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## Quick Notes Series

### Climate Change and Migration in the MENA Region

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**Introduction:** Climate change and climate-induced migration (Foresight, 2011) are major global concerns. This is true for the MENA region as well. Yet empirical data on how perceptions of climate change and weather shocks affect migration in the region are scarce. To what extent are perceived and actual weather shocks and changes in the environment driving temporary and permanent migration flows? Do remittances reach households living in climate poor areas, and if so, what is their impact on poverty and human development? These are some of the questions considered in a study by Wodon et al. (2014) based on various data sources including new household surveys for climate affected areas in Algeria, Egypt, Morocco, Syria, and Yemen (the “five country sample” in this note).

In a short summary note as this one, it is important to be clear at the outset about what is measured and what is not. It is sometimes said that “*Climate is what we expect. Weather is what we get.*” Simply put, climate relates to the distribution of variables such as temperature and rainfall over a long period of time. This distribution is characterized by its moments, including the mean and the variance of key climatic variables. Climate change is then used to refer to the change in the distribution of rainfall and temperature. However, it is difficult to tell if the weather experienced at a point in time is due to climate change (the overall mean and variance of rainfall and temperature) or part of an existing distribution.

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Egyptian Farmers – World Bank Photo Collection

In practice, the implication for this note and the study it is based on, is that the results do not provide new evidence on the direct relationship between climate change and migration *per se*, but they contribute new evidence on three related issues: 1) the impact of weather shocks on migration; 2) the impact of perceptions of recent climate change on migration; and 3) the impact of climate variables such as temperature and rainfall (but not directly climate change) on migration.

**Survey and Census Data:** Migration is often a strategy to cope with and adapt to changes in climatic and environmental conditions. In the surveys from the five country sample used for the study, the data suggest that 29.9% of households have migrants, whether residents (current household members who migrate temporarily) or non-residents (former household members who have migrated permanently). Rates are lower if migration is restricted to the last five years. At the individual level, 7.6% of individuals have migrated temporarily; the proportion over the last five years is 6.2%. For permanent migration, the rates are 8.0% in the whole sample, and 5.7% in the last five years. Most migration is internal, but the likelihood of migration abroad is high in Egypt and higher for individuals from higher welfare quintiles (as

expected given the cost of international migration). For residents and non-residents, migration to urban areas, especially to large cities, is much more likely than to rural areas.

To what extent are households migrating away from climate affected areas, and is climate a strong push factor? Regression results for the five country sample suggest that poor climate and extreme weather events lead to a higher migration probability, but the role of climate is less important than that of socio-economics and urban job prospects. The data were used to build two indices of household perceptions on changes in weather patterns and the environment. The first captures the extent to which the climate is becoming dryer and warmer, and is associated with droughts. The second captures the extent to which households suffer from excess water and is associated with floods. In regression analysis, higher values for both indices result in higher rates of temporary migration, with statistically significant coefficients. The effects for permanent migration are positive but statistically significant for the whole period only as opposed to the last five years. So higher values for both indices lead to higher rates of migration, but the evidence is weaker for permanent migration.

The estimates suggest that a steep worsening of the climate could increase migration rates by 1.5 percentage point. This represents up to a fifth of current migration patterns (but again, only the results for temporary migration are statistically significant for the last five years). This is of an order of magnitude similar to that obtained when considering reasons declared in the surveys by households for the migration of their members.

Additional evidence for Morocco using a 2009-2010 national survey suggests that weather shocks increase the likelihood of temporary migration by slightly more than one percentage point, an order of magnitude similar to that for the five country sample. In the Morocco survey, the impact of weather shocks on permanent migration is again not statistically significant, but the impact of changing structural conditions, i.e. reduced agricultural yields due to lack of water is, and it contributes to permanent migration away from affected areas.

Combining Yemen census and weather station data, the study also finds that climate variables (in means

and variation) affect migration from some districts to others, but in a limited way - socio-economic and cost factors are more prominent. The data suggest that migration flows are unlikely to increase sharply in the near term, but if conditions were to change drastically, the effect of weather could be larger.

**Qualitative Data:** Focus groups data also suggest a link between climate and migration, although again the role of socio-economic factors is probably at least as important as that of climatic conditions in driving migration decisions. Respondents linked migration to chronic droughts which lead to declining agricultural productivity. But few respondents mentioned flooding or being displaced as a result of natural disasters as the main reason for relocation or migration. Respondents appear to choose migration after other strategies have proven unsuccessful. The qualitative work suggests that remittances are key for livelihood, especially in Yemen where there is a tradition of migration to Saudi Arabia.

The qualitative work suggests that migrants are not always successful, which may explain why climate related factors do not seem to have a very large effect on permanent migration. What happens to the migrants once they leave? Many migrants hope to work and save enough to own their own business (a small store or shop). Finding jobs, however, is not an easy feat amid widespread joblessness found throughout the region given that unemployment levels hover around 15 %, and a much higher 20 % to 40 % among youth 15 to 30 years old. While some migrants find urban communities receptive, others say they were met with hostility. Finding adequate housing was also a challenge.

**Summary Results:** Table 1 summarizes the main results. The evidence suggests that worsening climatic conditions, or perceptions thereof, are a push factor for migration away from affected (mostly rural) areas towards urban centers. It must be noted that in an analysis such as that of census data which is at the level of a country as a whole, the impact of the climate on the overall patterns of migration tends to be diluted. By contrast, in the analysis based on climate affected areas in the five countries sample, as well as when looking at those directly affected by weather shocks with the national Morocco survey, the effects are estimated on those most affected, which also explains why impacts are larger. In the most affected areas, it seems fair to

suggest that climate conditions account for at least 10 % to 20 % of current migration flows, and this could increase in the future. But the evidence is stronger for temporary than for permanent migration by individual household members.

**Table 1: Summary Results**

Variables	Country	Migration type		Size
		Temp.	Perm.	
Climate perceptions	5 countries	+	Weak	Medium
Weather shocks	Morocco	+	Weak	Medium
Climate variables	Yemen	N.A.	+	Small
Focus groups	5 countries	+	+	Medium

Source: Adapted from Wodon et al. (2014).

**Role of Remittances:** The study also looked at remittances, focusing on Yemen. The literature suggests that remittances increase in response to climate shocks. Less clear is whether remittances are higher in areas suffering from poor climate in the absence of weather shocks. The study used a Yemen national household survey and weather data to assess the likelihood of receiving remittances by area. The results suggest that households living in less favorable climates (as measured by higher temperatures, lower rainfalls, more variability or seasonality in both, and larger differences in a given year between extreme temperatures) tend to be less likely to benefit from remittances in Yemen.

Finally the study used matching econometric techniques with the Yemen household survey and weather data to measure the impact of remittances, both domestic and international, on poverty and human development outcomes (school enrolment, immunization, and malnutrition). Four main results are obtained: (i) remittances – substantial in Yemen – tend to have positive impacts on poverty, school enrollment, and measures of malnutrition; (ii) for beneficiary households the impact of international remittances tends to be larger than that of domestic remittances, probably because the amount of remittances received tends to be higher for international than domestic remittances; (iii) the impact of remittances, especially international remittances, on poverty and malnutrition tends to be larger in areas affected by high temperatures, and also to some extent in areas with lower levels of rainfall, which in both cases tend to be more vulnerable; (iv) by contrast, in areas with higher levels of rainfall or lower levels of temperatures, where issues of poverty and malnutrition may be less severe, remittances tend to have a larger impact

on school enrollment. Thus, in areas with unfavorable climate, remittances seem to help for meeting basic needs and escape poverty or malnutrition, while in areas with more favorable climate, remittances may be used more for investments, including in the education of children.

**Conclusion:** The study suggests that the impact on migration of weather shocks and perceptions of a worsening climate is positive. Yet, the effects are not very large and they are stronger for temporary than permanent migration. In areas affected by climate change, the analysis suggests that climate factors may account for between one tenth and one fifth of today’s level of migration. We would expect this to increase as the climate deteriorates. While many migrants appreciate the opportunities offered by migration, living conditions and the ability to integrate well in their area of destination is far from guaranteed, given intense competition for few good jobs. In terms of implications, five areas for policy actions are outlined below (findings of the study on coping and adaptation and their implications are discussed in a separate note and not covered here).

First, the study shows that while environmental and climatic factors play a role in migration, other socio-economic factors are more important. Similarly, citing environmental degradation as key to trans-border migration is likely misleading: in the study, when environmental factors are at play, migration is mostly internal. These findings run against the received wisdom around climate-induced migration, but are in line with results from other assessments, such as the recently released Foresight (2011) report on environmental change and migration. Identifying climate migration as a domestic policy issue will lead to a different perspective on the problem for MENA policy makers and donors alike.

Second, migration can be a form of adaptation, but it is often seen as a last resort by households, and especially so in the qualitative work. One reason is that migration may be perceived as costlier than other strategies, such as using savings, selling assets, debt, or removing children from school. Material costs (travelling and housing) aside, migration has high risks due to uncertain outcomes and immaterial costs, including the uprooting of individuals, households, and even communities. Also, those left behind at the household or community level may be deprived of migration’s

benefits when remittances are hampered by the cost of remitting or if migrants cannot find jobs.

Policy responses and development engagements must recognize that migration is a viable and legitimate option to address risks to livelihoods and wider well-being. It is also a means of adapting to climate change and its impacts. A key question for migration policy is whether/when migration should be treated as a risk to be managed and mitigated, and whether/when it should be treated as an opportunity to be facilitated, even encouraged. Enabling sending area communities to better leverage the benefits of migration and increase their adaptive capacity is a better alternative than progressive displacement. The economic insertion of migrants in cities leads to opportunities for the sending communities, mostly due to remittances. Evidence from the surveys and qualitative work suggests a positive impact for remittances in areas affected by climate shocks, especially on human development outcomes. But without an enabling environment, remittances too often turn to pure consumption and the accumulation of non-productive assets such as real estate. These can be of little use for preventive and ex-post adaptation, since investment contributions are limited and their liquidity limited for use when climate impacts strike, at which point their value can drop. Policy should focus on upping the impact of remittances by encouraging productive use, for instance by subsidizing de-fiscalization for remittances-funded investments and community saving schemes which facilitate financial integration and increase liquidity.

Third, urban development policy is a key component of policies to address climate induced migration. The study summarized in this note focuses on sending areas, but the qualitative work in urban areas suggests that the migrants' integration into major destination cities is not going very well. Climate induced migration tends to be to mostly large cities. The policy responses to climate shocks and migration are then to be found in cities as much as in sending areas. Migrants are concerned about employment and housing, with migration adding to existing pressures that can only be dealt with through broad-based economic development, not necessarily focused on migration. Climate induced migration should be part of a broader policy debate on urbanization. The MENA region is rapidly urbanizing. From a 48% urbanization rate in 1980, it

reached 60% in 2000 and will reach 70% by 2015. How MENA policy makers address the issue of climate induced migration is linked to how well they will promote an urbanization open to migrant's contributions.

Finally, the provision of education and training can help potential migrants better utilize labor market opportunities, adapt to new conditions, and shift more easily between jobs. An emphasis on basic and portable skills and human capital would be effective regardless of the causes, timing, and destination of the observed patterns of migration. It would benefit not only those leaving, but also those staying or eventually returning.

Ultimately, dealing with climate induced migration will require interventions specifically aimed at migrants, yet the policy package needed to deal with both climate change and migration is broader and presents both a challenge and an opportunity. An opportunity because several levers can be used to better leverage migration's potential for adaptation and development; but also a challenge since an integrated policy response requires levels of coordination and commitment likely to arise only through broader governance reforms and strong political leadership in MENA countries.

## References

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