

# MNA Knowledge Notes

## Lessons from Analytic & Advisory Activities



By Jean-Charles Crochet

**Background.** Yemen should be credited for achieving an ambitious road building program over the last 25 years, and establishing a large primary road network given its level of GDP and population size. With the condition of 60 percent of the paved network rated good or very good, Yemen's road network appears better than in most comparator countries. This positive feature allows the country to satisfy economically its relatively high demand for road transport evidenced by its substantial vehicle fleet and traffic volumes on the arterial network. Yet, the country's inhabitable deserts, mountainous terrain, and population location patterns still give rise to high transport costs and leave many small communities isolated on mountain ridges or in remote valleys. The poor access to markets, employment, and services in many areas pose a serious challenge to economic and social development.

The full Road Sector Strategy Note<sup>1</sup> takes stock of recent developments in the sector and focuses on performance. It takes into account studies prepared for the Government and the rich dialogue between Government officials and Bank missions over the past few years. Based on this, key issues are identified and recommendations are made on a sector wide, short to medium term, *Agenda for Reform* which, if implemented, would further strengthen the performance of the road sector, thereby increasing its contribution to the national economy and the alleviation of poverty. This short note summarizes the findings and

recommendations of the full strategy note (see footnote link).

### Main Sector Challenges

The *current balance of expenditures* among various types of roads and categories of expenditures is not economically optimal. The annual allocation of funds for road maintenance is insufficient and far below what most other countries similar to Yemen spend on such maintenance. By deferring maintenance over many years a back log of works develops that will eventually be much more costly to address the longer it is postponed. Also, expenditures are probably too high on urban roads but could usefully be increased for secondary and rural roads. In addition, certain types of "high payback" expenditures, such as climbing lanes on high traffic roads are not included in road budgets while some low returns projects are contemplated. Finally, too many projects are being implemented at the same time, compared to the availability of funds for roads and to staff limitations. There are more than 750 projects being executed by MPWH, more than half of which are urban road projects.

Although MPWH is fully in charge of the sector, with impressive institutional progress in the past few years, *there is still a high fragmentation of roles and responsibilities in the sector* and some units key for the sector such as those in charge of planning, laboratory, and research, are outside the responsibility of the Road Sector. The role of the Road Maintenance Fund (RMF) is also too broad while the capabilities of the Rural Access Program Central Management Office (RAPCMO) could be used more extensively.

Although there has been progress in the past few years, *road planning, programming and*

<sup>1</sup> This Note is a summary of a [Road Sector Strategy Note for Yemen](#) dated August 2010. The report was prepared by Mr. Jean-Charles Crochet (Senior Transport Economist and TaskTeam Leader), Mr. Terje Wolden (Senior Highway Engineer), and Ms. Lamis Aljounaidi (Infrastructure Economist), following missions in Yemen in 2008 and 2009.

*budgeting is still weak and budget processes undeveloped.* There are multiple, often fragmented, plans and programs but not yet a single well accepted strategy document for the sector, although MPWH is keen to produce one. A medium term expenditure framework is not yet in place. Until recently, there was no road planning unit in the Road Sector Department. The sector data base, although greatly improved, still needs development. Finally the lack of a functional road classification makes planning and monitoring difficult.

*Weaknesses in road design* have negatively affected in the past the economy of projects as well as project implementation and quality assurance. This is compounded by insufficient capacity in MPWH for design review and guidance to consultants and contractors on desirable design changes and by inadequate monitoring and evaluation of the projects' technical aspects. There has also been a reluctance to vary the technical standards of roads depending on the type and location of the road, its function and traffic volume. Road standards on urban road projects are often excessive. Better methods and construction practices are also slow to be adopted.

*Despite great progress recently regarding procurement, contracts, and supervision, some key weaknesses remain.* First, there is the legacy of past contracts with inadequate contract forms and technical requirements. Inadequate follow-up of contractors in the past is still affecting quality of works and implementation progress on locally funded projects. There is also too much reliance on variation orders, which lack transparency and make program management and monitoring difficult. Lack of predictable price adjustments, advance payments, and other weaknesses in past local forms of contract as well as slow payments have also increased costs and inhibited the development of contractors. Finally, for many years, there have been difficulties in bringing contracts to closure as well as terminating non performing contracts. *The Yemeni road construction and maintenance industry is young and fragile.* It includes many small contractors each with limited capacity and capabilities and only very few large private

contractors with adequate capacity. Public road construction corporations have played a dominant role in the sector for a long time and their future may need to be clarified. Weaknesses in contracts and contract management, as highlighted above, as well as issues with the price and availability of key materials such as bitumen, have constrained development of the industry.

*The local road consulting industry is at an early stage of development.* Its growth has been hampered by reliance on in-house services by Government for design and supervision. The lack of a steady and substantial stream of work, and, perhaps, insufficient opportunities for partnership between foreign and local firms, have also prevented faster development.

Despite recent efforts, *monitoring and evaluation of road sector performance is still weak.* The availability and reliability of data needs improvement. Consultation mechanisms also need to be developed with all sector stakeholders.

*There is a serious shortage of capacity and skills in all institutions and firms involved in the sector* (including MPWH as well as contractors and consultants), and there are staffing imbalances among Government units.

With almost 3,000 persons killed every year in traffic accidents, *road safety is exceptionally poor in Yemen.* There is, however, a sound set-up for traffic safety enforcement but no national road safety strategy and no national unit clearly in charge and capable of carrying out the monitoring/evaluation of traffic safety activities.

*Current policies and lack of enforcement of axle load limits for trucks causes excessive wear and tear* with a high long term cost for the road network.

*The road sector has been highly subsidized in Yemen for many years.* Because of the very low price of gasoline and diesel and insufficient specific taxation of road use, as of the end of 2009 road users were not paying for the marginal cost of road infrastructure use, as they should, and their operations were subsidized.

*There is a clear link between roads infrastructure and enhancement of women's lives.* Wherever a good road is available, basic goods (drinkable water, food) are more available and cheaper, which gives time to women for commercial activities. The existence of a road also makes it easier for women to access markets where they can find basic materials and inputs as well as shops to sell their products to. Moreover, when a girls' school served by a safe road exists, daughters are encouraged to attend school.

The report recognizes that strong political commitment and good leadership is critical in addressing such issues and gives the Ministry of Public Works and Highways credit for recent changes in policies and improvements in sector performance.

### **An Agenda for Reform**

The report finds that there is much that can be done in the short to medium term to improve the performance of the road sector in Yemen. Below, the main recommendations have been summarized under three main directions for Government action:

#### **Improve the quality of public expenditure programs for the road sector:**

- Overall sector funding should remain substantial, at least above 1% to 1.5% of GNP.
- Funding for routine and periodic maintenance should be increased substantially and, in particular, periodic maintenance should be promoted vigorously. The RMF budget should increase from YR 4 billion to at least YR 10 billion over the next three years and reach about YR 15 billion over the medium term.
- Funding for road rehabilitation and low cost/high returns upgrading should be increased as already recommended in the National Highway Master Plan.
- The funding for urban main roads through MPWH should be reduced substantially.
- The focus should be on projects with high economic and social rates of return and the

start of premature projects, such as the proposed new Amran – Aden motorway, should be postponed.

- The road budget should be rationalized by cancelling non-performing projects and concentrating funding for MPWH's locally funded projects on economic and well performing contracts.
- An integrated road sector strategy should be prepared taking full account of financial constraints. This work would include in particular: (i) updating the National Highway Master Plan, and (ii) preparing a national strategy for secondary and rural roads based on realistic estimates of available funding under a medium term expenditure framework.
- The existing feasibility studies of large projects should be updated.
- Multimodal urban transport master plans should be prepared for the larger cities as a basis, among other goals, for the justification of new urban road construction projects by MPWH

#### **Develop the institutional framework and capability for road sector management:**

- The sector's overall organization should evolve gradually from the current one to one more in line with international best practices. For the time being, however, the sector should remain organized around the four main existing units (the Road Sector Department, RMF, RAPCMO, and the Foreign Funded Project Management Unit). Each of them would be developed and improved as recommended below. The clarity of each unit's mission and accountability, the adequacy of resources, and the need to optimize the use of heavily constrained manpower should be the main institutional objectives. In this context, the Government should proceed cautiously with decentralization. Whenever feasible, however, project implementation should be managed by units that are located in the field and cover several governorates, in order to facilitate supervision as well as consultations and coordination with local authorities.

- The organization principles and the rights and duties of all stakeholders in the road sector should be clarified by a new road law and its implementing regulations, both to be drafted urgently. This law should include a classification of all roads and, for each category of roads, designate ownership, management responsibilities, financing arrangements and responsibilities for maintenance management and financing.
- The Road Sector Department (RS) should assume full responsibility under the Minister's oversight for road sector policy and planning and for defining expenditure priorities including annual budgets for the sector. Procedures and technical and operational manuals should be prepared for design, procurement, and supervision reflecting international best practices. The Quality Control Unit's role should be defined more precisely. A road planning unit as well as other small units to deal with road standards, technology and research, and the road construction and consulting industries should be established within the RS. An assessment of work load and staff needs and organizational structure with job descriptions is needed. The management information system should be well developed.
- The mission of the RMF should be clarified: it should focus on preventive routine and periodic maintenance and not be involved in road upgrading/rehabilitation. Performance based maintenance contracts should be generalized when current pilots have made progress and a good approach has been identified. Hybrid "term maintenance" contracts should also be considered. Knowledge of the road network conditions and assessment of maintenance needs should be improved. The use of consultants for design and supervision should be maximized, and manuals for routine and periodic maintenance should be established. An assessment of work load and staff needs is desirable.
- The FPPMU should clearly be in charge of all aspects of foreign funded projects from design to contract management and be organized, staffed and resourced accordingly.
- RAPCMO's organizational structure should be revised and staff needs reassessed to take account of its much larger workload and implementation challenges. The need for de-concentration of RAPCMO should be assessed in this respect. A sustainable system should be established to provide uninterrupted adequate funding for RAPCMO's operations independent of donors.
- A strategy for strengthening Yemen's road construction and maintenance industry should be put in place as a matter of priority, based on the assessment of the industry planned under the Second Rural Access Project. As shown by the experience of other countries, most progress in the industry will come from the establishment of rules, procedures, and practices for selection and supervision of contractors and for contract management, which are fair, steady, predictable, and well understood by all parties. Current problems regarding the price and availability of key materials such as bitumen and cement should be addressed. The creation of a Yemeni association of road contractors should be promoted and effective communication channels should also be put in place between the Government and the construction industry. The contractor classification system should be used to weed out poorly performing and non professional contractors. Finally, the commercialization of Government corporations should be considered (setting them up as business units independent of the Government) as a first step before privatization.
- A strategy should also be put in place for strengthening Yemen's consulting profession in the field of road studies and road engineering. This would include outsourcing Government work to local consultants whenever feasible, ensuring that there is in the long term a regular and predictable demand for consultants' services in the road sector, using partnerships between foreign specialists and local consultants to develop the

industry (with training and mentoring obligations to benefit Yemeni consultants), ensuring fair treatment of consultants, and including local consultants in Government training programs.

- The Information Technology Directorate of MPWH should be the leading unit for sector monitoring. It should be strengthened and provided with adequate staff, resources and equipment to carry out its functions fully. Measures should also be taken to systematically produce and disseminate information on the sector and its performance, and consult stakeholders. This includes in particular road user satisfaction surveys.
- An assessment of skills needed and a human resources development strategy should be prepared as soon as possible for the entire sector. The strategy would include, in particular, a medium term training plan, the improvement of existing engineering programs in Yemeni universities, and a continuous education program for high level government staff, and a plan for improving in a sustainable way the salary level and other benefits for Government staff in the sector

**Correct present inefficiencies in the use of the road network:**

- A road safety management capacity assessment should be carried out as a first step in addressing the poor traffic safety situation. On this basis, a comprehensive national road safety strategy should be prepared including in particular the designation and strengthening of a central coordination and management road safety unit to spearhead and monitor the implementation of the strategy. There is also a need to start using traffic safety inspection/audits on existing road corridors as a way of identifying key safety improvement measures.
- Enforcing the current axle load limits is overdue. Several actions would have to be taken in concert to introduce effective axle load controls: implementation of an awareness campaign in cooperation with traffic police, the truckers' association, and

MPWH; purchase of mobile equipment for random controls of axle loads; and expansion of the number of permanent axle load stations on the key road corridors.

- Public costs generated by road use should be paid by the users. The main way to achieve this objective is through steady increases in the price of gasoline and diesel, which eventually should cover not only the full cost of providing fuel at the pump but also the cost of providing the road infrastructure as well as the cost of externalities generated by road use.
- The positive impact which roads have on women's economic activities and on girls' access to education is a major argument for expanding rapidly the all weather rural roads network. Since women, as well as children, mainly use the roads for walking, often in groups, rural roads' design should take into account the special needs of pedestrians. To enhance mobility for both men and women, the Government should also ensure that public transport services are available that link villages to the major services centers and markets, with reliable schedules and adequate information provided to the population.

**Contact MNA K&L:**

Director, MNACS: *Laura Tuck*

Regional Knowledge and Learning Team:  
*Omer Karasapan Roby Fields, Rory O'Sullivan*  
Tel #: (202) 473 8177

MNA Knowledge Notes:  
<http://mmaknotes>

*The MNA Knowledge Notes are intended to summarize lessons learned from MNA and other Bank Knowledge and Learning activities. The Notes do not necessarily reflect the views of the World Bank, its board or its member countries.*

