergone a major restructuring in 2010 focusing it as an investment promotion agency. Donors should support its ongoing capacity building activities to enable it to make best use of investment demand (including from abroad), assist and advice in improving the investment climate (regulatory and administrative obstacles), help to identify investment opportunities, and work on an investment promotion strategy, taking TPSD priorities into account, that cater to highlighting specific investment areas, possibly specific projects (infrastructure), and to building investor confidence. Although, the Islamic Development Bank (IsDB) Investment Promotional Technical Assistance Program (ITAP) will work with GIA to develop such a capacity program and will request government support in the process, other donors are invited to join as deemed appropriate. This should help, among other initiatives, to establish Yemen's own Export Credit Agency by (projected) 2020.

Making the public investment processes more efficient. Major regulatory changes should be pursued that expedite the administrative process for implementing projects funded under the Public Investment Program (PIP) and address fragmentation of PIP projects. Government and donors should work together to re-engineer implementation mechanism and processes—with specific measures to be identified—to speed up project implementation. In a recent IsDB study it was shown that projects in Yemen took on average 1.2 years more compared to other IsDB serviced Low Income Countries. The Government of Yemen should considerably improve and streamline national systems (on the central and governorate level) to ease project implementation, and facilitate supervision and monitoring. In addition, donors should help through improved coordination, harmonization, and simplification of donor delivery systems. It is recommended maximum use be made of country systems, and common results frameworks. While line ministries should serve as central development agencies and supervisory entities coordinating all implementation efforts with regards to the TSPD and related strategies, donors are well advised to help to build or improve such a capacity, as well as support capacity-building of executing agencies.

Priority 6: Support for Good Governance and State Building

Improving Governance and implementing effective transparency and accountability mechanisms (e.g., the recently adopted access to information legislation)

is also critical. Governance and public sector weaknesses are a key constraint for Yemen to realize its development and growth goals, as underlined by the 2011 protests. A significant overhaul of the governance system is needed to enable the Yemen civil service to effectively perform core functions and deliver services. In addition, efforts need to be undertaken to generate greater diversity in governance structures. This includes targeted policies and measures to increase the number of women in decision-making and governance positions. Governance related reforms will require a participatory approach to the strengthening of selected major public sector institutions, policies, procedures and capacity starting from the district, governorate, up to the central level.

6.5 Supporting the Transition

Given the challenging condition for success, both Government and donors need to prioritize measures, programs, and operations which help toward conflict abatement, work to improve economic conditions, provide rapid relief to the Yemeni people, and assist in alleviating budgetary pressures during the period 2012–14. Donors should review their programs to also allow for quickly disbursing aid to support political, humanitarian, and economic recovery, and contribute quickly to improving livelihood conditions.

In moving ahead, a common understanding of suitable aid modalities that support and accelerate implementation of different types of prioritized programs and suggested investments will be critical. In this regard, the TPSD supports adoption of the OECD recommendations[147] for fostering a "Country Compact" which stresses national ownership, flexible and predictable financing, transparency in financial flows, results-based aid delivery as an accountability tool, and higher donor tolerance for risks in a context like the one prevailing in Yemen.

When supporting TPSD implementation, it is vital to reduce the risk of strategic failure arising from improper sequencing of aid and aid flows, and from the dispersion of donors in multiple activities, either singularly or jointly. Needless to say, institutional mandates and types of resource mobilization as well as the particular TPSD priority will dictate the choice of a financing modality. In post-conflict and transition situations as in Yemen, strong donor coordination, making proactive use of the choice of available aid modalities to support, focus, and anchor coordination, is indispensable.

[147] OECD International Network on Conflict and Fragility INCAF. Discussion Note. 2011.

Annexes

Annex 1. Context Review

Lessons from the 2011 World Development Report on Conflict, Security and Development

1. The 2011 World Development Report on Conflict, Security, and Development (WDR) called for development interventions that restore confidence and transform institutions to create a virtuous cycle that moves a country out of repeated cycles of violence and fragility to security and prosperity. The WDR found that institutions that contribute to citizen **security, justice, and jobs need to be prioritized** due to the nature of the stresses that pose a risk of conflict and violence. The WDR found that different types of **violence are interlinked and are recurrent over time**, blurring the lines between political conflict, criminality, and other forms of violence, requiring development interventions that recognize these linkages.
2. The WDR recognized that successful prevention of and transition from conflict and violence have involved **early confidence-building** measures in the form of **"signals" and commitment mechanisms** that demonstrate that intentions are backed-up by concrete actions. It highlighted the importance of **"inclusive enough" coalitions** to galvanize support for change and the need to achieve early repeated results to maintain momentum, and that creative inclusive approaches to **achieving early results** can be compatible with, rather than undermine, long-term institution building and government legitimacy.
3. The WDR also underscored the importance of **capable institutions in managing the internal and external stresses** that increase vulnerability to violence, and laid bare the often unacknowledged reality that successful **institution building is a long-term commitment**, typically no less than a generation. It identified the danger of too many reforms too soon, **"premature load bearing,"** leading to a breakdown in the system due to lack of capacity and the creation of new incentives for corruption. It concluded that the institutions that contribute to citizen security, justice and jobs need to be prioritized in situations of conflict and violence and proposes that **"best-fit" institutional approaches** that can be implemented with limited capacity in fragile contexts.
4. Finally, the WDR concluded that international actors need to adopt long-term sustained engagements rather than the present **short-term stop-go aid**; institutional transformation requires time and patience. The **risk aversion and "procedural conformism"** of international agencies is not suited to the challenges of institutional transformation in conflict settings; better solutions are needed that satisfy accountability to domestic constituencies and manage the risk of action, and but that also **recognize the risk of inaction**. Finally, it calls on the international community to **work together across diplomatic, development, and security capacities** with country partners to better address the interlinked humanitarian, security, and development agendas.

5. These findings have strong implications for the international community's engagement in fragile and conflict situations (FCS). Accordingly, the World Bank has committed to shifting the paradigm of its engagement in FCS and developed a framework for operationalization WDR findings and recommendations. This includes: (1) making country strategies more fragility focused; (2) developing strategies/interventions covering development, security, and justice; (3) increasing attention to jobs and private sector development, including public employment schemes early on; (3) readjusting and agreeing to the level of risk tolerance early on with management and co-financiers, and revisiting portfolios; (4) identifying a financing strategy to include IDA, MDTFs and Bank resources like the State- and Peace-building Fund (SPF) to ensure consistent financing of critical sectors under evolving political scenarios; and (6) determining the best mix of in-country staff and supporting resources to deliver the work program.

The findings of the WDR on evolving forms of violence and conflict resonate strongly in the Yemeni context. The dearth of resilient national institutions to act as drivers of resilience to violence, and the increasing shift of tribal institutions from contributors to resilience to contributors to conflict, indicate the need for a strong focus on national institution building, both within and beyond the government. This will necessitate overcoming distrust and skepticism among the stakeholders in the short-term to enable a sustained effort for institution building in the long term. The international community can only play a supporting role in what will necessarily be a nationally bred and led agenda, but international diplomatic, financing, and security actions will certainly contribute to the success or failure of the effort.

Annex 2. Macroeconomic and Social Impact Analysis of the 2011 Crisis in Yemen and Alternative Transition Scenarios

A. Conflict and Food Insecurity

Table 1 Annex Chapter 2: Overview of Scenario Assumptions

	Annual Growth Rate (change from previous year in percent)						
		TFP		Government consumption	Transfers to households	Remittances	Population &labor force
	Agriculture	Industry	Services				
Base	**0**	**2**	**2**	**4**	**4**	**4**	**3**
Conflict 2011							
Stagnation	–12	–12	–12	–12	–23	–9	3
Slow transition	–12	–12	–12	–12	–23	–9	3
Agriculture-led transition	–12	–12	–12	–12	–23	–9	3
Industry-led transition	–12	–12	–12	–12	–23	–9	3
Service-led transition	–12	–12	–12	–12	–23	–9	3
Accelerated transition	–12	–12	–12	–12	–23	–9	3
Transition 2012							
Stagnation	–4	–4	–4	–2	20	11	3
Slow transition	–4	–4	–4	–2	20	11	3
Agriculture-led transition	–4	–4	–4	–2	20	11	3
Industry-led transition	–4	–4	–4	–2	20	11	3
Service-led transition	–4	–4	–4	–2	20	11	3
Accelerated transition	–4	–4	–4	–2	20	11	3
Transition 2013–2020							
Stagnation	0	0	0	0	0	0	3
Slow transition	0	2	2	4	4	4	3
Agriculture-led transition	1	2	2	4–5 (* + #)	4–28 ++	2–6 +++	3
Industry-led transition	0	3–6 *	2	4–5 (* + #)	4–28 ++	2–6 +++	3
Service-led transition	0	2	3–6 **	4–5 (* + #)	4–28 ++	2–6 +++	3
Accelerated transition	1	3–6 *	3–6 **	4–5 (* + #)	4–28 ++	2–6 +++	3

Source: Government of Yemen and JSEA Staff.
Note: * TFP for the industry sector is assumed to grow at three percent in 2013 after which it grows at six percent for the remainder of the period.
** TFP for the services sector is assumed to grow three percent in 2013 after which it grows at six percent for the remainder of the period.
+ The annual growth in government consumption increases from four percent in 2013 to five percent in 2014 and 2015 and goes back to four percent from 2016–2020.
++ The annual growth in households' transfers is 28 percent in 2013, falls down to five percent in 2014 and 2015 and then reverts to a growth rate of four percent till 2020.
+++ The annual growth in household remittances is two percent in 2013, rises to six percent.in 2014 and 2015 and finally becomes four percent till 2020.
# Annual growth rises from four percent in 2013 to five percent in 2014 and 2015 and falls back to four percent growth for the remainder of the period.

Table 2 Annex Chapter 2: Correlation between Conflict and Food Insecurity

	Correlation coefficients	
Total	0.224	***
Sana'a (urban)	0.192	***
Amran (rural)	0.156	***
Al-Hodeidah (urban)	0.385	***

Source: Based on UNICEF (2012).
Note: ***, **, * coefficient is statistically significant at the one percent, five percent, and ten percent level, respectively.
The percentages of households with children afraid of playing outside (that is, proxy variable for direct exposure to conflict) and with a hungry family member (that is, proxy variable for household food insecurity) are based on the following questions (addressed to the children's care taker):
"During the past two weeks have you or any family member experienced going to bed hungry due to lack of food?"–"Yes".
"During the past two weeks has any child become afraid of playing outside?"–"Yes".

Table 3 Annex Chapter 2: Relationship between Conflict and Food Insecurity – Fixed-Effects Logit Model Results

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
Household insecurity	1.762	***					1.795	***	**1.100**	***	1.564	***	1.985	***	0.979	***
	0.212						0.233		**0.233**		0.233		0.249		0.257	
Lagged, t–1			0.373	*			–0.058									
			0.224				0.253									
Lagged, t–2					0.118											
					0.250											
Neighborhood insecurity									**3.399**	***					3.584	***
									0.484						0.578	
Lagged, t–1											1.556	***			–0.398	
											0.555				0.632	
Lagged, t–2													–1.300	*		
													0.677			
Round	–0.044	**	0.043	**	0.109	***	0.020		**–0.081**	***	0.013		0.084	***	–0.021	
	0.019		0.021		0.025		0.022		**0.020**		0.022		0.027		0.024	
Log likehood	–417.0		–379.7		–322.6		–344.3		**–392.2**		–344.5		–283.6		–325.4	
Observations	1,303		1,093		973		1,087		**1,303**		1,093		966		1,093	
Groups	95		85		82		85		**95**		86		81		86	

Source: Based on UNICEF (2012).
Note: ***, **, * coefficient is statistically significant at the one percent, five percent, and ten percent level, respectively.
The percentages of households with children afraid of playing outside (that is, proxy variable for direct exposure to conflict) and with a hungry family member (that is, proxy variable for household food insecurity) are based on the following questions (addressed to the children's care taker):
"During the past two weeks have you or any family member experienced going to bed hungry due to lack of food?" – "Yes".
"During the past two weeks has any child become afraid of playing outside?"–"Yes".

B. Model and Methodology used

The model described in the following are used to evaluate alternative future scenarios which essentially try to capture the central conditions for economic growth, poverty reduction, and reduction in child malnutrition.

B.1 Yemen DCGE model

Table B.1 presents the equations of a simple DCGE model illustrating how changes in economic output affect employment and household incomes.[148] Producers of each commodity c produce a level of output Q by employing the factors of production F under constant returns to scale (exogenous productivity α) and fixed production technologies (fixed factor input shares δ) (eq. [1]). In the case of Yemen, there are 12 agricultural activities and commodity sectors, nine industry sectors and four service sectors. In order to provide a deeper analysis, agricultural activities were spatially disaggregated into the four regions; the Highlands, the Red Sea and the Tihama, the Arabian Sea, and, the Internal Plateau and Desert (all except for coffee and fisheries, they are only grown in two zones). Furthermore, the 12 agricultural production activities are regionally split into livestock (four), fishery (four), forestry (one), and crop production activities (34), where all agricultural production activities are specific to each agro-ecological zone. Other production sectors and commodities included in the model are mining, including oil and gas (one), food processing (one), light manufactures, and (other) manufactures (one). Electricity and water appear as two separate sectors, and services include trade and transportation, other private services, social services, and other public services.

The Yemen DCGE model includes three main factors of production, labor, capital and land. Labor is disaggregated into unskilled, semi-skilled and skilled labor for both the private and public sectors. To capture their distinctive nature, capital is split into capital that is specific to the oil and gas sector and capital that freely moves across all other sectors of the economy. Within the DCGE model, profit maximization implies that factor payments W are equal to average production revenues (eq. [2]). Total labor, land and capital supply s are fixed, implying full employment and inter-sector mobility (eq. [10]) and land is assumed to be agro-ecological zone specific, thus giving us four factors of land, one for each region in the model. Consequently, declining farm/factory production causes factor demand to fall, which in turn lowers economy-wide factor returns and affects production in other sectors as well.

Foreign trade is determined by comparing domestic and world prices, where the latter are fixed under a small country assumption. The simple model implements trade as a complementarity problem. If domestic prices exceed world import prices w^m (adjusted by exchange rate E) then the quantity of imports M increases (eq. [3]). Conversely, if domestic prices fall below world export prices w^e then export demand X increases (eq. [4]) and to capture that relationship, the Yemen model uses an Armington elasticity of 4 and an export transformation elasticity of 2. To ensure macroeconomic consistency, a flexible real exchange rate adjusts to maintain a fixed current account balance b (measured in foreign currency units) (eq. [8]). TFP growth determines the growth of GDP, the macroeconomy and the interactions between the economy's agents of production and consumption. If a negative shock should occur, e.g., in this case of Yemen a conflict situation, TFP growth will be negative. The negative growth shock is translated into reduced sectoral production, reductions in the use of factors of production, and through the model's linkages, impacts on factor income, household income, possibly falling exports, and possibly rising imports.

Factor incomes are distributed to households using fixed income shares θ based on households' initial

[148] The model description draws on Breisinger, Ecker, and Engelke 2011. Petroleum subsidies in Yemen. IFPRI Discussion Paper 1071. Thurlow, J., Tarp, F., McCoy, S., Hai, Nguyen Manh, Breisinger, C., Arndt, C. 2010. *The Impact of the Global Commodity and Financial Crises on Poverty in Vietnam Journal of Globalization and Development*. Volume 2, Issue 1.

Table 4 Annex Chapter 2: Mathematical Presentation of the Dynamic Computable General Equilibrium Model – Core Model Equations

Production function	$Q_{ct} = \alpha_{ct} \cdot \Pi_f F_{fct}^{\delta fc}$		(1)
Factor payments	$W_{ft} \cdot \sum_c F_{fct} = \sum_c \delta_{fc} \cdot P_{ct} \cdot Q_{ct}$		(2)
Import supply	$P_{ct} \leq E_t \cdot W_c^m \perp M_{ct} \geq 0$		(3)
Export demand	$P_{ct} \geq E_t \cdot W_c^e \perp X_{ct} \geq 0$		(4)
Household income	$Y_{ht} = \sum_{fc} \theta_{hf} \cdot W_{ft} \cdot F_{fct} + r_h \cdot E_t$		(5)
Consumption demand	$P_{ct} \cdot D_{hct} = \beta_{hc} \cdot (1 - v_h) \cdot Y_{ht}$		(6)
Investment demand	$P_{ct} \cdot I_{ct} = \rho_c \cdot (\sum_h V_h \cdot Y_{ht} + E_t b)$		(7)
Current account balance	$w_c^m \cdot M_{ct} = w_c^e \cdot X_{ct} + \sum_h r_h + b$		(8)
Product market equilibrium	$Q_{ct} + M_{ct} = \sum_h D_{hct} + I_{ct} + X_{ct}$		(9)
Factor market equilibrium	$\sum_c F_{fct} = s_{ft}$		(10)
Land and labor expansion	$s_{ft} = s_{t-1} \cdot (1 + \phi_f)$	*f* is land and labor	(11)
Capital accumulation	$s_{ft} = s_{t-1} \cdot (1 - \eta) + \sum_c \frac{P_{ct-1} \cdot I_{ct-1}}{k}$	*f* is capital	(12)
Technical change	$\alpha_{ct} = \alpha_{ct-1} \cdot (1 + y_c)$		(13)

Note:

Subscripts		**Exogenous variables**	
c	Commodities or economic sectors	*b*	Foreign savings balance (foreign currency units)
f	Factor groups (land, labor, and capital)	*r*	Foreign remittances
h	Household groups	*s*	Total factor supply
t	Time periods	*w*	World import and export prices
Endogenous variables		**Exogenous parameters**	
D	Household consumption demand quantity	α	Production shift parameter (factor productivity)
E	Exchange (local/ foreign currency units)	β	Household average budget share
F	Factor demand quantity	γ	Hicks neutral rate of technical change

(continued on next page)

Table 4 Annex Chapter 2: Mathematical Presentation of the Dynamic Computable General Equilibrium Model – Core Model Equations *(continued)*

I	Investment demand quantity	δ	Factor input share parameter
M	Import supply quantity	η	Capital depreciation rate
P	Commodity price	θ	Household share of factor income
Q	Output quantity	κ	Base price per unit of capital stock
W	Average factor return	ρ	Investment commodity expenditure share
X	Export demand quantity	υ	Household marginal propensity to save
Y	Total household income	ϕ	Land and labor supply growth rate

Source: Thurlow et al. 2004.

factor endowments and are combined with foreign remittances *r* adjusted by the exchange rate (eq. [5]). Incomes *Y* are then saved (based on marginal propensities to save υ) or spent on consumption *C* (according to marginal budget shares β) (eq. [6]). The budget shares were calculated using detailed sectoral data from the Central Statistics Organization (CSO), and the latest Household Budget Survey (HBS 2005/2006) for Yemen. Household income elasticities were econometrically estimated using a semi-log inverse function suggested by King and Byerlee (1978) and based Yemen's HBS 2005/2006 for rural and urban households separately. These elasticities range from, for example, 0.31 for cereals to 2.2 for transport and 1.95 for fuel, with urban household elasticities tending to be lower than their rural counterparts.

Household savings and foreign capital inflows are collected in a national savings pool from which investment demand *I* is financed (i.e., a savings-driven investment closure) (eq. [7]). Finally, prices *P* equilibrate product markets such that demand for each commodity equals supply (eq. [8]). The model therefore links production and trade to household incomes via changes in market prices, employment and factor returns. Thus if production falls, two mechanisms work together, factor income will fall as a result of reduced factor demand, at the same time supply falls leading to an increase in prices, which in turn raises consumption expenditure and in addition to reduced income from factors, reduces demand which may then reduce prices. The interaction between all the agents used in the model will eventually reach a stable equilibrium where, depending on the relationships specified the result may be reduced output, wages, demand and ultimately GDP.

The model's variables and parameters are calibrated to empirical data from a social accounting matrix (SAM) that captures the initial structure of Yemen's economy in 2009. The 2009 Social Accounting Matrix is updated from the 2007 Yemen SAM using various national and international datasets. For the agricultural sector all the detailed data relied upon the 2011 Agricultural Yearbook from the Ministry of Agriculture and Irrigation. The data sources above have been complemented with the most recent data from Government and are consistent with discussion held the International Monetary Fund, the World Bank and the United Nations Conference on Trade and Development (UNCTAD). For example, the SAM is fully consistent with GDP at market prices as discussed between the government and the IMF in early 2012:

GDP = C + I + G + (X–M)
Private consumption (C) = YR 4.25 billion
Public consumption (G) = YR 0.75 billion
Investment (I) = YR 0.69 billion

Net Exports (X–M) = YR –0.59 billion
GDP = YR 5.10 billion

After the calibration, the parameters are then adjusted over time to reflect demographic and economic trends and the model is re-solved for a new equilibrium each year. The model is recursive dynamic with the dynamics occurring from 2010 to 2020. Between periods the model is updated to reflect exogenous rates labor expansion ϕ (eq. [11]). The rate of capital accumulation is determined endogenously, with previous period investment converted into new capital stocks using a fixed capital price κ (eq. [12]). This is added to previous capital stocks after applying a depreciation rate π. Finally, the model captures total factor productivity (TFP) through the production function's shift parameter α, with the rate of technical change γ determined exogenously. Changes in TFP is the main driver of changes in output for the simulations conducted in this paper, which will be described in more detail in Section 4.

B.2 Microsimulations

Poverty

The DCGE model links to a micro-simulation model, which allows for the endogenous estimation of changes in economic output on poverty. All HBS sample households are included in the micro-simulation model and their total expenditures are linked to each of the eight representative households included in the DCGE model according to their rural/urban and zonal locations. The linkages between the DCGE and micro-simulation models allow for the analysis of micro impact of the changes in representative households' consumption induced by changes in their real expenditures. The endogenous changes derived from the DCGE model for the respective household groups are used to recalculate consumption expenditures of their corresponding households in the survey dataset. New levels of total consumption expenditures are recalculated based on individual households' budgets, and the new poverty rates for each region, rural and urban, and the national total are obtained by comparing expenditure levels (in real terms) to the official poverty line defined for HBS.

Nutrition

The prevalence of stunting for children under five years of age is chosen as an indicator to measure nutritional impact of economic growth under different policy scenarios for 2012–2020.[149] To translate economic growth as projected by the DCGE model we estimate elasticities that translate changes in GDP into changes in the prevalence of malnutrition. GDP growth elasticities with respect to the prevalence of malnutrition are directly derived from cross-country estimations that fit time series data of GDP levels and malnutrition prevalence rates such as available from the World Bank's World Development Indicators (WDI) database (2012). Following this approach, we estimate the prevalence rate of child stunting in a country as a function of the country's GDP per capita using a nonparametric regression to explore the relationship between the variables and then choose a functional form that best fits this relationship in the data. Specifically, we apply a locally weighted regression on the data from all low- and middle-income countries (with available observations), using STATA's locally weighted scatter plot smoothening (lowess) command. Given the

[149] There are five reasons to support this choice: First, young children's nutritional status tends to be most responsive to changes in living conditions and to be vulnerable to food insecurity. Second and closely related to the first, protein-energy deficiency and micronutrient deficiencies are usually most prevalent among young children. Third, anthropometric measures capture the nutrition outcomes of inadequate food intake in terms of macro- and micronutrients, adverse health conditions, and the interaction of both. Fourth, from the three common child anthropometric measures height-for-age (identifying stunting), reflects best the cumulative effects of chronic under-nutrition and persistent disease burden, and is therefore a good overall, long-run nutrition indicator. Fifth, by focusing on young children, who are often the weakest individuals in the household, we capture aspects of unequal intra-household distribution of resources that are ignored when looking at household-level indicators.

shape of the curve, we apply a fractional polynomial regression of degree one on the data and let the data determine the specific functional form and respective parameter estimates).[150]

The fractional polynomial regression shows that the specification of the functional form with best statistical fit of the data has GDP per capita in logarithmic form and is defined as

$$Stunt = b_0 + b_1 * [In(GDP_{pc}) + b_2] + \varepsilon,$$

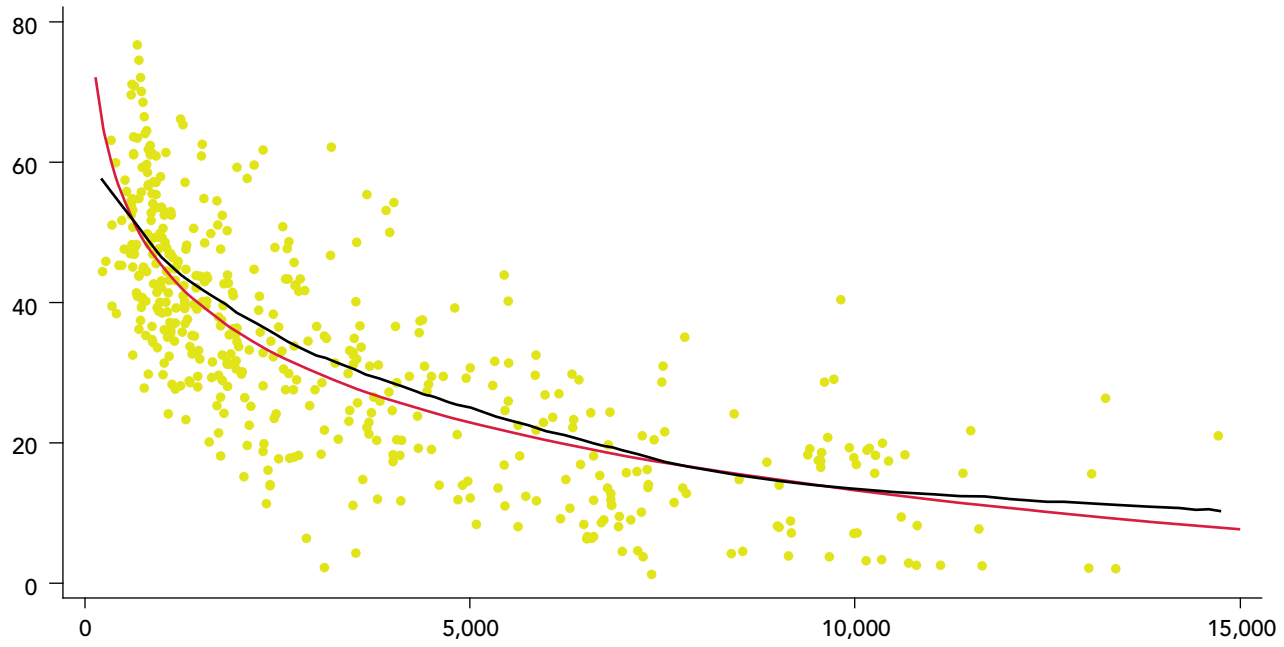
where *Stunt* is the prevalence rate of child stunting in percentage; *GDPpc*, the GDP per capita level, normalized by 10,000; *b0*, *b1*, and *b3*, the coefficients to be estimated; and ε, an error term. Per capita GDP is measured in constant 2005 international dollars at purchasing power parity. The sample of low and middle-income countries contains observations from 123 countries for different years between 1980 and 2009.The regression results suggest that one percent GDP per capita growth reduces the prevalence rate of child stunting by 0.139 percentage points on average in the long run.

To test the sensitivity of this semi-elasticity estimate, we divide the total sample into two subsamples and run the fractional polynomial regression of degree for each subsample. We separate countries based on their effectiveness in translating growth into reduction of child stunting.[151] Inter-country differences may be due

[150] Thus, we do not control for other country-specific factors such as income distribution, literacy/enrollment rate, vaccination rate, and water and sanitation network coverage that may systematically change in the course of economic growth and affect nutrition outcomes.

[151] The effectiveness of a country is considered as above (below) average, if the sum of the deviations of the observed values from the predicted value is negative (positive).

Figure 1 Annex Chapter 2: Relationship between Child Stunting Prevalence and GDP per Capita in Low- and Middle-Income Countries, Fitted by Locally Weighted Polynomial Regression (dashed line) and Fractional Polynomial Regressions of Degree One (solid lines)



Source: Based on WDI database (2011).
Note: The chosen bandwidth of the locally weighted polynomial regression curve is 0.8 (that is STATA's standard bandwidth).
The data are fitted by locally weighted polynomial regression (dashed line) and fractional polynomial regressions of degree 1 (solid line). PPP = purchasing power parity.

to the structure of growth, distribution policies, more and more effective nutrition-beneficial investments, and so on. The subsample of more effective countries includes observations from 68 countries, and the subsample of less effective countries includes observations from 55 countries. The specifications of the functional form with best statistical fit for the subsamples are identical with the functional form for the total sample (though the coefficient estimates differ, of course). In more effective countries, the average child stunting reduction resulting from a GDP per capita increase by one percent equals 0.146 percentage points, and 0.138 percentage points in less effective countries. Thus, the semi-elasticities for less-effective countries and for all countries are very similar. Given that Yemen belongs to the less-effective countries according to our classification but reforms toward more effective use of available resources are generally assumed under our transition scenarios, we use the overall semi-elasticity (–0.139) for all our projections.

Table 5 Annex Chapter 2: Regression Results

	All countries	More effective countries	Less effective countries
Coefficient (standard error)			
b_0	27.87	35.04	20.18
	0.53	0.55	0.43
b_1	–13.90	–14.56	–13.79
	0.53	0.57	0.42
b_2	1.052	1.035	1.069
F-value	685.8	659.0	1073.8
R-squared	0.593	0.734	0.824
Adjusted R-squared	0.593	0.733	0.824
Observations	472	241	231

Source: Based on WDI database (2011).

C: Supplementary DCGE Model Tables and Figures

Table 6 Annex Chapter 2: MacroSAM for Yemen, 2009

	Activity	Commodity	Factors	Households	Government	ROW	S-I	Direct Tax	Import Tax	Commodity Tax	Total
Activity		8.000									8.000
Commodity	3.000			4.000	0.752	1.000	0.691				10.000
Factors	5.000										5.000
Households			5.000	0.533	–0.596	0.096					5.000
Government						0.078		0.213	0.057	–0.271	0.077
ROW		2.000									2.000
S-I				0.354	–0.079	0.416					0.691
Direct tax				0.213							0.213
Import tax		0.057									0.057
Commodity Tax		–0.271									–0.271
Total	8.000	10.000	5.000	5.000	0.077	2.000	0.691	0.213	0.057	–0.271	

Source: Yemen DCGE Model, 2012.

Table 7 Annex Chapter 2: Social Accounting Matrix (SAM) Disaggregation

Activities	Activities cont'd	Commodities cont'd	Factors cont'd
Wheat 1	Livestock 1	Other mining	Public sector, skilled
Wheat 2	Livestock 2	Food processing	Profit
Wheat 3	Livestock 3	Light manufacturing	Oil sector profit
Wheat 4	Livestock 4	Oil refinery	Land 1
Sorghum and millet 1	Fishery 2	Other manufacturing	Land 2
Sorghum and millet 2	Fishery 3	Electricity	Land 3
Sorghum and millet 3	Forestry	Water	Land 4
Sorghum and millet 4	Oil and gas	Construction	**Households**
Other cereals 1	Other mining	Trade and transport	Rural Households in region 1
Other cereals 2	Food processing	Other private services	Urban households in region 1
Other cereals 3	Light manufacturing	Social Services	Rural households in region 2
Other cereals 4	Oil refinery	Other public services	Urban households in region 2
Fruits 1	Other manufacturing	Livestock	Rural households in region 3
Fruits 2	Electricity	Fishery	Urban households in region 3
Fruits 3	Water	Forestry	Rural households in region 4
Fruits 4	Construction	Oil and gas	Urban households in region 4
Vegetables 1	Trade and transport	Other mining	**Other agents**
Vegetables 2	Other private services	Food processing	Enterprises
Vegetables 3	Social services	Light manufacturing	Government
Vegetables 4	Other public services	Oil refinery	Rest of the World
Pulses and oilseeds 1	**Commodities**	Other manufacturing	**Savings and investments**
Pulses and oilseeds 2	Wheat	Electricity	**Taxes**
Pulses and oilseeds 3	Sorghum and millet	Water	Direct tax
Pulses and oilseeds 4	Other cereals	Construction	Commodity tax
Coffee 1	Fruits	Trade and transport	Import tax
Coffee 2	Vegetables	Other private services	
Other export crops 1	Pulses and oilseeds	Social services	
Other export crops 2	Coffee	Other public services	
Other export crops 3	Other export crops	**Factors**	
Other export crops 4	Qat	Private sector, unskilled	
Qat 1	Livestock	Private sector, semi-unskilled	
Qat 2	Fishery	Private sector, skilled	
Qat 3	Forestry	Public sector, unskilled	
Qat 4	Oil and gas	Public sector, semi-unskilled	

Source: Yemen DCGE Model, 2012.

Table 8 Annex Chapter 2: Detailed Poverty Results

		Initial (2009)	2010	2011	2012	2016	2020
Base	National	42.8	42.3	41.8	41.3	38.8	36.3
	Rural	47.6	47.3	46.9	46.5	44.0	41.5
	Urban	29.9	29.2	28.5	27.6	25.1	22.5
Stagnation	National	42.8	42.3	54.4	57.3	58.7	59.6
	Rural	47.6	47.3	59.0	61.8	63.0	63.8
	Urban	29.9	29.2	42.4	45.3	47.5	48.7
Slow transition	National	42.8	42.3	54.4	57.3	54.0	50.8
	Rural	47.6	47.3	59.0	61.8	58.7	55.9
	Urban	29.9	29.2	42.4	45.3	41.4	37.4
Agriculture-led transition	National	42.8	42.3	54.4	57.3	52.5	49.3
	Rural	47.6	47.3	59.0	61.8	57.4	54.5
	Urban	29.9	29.2	42.4	45.3	39.6	35.7
Industry-led transition	National	42.8	42.3	54.4	57.3	50.6	43.9
	Rural	47.6	47.3	59.0	61.8	55.4	48.4
	Urban	29.9	29.2	42.4	45.3	37.7	32.0
Service-led transition	National	42.8	42.3	54.4	57.3	50.6	42.3
	Rural	47.6	47.3	59.0	61.8	55.6	47.4
	Urban	29.9	29.2	42.4	45.3	37.3	28.9
Accelerated transition	National	42.8	42.3	54.4	57.3	46.8	33.9
	Rural	47.6	47.3	59.0	61.8	51.5	38.1
	Urban	29.9	29.2	42.4	45.3	34.3	22.7

Source: Yemen DCGE Model, 2012.

D: Costs of Investments

Table 9 Annex Chapter 2: Health Program Costs for Treatment of Malnourished Children Aged 0–5 Years, at 2005 Prices in US$

Hospital Level	
Severe malnutrition	**30.28**
Primary Health Care Level	
Children between 2 months and 5 years	
Acute Respiratory Infections	
Severe pneumonia or very severe disease	0.15
Pneumonia	0.17
Cough or cold–mother counseling	
Diarrhea	
Severe dehydration	1.39
Some dehydration	0.23
No dehydration	0.16
Severe persistent diarrhea	1.35

(continued on next page)

Table 9 Annex Chapter 2: Health Program Costs for Treatment of Malnourished Children Aged 0–5 Years, at 2005 Prices in US$ *(continued)*

Persistent diarrhea	0.16
Dysentery	0.18
Fever	
Very severe febrile disease	0.43
Fever/Malaria unlikely	0.02
Severe complicated measles	1.14
Measles with eye or mouth complications	1.07
Measles	0.06
Ear Problems	
Mastoiditis	0.16
Acute ear infection	0.17
Chronic ear infection–mother counseling	
Malnutrition	
Severe malnutrition (pre-referral)	0.06
Very low weight	4.00
Anemia	
Severe anemia (pre-referral)	0.06
Anemia	1.00
Infants Under 2 Months	
Bacterial infection	
Possible serious bacterial infection (pre-referral)	0.48
Local bacterial infection	0.70
Diarrhea	
Severe dehydration	0.75
Some dehydration	0.23
No dehydration	0.16
Severe persistent diarrhea	0.75
Dysentery	0.05
Feeding problem or low weight	
Not able to feed (pre-referral)	0.48
Feeding problem or low weight	3.00
Total	**11.78**

Source: Compernolle (2005).

Table 10 Annex Chapter 2: Foreign Aid[a] and Total Investment

	2013–2016			2017–2020		
	Foreign Aid Flow	Total [b] Investment	Growth (in percent)	Foreign Aid Flow	Total 2 Investment	Growth (in percent)
Baseline scenario	2,978	24,515	4.0	3,365	38,529	4.0
Agriculture-led			4.2			4.0
Low efficiency	3,669	25,897		3,472	38,427	
High efficiency	3,323	25,205		3,418	39,570	
Industry (electricity, water, roads etc.)			5.0			5.2
Low efficiency	5,329	31,117		7,010	58,985	
High efficiency	4,154	28,887		5,187	53,251	
Services (communication, transport, social)				5.6		6.3
Low efficiency	4,716	30,011		6,141	52,810	
High efficiency	3,815	28,289		4,481	48,976	
Accelerated growth scenario			6.7			8.0
Low efficiency	7,758	36,191		9,893	71,166	
High efficiency	5,336	31,371		6,356	60,363	

[a] Not including the urgent emergency needs.
[b] Includes foreign aid flows.

E: The Private Sector in Yemen

Even prior to the 2011 crisis, Yemen faced a difficult and mounting challenge in moving toward diversified, private sector led economic growth. Yemeni enterprises have consistently identified corruption as a leading constraint to private enterprise activity and growth, and increasingly reported electricity, access to land, and political instability as well as regulatory policy uncertainty as other key constraints.[152] Corruption has been reported as the leading constraint across firm size, ownership, and sector. Medium-sized, domestically owned firms were more affected than larger firms. Expectations of informal payments/gifts were most frequently reported in relation to interactions with municipal police, tax officials, and sanitation/environmental inspections as well as in relation to obtaining permits and licenses (construction, import, etc.) and electrical connections.

Also contributing to the lack of transparency in the business environment was the inconsistency and unpredictability of regulatory interpretation by public officials. Over 60 percent of firms surveyed did not believe regulations were implemented consistently. Medium-sized firms were the most likely to identify bureaucratic interpretations of regulations as inconsistent, and also reported the highest rate of business inspections (an average of 42 inspections annually) and were most likely to have experienced the expectation of associated informal payments. These challenges have increased over the years. For example, the number of tax inspections had reportedly doubled between 2005 and 2010 (from an average of 5 to 10 per year), and the number of police inspections was reported to have nearly tripled (from an average of 5 to 14 per year). The rates of inspection for domestic, private, non-exporting firms are the highest.[153]

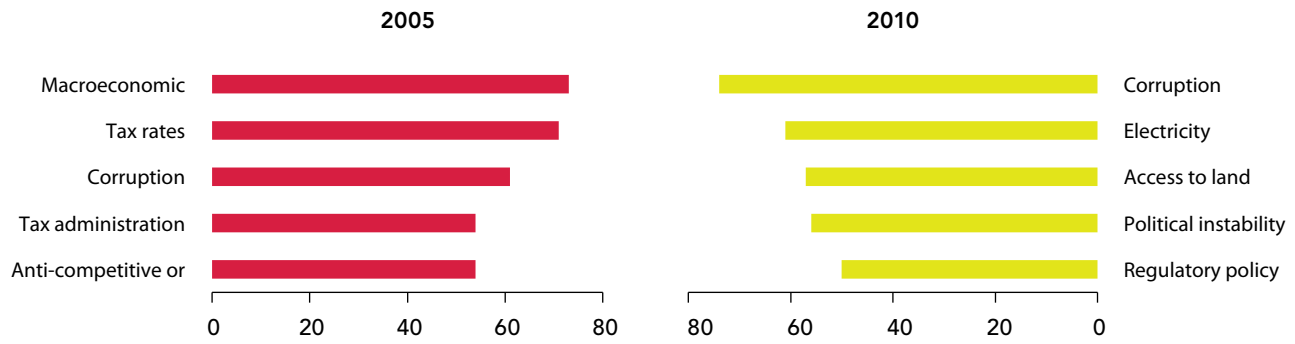
Although corruption is more costly in Yemen than in any other MENA country for which parallel data is available, the cost of unreliable power is even worse. In the last survey, the average firm estimated a loss of the equivalent 13 percent of sales value to power outages and fluctuations.

[152] Yemen Investment Climate Assessment Update, World Bank 2011.
[153] Ibid.

These challenges continued through the 2011 crisis until today as reported in interviews with Yemeni business owners in March 2012. However, these issues were overshadowed by new concerns over political stability and physical security.[154] Insecurity in urban areas, but even more so for the transport of goods and inputs on inter-city roads, is a key concern voiced by business owners in Yemen. Business owners in various sectors, from consumer goods (food and pharmaceuticals) to petroleum related services, reported a range of coping mechanisms to address insecurity and higher costs, including limiting business to the immediate urban areas, temporary business closures, re-routing trade through more costly but more secure routes, and even shutting down businesses altogether in favor of

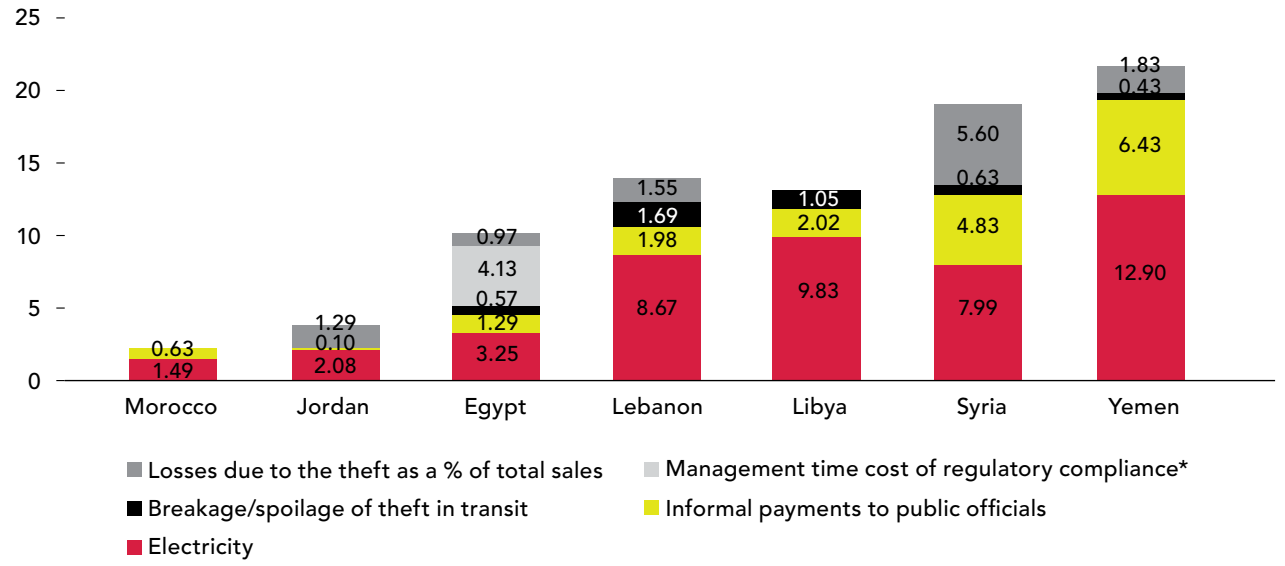
[154] Interviews with members of the Sana'a Chamber of Commerce, Yemen Businessmen's Club, and other business representatives from banking, telecommunications, and transport sectors in Sana'a in March 2012.

Figure 2 Annex Chapter 2: Percent of Yemeni Enterprises Evaluating Constraints as "major" or "very severe"



Source: Investment Climate Assessment Update, World Bank 2011.

Figure 3 Annex Chapter 2: Losses Due to Investment Climate Weaknesses



operating from neighboring countries. For example, some fishing exporters reportedly have begun to re-route their export shipments through the Salalah port in Oman, since the route from Mukallah to Aden port has been found to be insecure, increasing the cost of shipment. Factory owners reported moving production facilities to neighboring Saudi Arabia due to increasing insecurity and higher costs of production in Yemen. They plan to export to the Yemen market in lieu of local production.

These interviews also highlighted the increasing challenge of reliable power supply, which had already emerged as a critical business constraint in the 2010 survey. Electricity is reportedly even more of a problem today due to repeated and extended power outages and increased power shedding in urban areas where private enterprises tend to be located. In 2010 power outages were most frequent in Ibb, Hodeidah, and Ta'iz, with about two thirds of firms in Ibb and Hodeidah reporting this as a serious constraint. But power outages were also reported as a serious constraint in Ta'iz, Sana'a, and Aden. Power outages are likely to have increased in importance in Sana'a since 2011. While generators are used as a coping mechanism (37 percent of enterprises reported owning one),[155] the costs are more prohibitive for small enterprises, making them more vulnerable to power outages and resulting in greater production losses for smaller firms with less financial resources.

A key issue not previously reported as a constraint but which has emerged since the 2011 crisis is the shortage and cost of diesel. This was perhaps one of the most emphasized issues by private enterprises during the assessment, affecting enterprises in every sector. During the height of the 2011 crisis shortages related to the sabotage of the Mareb pipeline and other security events pushed black market prices for diesel as high as YR 250–750 per liter (compared to the official price for small scale consumers of YR 50 per liter). Despite high unofficial prices, often diesel was simply unavailable, bringing many productive activities to a halt. Oil grants from neighboring countries have helped ease shortages to a limited extent, reflected in current black market prices estimated to range from YR 50–YR 250 per liter.[156] Nonetheless, a continuous shortage of diesel has elevated this issue to the top of the private sector agenda, and places greater urgency on rationalizing pricing of fuel over the medium term.

These findings are also supported by an assessment of the General Investment Authority (GIA) on the crisis' impact on larger enterprises or investment projects (those registered through the GIA). A report prepared by GIA emphasizes the impact on investments of several key factors: loss of foreign workers, insecurity on inter-governorate roads, diesel shortages, power outages, and depression in demand.[157] Through outreach conducted in 2011/2012, the GIA identified a total of 59 enterprises or investment projects with a total investment capital of YR 214 billion as distressed as a result of the 2011 crisis.[158] Most of these investments were in the service and industrial sectors, with a notable concentration in tourism and fishing. While not representing the highest *levels* of investment (which is concentrated in Sana'a), the highest *numbers* of distressed investments were noted to be in Abyan, where elevated insecurity brought most productive activities to a standstill. Significant investments in Hadramout, Al-Muhra, Al-Bayda, and Hodeidah were also affected.

The private sector is the engine which will lead Yemen towards sustainable, equitable development, and which is the genuine source for employment. It is therefore necessary to create some economic space it for to operate and grow and begin to improve its competitiveness. Helping the private sector to recover and grow requires efforts at multiple levels, ranging from

[155] Investment Climate Assessment Update, World Bank 2011.

[156] World Bank staff estimates.

[157] Report on Distressed Investments, General Investment Authority, 2012.

[158] By comparison, GIA had previously identified a total of 875 distressed investments and enterprises with a total investment capital of YR 779 billion from 2001–2008, which seems to reflect a higher level of distressed capital on an annualized basis in 2011, but a lower number of enterprises. This may however simply be due to variation in GIA's outreach and analytical approach between the two periods.

deep governance reforms, to infrastructure investment to addressing the issues of Yemen's weak competitiveness. In the medium term, however, priority needs to be given to encourage the private sector's re-engagement and investment. This will require taking confidence-building measures that could demonstrate progress on some of the private sector's key concerns: improving political stability, security, a predictable and transparent business environment, and reliable energy supplies (including electricity and diesel). Even with confidence building measures, rebound will be take time, particularly for the vast majority of Yemen's private sector that are small and medium enterprises with a limited scope for coping with the crisis and limited financial resources for recovery and re-investment. A key priority is thus to help smaller enterprises, to re-engage, re-invest, and re-invent their businesses through rehabilitation and the introduction of new products, access to new local and export markets, use of new processes, logistics, and equipment, and development and procurement of new skills and skilled labor.

It will be critical not to lose sight of the longer-term objectives of improving competitiveness through infrastructure investment, a focused program of regulatory reform, and investment in skills and innovation. Constructive dialogue and partnership between the private and public sector will be key to establishing the levels of trust and cooperation between the government and private sector which is necessary to make the transition to private-sector led growth in Yemen.

Annex 3. Employment and Livelihoods

Yemen: Formal employment

	GDP Per capita	% workers who are informal	Employment in Rural Areas		Employment age 15–24		Employment in the Public Sector		Employment with University education		Unemployed
	(2000 US$ constant) (*)		%	% Inf	% (*)	% Inf (*)	%	% Inf	%	% Inf	% (*)
Yemen	560	91	72	94	22	97	39	12	5	41	15
Egypt	1786	58	57	70	23	87	30	11	17	24	9
Iraq	731	67	27	76	23	85	37	12	13	25	18
Jordan	2245	44	17	28	22	50	36	6	26	22	13
Lebanon	5859	56	50	67	29	69	14	—	17	28	9
Morocco	1718	82	44	94	35	91	19	19	9	37	10
Syria	1330	71	50	76	32	89	27	11	7	24	8

Source: Thriving for Better Jobs, the Challenge of Informality in the Middle East and North Africa, World Bank, 2011.

LIVE'S

Annex 4. Expanding Social Service Delivery

Social Welfare

Safety Net Programs in Yemen

Social assistance	Labor market	Social security
• Subsidies • Cash assistance through Social Welfare Fund • Food distribution with the support of WFP • Social care welfare systems • Martyr's Fund • Tribal Affairs' Authority • Disabilities' Fund.	• Social Fund for Development • Microfinance institutions (Al-Amal Bank, National Microfinance, etc.) • Public works • The Agricultural and Fisheries' Production Promotion Fund • Small Enterprise Development Fund • The National Program for Community Development and Productive Families • Others.	• General Authority for Social Security and Pensions • The Social Security and Pension (private and mixed) • Army Pension Fund • Police Pension Fund.

Private/Informal Social Safety Net

Private Social Safety Net

Traditional/Community Based Social Assistance	Civil Society Organizations	Retailers
• Remittances from relatives working domestically or/and abroad • Interest free loans • Donations by people during religious occasions and other times (zakat and sadaga) • Revolving savings • Pooled labor and money • Shared food, contributions to wedding and funeral expenses, etc.	• Charitable Association distribution of food, cash and in-kind; providing programs for medium- to long-term development.	Credit lines from retailers Al-Kuraimi Microfinance SFD surveys conducted in 2009 and 2010 indicated that buying food on credit is a main coping strategy in rural Yemen. It is believed to be in urban areas also.

Social Welfare Fund's Geographic Distribution

Table 11 Annex Chapter 4: Distribution of SWF Recipients per Governorate

Governorate	Yemen Population 2010	Number of SWF Cases	Estimated recipients in the population		Estimated eligible recipients in the population		Poverty incidence 2005/6
			number	percent	number	percent	percent
Ibb	2,490,187	140,176	651,324	26	450,234	18	30.07
Abyan	512,239	50,199	177,742	35	169,588	33	45.68
Amanah	2,087,638	71,323	291,788	14	129,491	6	14.89
Al-Baydha	675,427	59,883	296,798	44	286,459	42	51.85
Ta'iz	2,804,926	190,296	875,933	31	666,878	24	37.8
Al-Jawf	516,843	52,490	284,873	55	283,375	55	49.58
Hajja	1,732,092	141,395	771,182	45	654,513	38	47.53
Al-Hodieda	2,545,293	144,455	597,712	23	427,805	17	31.72
Al-Mukalla +Seiyun	1,218,043	72,899	260,254	21	163,723	13	35.59
Dhamar	1,558,103	70,447	293,140	19	112,863	7	25.84
Shabwah	552,013	60,527	290,716	53	288,987	52	54.13
Sada	814,777	38,018	191,254	23	154,339	19	16.55
Sana'a	1,078,479	58,971	272,124	25	154,033	14	28.13
Aden	707,237	41,012	154,100	22	74,044	10	16.88
Lahej	849,977	82,216	359,257	42	336,963	40	47.2
Mareb	279,609	24,831	113,423	41	102,620	37	45.88
Mahweet	580,486	37,390	176,052	30	134,513	23	30.75
Al-Mahara	104,836	12,951	49,074	47	10,208	10	8.85
Amran	1,031,358	80,062	367,089	36	361,440	35	63.93
Al-Dhalea	553,032	44,931	225,746	41	182,517	33	44.24
Raymah	461,389	35,939	177,733	39	99,892	22	34.07
Total	23,153,982	1,510,411	6,877,314	30	5,157,986	22	34.78

Source: Social Welfare Fund
Note: The above table is indicative, since the methodology for measuring poverty differs from that for measuring SFW's targeting. Although the indicators for proxy means-testing are derived from the same data: 2005/06 HBS.
The eligible recipients exclude categories E and F which are not poor and therefore not eligible for assistance.

Annex 5. Expanding Basic Service Delivery

Table 12 Annex Chapter 5: Incidence Rates for Selected Communicable Diseases		
	2010[a]	2011
Diarrhea (bloody & non-bloody)	130,008	174,713
Typhoid & Para Typhoid	16,106	27,127
Hepatitis A	2,238	3,275
Dengue	4,925	719
Hepatitis B& C	1,270	978
Malaria[b]	198,963	142,152
Bilharzias is	4,205	4,720
Cholera[c]		31,789
Typhoid Paratyphoid	16,106	
Diarrhea & gastroenteritis	130,008	119,438
Brucellosis	1,685	2,588
Tetanus neonatorum	54	39
Diphtheria	3	4
Whooping cough	1,385	1,149
Acute poliomyelitis	117	98
Rabies	1,198	553
Dengue Fever	4,925	3,907
Chikungunya[d]	0	13,500
Yellow Fever	0	0
Varicella (chickenpox)	1,890	1,479
Measles[e]	825	681
Rubella	143	156
Acute Hepatitis A	2,238	2,001
Acute hepatitis B–C	1,270	823
Mumps	2,652	2,033
Leishmaniasis	633	518
Schistosomiasis (Bilharziasis)	4,205	1,940
Biennial meningitis	203	153
Nontauerial meningitis	441	346
Registered PLTB	3,557	
Percent Death	3.2	
# and proportion of tuberculosis cases	9,050	

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Table 12 Annex Chapter 5: Incidence Rates for Selected Communicable Diseases *(continued)*

	2010[a]	2011
Detected and cured under directly observed treatment short course	2,769	
Proportion of children u5 sleeping under insecticide treated bed nets (percent of all houses)	45 percent	
Proportion of children u5 with fever treated with appropriate anti-malarial drugs		
HIV prevalence among population aged 15–24 years	55	
# of patients on ART		
Condom use at last high risk sex		
Proportion of population aged 15–24 years with comprehensive correct knowledge of HIV/AIDS		
Proportion of population with advanced HIV infection with access to antiretroviral drugs	0.07	

Source: Government of Yemen and JSEA Staff.
[a] MoPHP & CSO 2010, 2011.
[b] The figures for 2010 might have included some cases of Dengue& Chikunguniya.
[c] AWD/Cholera outbreak in Abyan, Aden, Lahj, Al-Dhalae and Ibb resulted in 31,789 cases with 124 deaths during 2011.
[d] 13,500 total affected out of which 199 cases hospitalized and 72 deaths.
[e] In 2012, the Government reported officially a measles outbreak with a total of 2,878 cases and 126 deaths due to low coverage of 2011.

Water

Recommendations on basin planning for Sana'a made at the Stakeholder Conference at the completion of SBWMP Phase I.

- Consider the following sharpened water resource management objectives for the basin:
  - Ensure affordable safe water for domestic and industrial use;
  - Ensure sustainable farm incomes in 'green-belt' areas reserved for farming;
  - Ensure that any transfer of water between uses is done on a win-win basis, and that there is no uncompensated harm.
- The deep Tawilah sandstone aquifer should be reserved for drinking water, and certain areas should be declared 'green belt' areas for farming and environmental protection.
- Adopt a 20–25 year, five year and one year planning time frame, and establish M&E accordingly.
- Plan at sub-basin level, as well as for the basin as whole. Data should be split out by sub-basin, published and shared with stakeholders, and used as a tool for participatory planning at the sub-basin or district level.
- Adopt different approaches for four groups of sub-basins with different characteristics: (1) urban, (2) urbanizing, (3) rural overlying the deep aquifer, (4) rural greenbelt/farming area.
- Hold a conference to bring together practice in preparing and executing basin plans in Yemen, in order to draw up guidelines or best practice notes.
- Design in detail a planning process along the lines discussed above:

  1. Set up a small but effective IWRM basin planning unit in NWRA Sana'a Branch, assisted by a decision support system and modeling capability, to set water management goals and objectives and to prepare

Health – Malnutrition – Human Impact Stories

Ahmed Tawfiq, Male—one year and four months, here with his grandmother, from Haraz. Sick since he was four months old. Family is well off, the father is a butcher.

Manal Abdullah—female, 16 months old with her mother. Tahani Nasser, mother of five and currently pregnant. From Mareb. Manals' state started to deteriorate in the last four months.

Ikhas Faisl, nine months, from Sana'a capital here with her grandmother, started having diarrhea at the age of three months. His grandmother is Zahra Hussein. Reduced amount of food in the house, due to rising food prices. Ikhas mother has seven children. Her father said they should leave her to die. They had been giving her flour stirred in water. No money for milk or basic foods. The grandmother decided to save the girls' life, on her own expenses, since her son didn't want to take care of her.

Laila Yehia, female—four months from Amranwith her mother, Saleha Saleh, mother of seven. Laila got both breast milk and artificial milk and now she has been sick with diarrhea for one month.

Mohamed Ali, 13 months old, here with his mother, Hind Ali, mother of three children, currently pregnant. She has already lost two children.

a long term plan, and five year and annual action programs.

2. Develop a three-part governance structure (Basin Committee–local councils–water user associations.
3. Agree with the Ministry of Finance on the annual programming arrangements and on how financing and implementation programs for all water-related investments and operations can be integrated at the basin level.

Table 13 Annex Chapter 5 – Water: Implementing the Agenda: Links to Reform Priorities, Readiness, and Impacts in the Recovery Period

				Short term recovery impacts			
Priority agenda	**Support to longer term reform agenda (NWSSIP, NASS)**	**Available financing vehicle or project**	**Implementation readiness**	**Immediate rehabilitation or re-equipment need?**	**Rapid impact on poverty?**	**Labor-intensive public works?**	**Impact on lagging or sensitive areas**
1. Water resources management							
Strengthening and reorienting NWRA HQ	Yes	WSSP, PAWS	On-going, but needs to be refocused on NWRA in a support role	Some	No	No	Possible
Water resources studies, planning, monitoring etc.	Yes	WSSP, PAWS	On-going, but needs prioritizing and operationalizing	Some	Longer term	No	Possible
Support to decentralized planning (basin approach, NWRA decentralization etc.)	Yes	WSSP, PAWS (financing) Continuation of the Sana'a Basin IWRM initiative, similar approaches in other basins backing basin plans	On-going but needs strengthening and mainstreaming	Some	No	No	Yes
Support to community water management	Yes	WSSP, GSCP, IIP, NGO programs etc.	Much can be done through existing projects etc., but a 'mainstreaming strategy' needs to be developed	No	Yes	Possible	Yes
2. Water and agriculture							
Groundwater use efficiency	Yes (involvement of private sector, integration with community water management)	WSSP, GAFSP and PPCR (financing) NIP/GSCP (project)	Well-equipped implementation network	Some	Should be, if properly targeted	Possible	Possible
Surface irrigation improvement (large and small scale spate)	Yes (equity of water allocation, sustainable WUAs, IMT)	WSSP, GAFSP (financing) NIP/IIP/GSCP (project)	Well-equipped implementation network	Some	Should be, if properly targeted	Yes	Yes

(continued on next page)

Table 13 Annex Chapter 5 – Water: Implementing the Agenda: Links to Reform Priorities, Readiness, and Impacts in the Recovery Period *(continued)*

Priority agenda	Support to longer term reform agenda (NWSSIP, NASS)	Available financing vehicle or project	Implementation readiness	Short term recovery impacts			
				Immediate rehabilitation or re-equipment need?	Rapid impact on poverty?	Labor-intensive public works?	Impact on lagging or sensitive areas
Rainfed, livestock, water harvesting, watershed management	Yes (restructuring of AFPPF, 'Aden Agenda' reform of MoA services, introduction of 'payments for environmental services' [PES))	WSSP, GAFSP (financing) RALP (project)	RALP coverage is limited. Development models may need to be further identified and prepared. Implementation capacity not clear (RDAs? Governorate Agricultural Directorates)	Not known	Yes	Yes	Yes
Adapting farming practices	Yes (strengthening of AREA and extension on a 'demand-driven' basis, 'Aden Agenda' reform of MoA services	WSSP, GAFSP (financing) GSCP, RALP (projects)	The approach needs to be carefully prepared	No	Should be, if properly designed	No	Yes
3. Rural water supply and sanitation							
Accelerating extension of sustainable coverage by GARWSP, including mainstreaming the demand-responsive approach, efficient delivery etc.	Yes	WSSP, PAWS	On-going, but needs more focus on efficiency and sustainability	Some	Yes	Possible	Possible
Reaching the poorest communities through sustainable, affordable technologies, partnerships with CBOs/NGOs, community contracting etc.	Yes	WSSP, PAWS, SFD, PWP, UNICEF, NGO programs	On-going, but needs to be scaled up	Possible	Yes	Possible	Possible
Improving sector-wide collaboration, including planning, capacity building, and effective and honest M&E	Yes	WSSP, PAWS etc.	On-going, but needs improvement as set out in the NWSSIP Update	n/a	n/a	n/a	n/a

(continued on next page)

Table 13 Annex Chapter 5 – Water: Implementing the Agenda: Links to Reform Priorities, Readiness, and Impacts in the Recovery Period *(continued)*

Priority agenda	Support to longer term reform agenda (NWSSIP, NASS)	Available financing vehicle or project	Implementation readiness	Short term recovery impacts			
				Immediate rehabilitation or re-equipment need?	Rapid impact on poverty?	Labor-intensive public works?	Impact on lagging or sensitive areas
4. Urban water supply and sanitation							
Firm up sustainable water sources for Sana'a, Ta'iz and Ibb	Yes	WSSP, KfW, AFESD etc. Continuation of the Sana'a Basin IWRM initiative, similar approaches in other basins backing basin plans	Elements exist in plans etc. but need revising and implementing	Some	Longer term	Possible	Yes
Improving coverage with priority to the poor, ensuring affordable service provision and a business approach	Yes	WSSP, KfW, AFESD etc. Each utility should present its Business Plan for achieving the objectives	The reform agenda and next steps are clear (see Equity and Efficiency in Yemen's Urban Water Reform, 2009 publication by MoWE with GIZ/KfW/World Bank)	Yes	Possible	Possible	Possible
Innovative and pro-poor approaches (low cost technology, PPP, OBA etc.)	Yes	WSSP, KfW, AFESD etc. GPOBA	Some projects ready (e.g.al Qabel OBA, SFD decentralized sanitation) or outlined (e.g., Sana'a PPP)	Possible	Yes	Possible	Possible
Assessing feasibility of desal and/or out-of-basin water transfer (Sana'a, Ta'iz and Ibb)	Yes	WSSP, KfW, AFESD etc.	Desal: some work underway e.g., Hail Said. Transfer: SAWAS, Hydrosult, basin plans	No	Unlikely	Possible	Possible

Urban Water Supply and Sanitation

And what should donors do

There have been real advances in harmonization and alignment of donor programs, and these need to be continued. Also, donors must make sure that the new sector-wide approaches do not lead to a hiatus in good programs from the past. Donors need to continue and strengthen these programs with more sustainable institutional arrangements. Donors could:

1. Sign up for the National Water Sector Strategy (NWSSIP) Update and the Sana'a Declaration, and actively participate in the preparation of the priority action/investment plans for NWSSIP and for the National Agricultural Strategy (NASS).
2. Given the reality that the Yemeni economy and society have to adjust to ever-increasing water scarcity, donors could establish a programmatic technical assistance that will continue to guide the Government—mainly the Ministries of Planning (MOPIC) and Finance (MOF), together with the Ministries of Water (MoWE) and Agriculture and Irrigation (MAI)—on overall economic planning, taking water as the determining constraint. Such support could, for example, help to develop a water strategy 2030/40 for Yemen indicating the policy options in view of ever-declining water availability and how this trend might impact (i) the competitiveness of the economy, and (ii) the future of the water-dependent rural population.
3. Remain proactive at the level of sector-wide reform and support, working with MWE and MAI on:

    - Implementing NWSSIP and NASS;
    - Getting the Water Sector Support Program (WSSP) model to work as: (1) an integrating mechanism for financing within national strategies (NWSSIP, NASS); (2) a planning and delivery mechanism at the sub-sector level; and (3) a decentralized tool for integrated planning at the basin or governorate level;
    - Tracking results through sector-wide monitoring and dissemination of results;
    - Supporting sector-wide participatory forums, especially the Joint Annual Review (JAR);
    - Strengthening MWE and supporting the reorientation of the National Water Resources Authority (NWRA) to become a decentralized agency supporting the community-based 'bottom up' approach to water management;
    - Supporting reform in agriculture and MAI, including: (i) improving and then operationalizing the NASS sector strategy and investment plan; (ii) demand-driven research and extension; (iii) market-based water technology transfer; (iv) operationalization of the National Irrigation Program (NIP); (v) restructuring of the Agricultural Fund (AFPPF); and (vi) introduction of Payments for Environmental Services (PES) etc.

4. Support WSSP and other investment mechanisms but ensure that the mechanisms deliver on coherent and sustained sub-sector reform and investment programs for:

    - Integrated water resource management (IWRM) and community-based water management within basin plans (following on from the Sana'a Basin Project (SBWMP) etc.);
    - Rural water supply and sanitation (following on from the Rural Water Supply Project (RWSSP) etc.);
    - Urban water supply and sanitation (following on from the sector reform agenda and

the Urban Water Supply Project (UWSSP) etc.);

- Community water management and water use efficiency for groundwater-based irrigation (following on from SBWMP, the Groundwater and Soil Project (GSCP) etc.);
- Spate irrigation improvement and management (following on from the Irrigation Improvement Project (IIP), GSCP etc.); and
- Rainfed, water harvesting, watershed management, hill dams for poverty reduction and food security (following on from the Rainfed Agriculture Project (RALP) etc., and perhaps with PES).

Education

Infrastructure Impact

Since the middle of 2011, the Ministry of Education started to record all damages encountered at the schools and education offices in all governorates. According to a report by the MoE 810 schools were attacked and 20 education office in 12 governorates, and total estimated cost, for repairs and rehabilitations amount to:

- YR 5,861,532,150 for repairs and rehabilitations
- YR 2,630,493,900 for equipment and furniture.

Table 14 Annex Chapter 5 – Education: Impact of 2011 Crisis towards General Education Repair and Rehabilitation

No.	Gov.	No. of schools and educ. Offices	Cost of repair and rehabilitation	Cost of equipments
1	Sana'a city	23 schools	180.000.000	276.542.000
2	Ta'iz	10 schools and education office	66.307.650	52.707.000
3	Aden	67 schools	606.000.000	595.740.000
4	Sana'a gov	80 schools	340.000.000	280.000.000
5	Lahj	61 schools + edu. Office	263.800.000	263.520.000
6	Abian	120 schools + edu. Offices	2.300.000.000	460.000.000
7	Alohleah	34 schools	242.000.000	140.000.000
8	Sa'ada	220 schools + edu. Offices	1.553.600.000	388.400.00
9	Haajah	2 schools	10.400.00	3.300.000
10	Amraan	17 schools + edu. Office	138.000.000	138.000.000
11	Hadramout	106 schools	74.424.500	14.884.900
12	Alhudiadah	70 schools + edu. Office	87.000.000	17.400.000
Total			**5.861.532.150**	**2.630.493.900**
Total			**8.492.026.050**	

Source: Government of Yemen and JSEA Staff.
* all information's from reports prepared by technical office and emergency committee at MOE.

Table 15 Annex Chapter 5 – Water: Crisis and Cost of Rehabilitation and Equipment, 2011

No.	Gove.	No. of schools	Cost of rehabilitation	Cost of equipment	Total cost
1	Sana'a City	23	101.493.000	34.940.000	136.433.000
2	Ta'iz	14	85.160.650	—	85.160.650
3	Abyan	128	2.300.000.000	460.000.000	2.760.000.000 (estimated cost done by Experts for unreached areas)
4	Amran	18	38.000.000	—	138.000.000
5	AlHudeida	71	85.200.000	—	85.200.000
6	Hadramout	87	68.774.000	—	68.774.000
7	Sa'ada	221	2.118.700.000	—	2.118.700.000
8	Aden	79	816.826.280	263.748.200	1.080.576.480
9	Lahij	137	940.820.000	1.582.350.000	2.523.170.000
10	Aldale'a	34	242.000.000	—	242.000.000
11	Hajah	2	10.400.000	3.300.000	13.700.000

Source: Government of Yemen and JSEA Staff.
* emergency committee MOE 2012

Number of schools affected by 2011 crisis and cost of rehabilitation and equipment according to each governorate.*

Some reports mentioned that little is known about the situation of education in governorates that are inaccessible, like Shabwa, Aljawf and Abyan where most of schools are closed. It clarified also that around 36 schools in Sa'ada governorate were destroyed, and 76 schools in Aden are inhabited by people from Abyan. These reports indicate that disruption to children's education occurred mostly in Sana'a Ta'iz and Aden. Around 10,000 IDPs escaped from Abyan to Aden and Lahj with their children who stopped learning. Most of Aden schools are now having shifts in schools to provide opportunities for children to learn and in some cases there are tents are using as classrooms.

Annex 6. Example of a Matrix

Table 16 Annex Chapter 6: Example of a Matrix linking the TPSD Priorities and Project Proposals with Offers from Donors

	Areas of Intervention/ Action	Challenges/ Constraints	Intermediate Results/ Milestones	Outcomes by end-2014	High-level Transitional Compact			Implementation Mechanism (sources of funding)					
											Donors (specify)		
Serial Numbers					Actions by GoY/Year	Actions by Donors (by name) /Year	Program Costing (US$ mn.); if available	Multiannual (yes/no) specify years	National budget (yes/no) specify years	Humanitarian/ Grants	ODA terms	Non-ODA terms	Remarks, if any

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