



**AFRICA INITIATIVE**

**AFRICA INITIATIVE  
DISCUSSION PAPERS  
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**Stealth Environmental  
Influences on Economic  
Migration in Egypt**

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United Nations University Institute for Environment and Human Security (UNU-EHS).

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**ABSTRACT**

Policy makers and academics often pay little attention to environmental drivers of migration in Egypt. This paper demonstrates that environmental factors are often the hidden cause of the migration of Egyptians from one region to another. The analysis is situated in the broader studies on migration, and also shows why the findings of this study are significant. The paper makes recommendations that will hopefully help policy makers in understanding the causes of environmental migration and assist them in developing policies to address the problem of environmentally induced migration in a sustainable way.

**INTRODUCTION**

On the surface, migration in Egypt appears to primarily be a reaction to economic problems. However, environmental degradation is a major factor influencing Egyptians' decision to leave their place of birth and move to another region in the country.<sup>1</sup> This paper demonstrates that environmental factors are often the hidden cause of economic migration that influences the movement of people from one region to another in Egypt. Scholarship on migration within Egypt often fails to either clearly identify the impact of environmental factors on economic hardships or pays little attention to the environmental drivers of migration. This paper contributes to the literature on environmental migration and climate change arising from both natural and man-made causes.

The paper is organized as follows. The section following this introduction situates the paper in the broader literature or studies on migration. The next section focuses on economic and environmental migration. This is followed by a discussion of Egypt's agro-ecological zones, explaining why the findings of this migration research are significant. Next, the types of environmental degradation found in Egypt are explained. The fifth section lays out the research methodology, and the penultimate section discusses the research findings. The paper closes with the conclusions drawn from the research and includes recommendations that will aid policy makers in understanding the causes of environmental migration, assisting them in developing policies to address the problem in a sustainable way. The research was conducted as part of the Environmental Change and Forced Migration Scenarios (EACH-FOR) research project, co-financed by the European Commission - Sixth Framework Programme and the Africa Initiative

<sup>1</sup> The term "environmental degradation" is used in its broad sense, and includes soil salinization, soil pollution, wind and water erosion, sand dunes, urban encroachment and surface scraping for manufacturing red bricks.

**THE CONTEXT**

There are numerous and varied estimates of the number of people who have been and will be displaced or forced to migrate throughout this century. It is estimated that over 3.1 percent of the world's population lived outside their country of birth for at least a year in 2010 (UN Population Division, 2010). Most of the 214 million people who crossed borders did so for economic reasons. However, a sizeable number were driven from

their place of birth by environmental factors. According to the International Federation of the Red Cross (IFRC) and Red Crescent Societies (IFRC, 2003), the number of environmental refugees currently exceeds those who have been displaced by war. Estimates by the Office of the United Nations High Commissioner for Refugees (UNHCR) (2002) show that 24 million people around the world have fled due to floods, famine and other environmental factors; this surpasses the number of all other types of refugees. Klaus Toepfer from the United Nations Environment Programme (UNEP) expected the number of environmental migrants to reach 50 million by the end of 2010 (Boano et al., 2008), which created a huge discussion among academics and in the media at the beginning of 2011. The Intergovernmental Panel for Climate Change (IPCC) (2007) predicts that the number will reach 150 million by 2050. The *Almeria Statement* (1994) estimates 135 million people may be negatively affected by desertification and droughts. Robert Nicholls (2004) expects 200 million environmental migrants by 2080, whereas the Friends of the Earth (2007) expects the same number by 2050, including one million in small island states. Norman Myers (2005) states that there are already 200 million environmental migrants. Christian Aid (2007) classifies the expected environmental migrants by breaking down its predicted number of approx. 0.9 billion people by 2050 to 250 million people affected by droughts, floods and hurricanes and 645 million affected by dams and other development projects. Some of these estimates have been criticized (see for example, Black et al., 2008) given their highly speculative nature and dependence on variable indicators.

In northern Africa, and Egypt in particular, previous studies point to economic causes as the common triggers of migration, without referring to the possible environmental root causes. For example, Aldakhil (1999: 8–9) shows that “low-income levels in rural areas encourage people to move toward high-income urban and rural governorates,” and that “higher rates of origin unemployment tend to encourage migration from rural and urban areas, and higher rates of destination unemployment tend to discourage migration to rural and urban areas within Egypt.” In determining the causes of internal migration in Egypt, Zohry (2005: 13) states that “demographic pressure is not in itself a cause of migration; it becomes a causal factor when mediated through a relationship with economic resources such as employment, income or land.” Neither of these authors refers to the quality of the land or other types of environmental change or degradation as possible causes affecting economic conditions. Zohry (2005) mentions that rural youth, who represent the bulk of surplus workers in the agricultural sector in Egypt, have no way to survive except by migrating to cities, thereby referring to the rapid population growth that causes youth to compete over limited land, without stating explicitly that the deteriorating quality of the land due to environmental degradation can also be considered a trigger for internal migration.

## **ECONOMIC AND ENVIRONMENTAL MIGRANTS**

There is no question that there are many factors interrelating and influencing the decision to migrate; according to Biermann (2001), there are no environmental refugees per se. It is important, therefore, to

detect the extent to which “environmental migrants” can be distinguished from “economic migrants,” whose decision to migrate is in some way affected by environmental degradation. Afifi and Warner (2008) included environmental variables (in addition to different economic, political, social, historical and cultural indicators) in a gravity model and related all these factors to migration. They found that the environment has a positive significant impact on the migration flows across countries, given the limitations of the model, including secondary data on migration stocks rather than flows.

Numerous terms have been used in different publications to describe the various categories of people affected by, and fleeing from, environmental problems, including environmental migrants, environmentally displaced persons, environmentally induced population movements, environmentally induced migrants, environmental emergency migrants, environmentally forced migrants, environmentally motivated migrants, eco-migrants, ecological refugees, “envirogees,” climate migrants, climate refugees and “climigrants.”<sup>2</sup>

The IOM defines environmental migrants as:

[T]hose persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad.<sup>3</sup>

Most definitions link economic factors to environmental degradation, which indirectly leads to migration. When addressing livelihood concerns, one cannot exclude food security, income and employment — economic factors that affected populations depend on for subsistence. Nevertheless, determining the extent to which *only* environmental problems contribute to the decision to migrate compared to other factors (including social and economic aspects) is difficult — especially when the key cause for migration is not a natural disaster, where people flee to survive without having adequate time to consider their livelihood in the long run.

This brings us to the definitions introduced by Renaud et al. (2008), where three distinct categories of environmental migrants are characterized:

- Environmental emergency migrants (those *fleeing* the worst of an environmental impact, either permanently or temporarily, usually in the case of rapid onset hazards, such as earthquakes, floods and tsunamis). In such cases, it is hard to incorporate economic factors, since migrants belonging to this category leave immediately to survive a potentially fatal event.

2 For examples, see International Organization for Migration [IOM], 1992; UNHCR, 2002; Black et al., 2008; Renaud et al., 2007; Renaud et al., 2008; Leighton, 2009; Wood, 2001; and Bronen, 2008).

3 This definition was put forward at the ninety-fourth session of the IOM Council. See background paper MC/INF/288: 1) available at: [www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/microsites/IDM/workshops/evolving\\_global\\_economy\\_2728112007/MC\\_INF\\_288\\_EN.pdf](http://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/microsites/IDM/workshops/evolving_global_economy_2728112007/MC_INF_288_EN.pdf). It also appears in *World Migration 2008: Managing Labour Mobility in the Evolving Global Economy*, IOM, Geneva, p. 399, available at: [http://publications.iom.int/bookstore/free/WMR\\_1.pdf](http://publications.iom.int/bookstore/free/WMR_1.pdf).

- Environmentally forced migrants (those who *must leave* to avoid the worst of environmental deterioration, usually in the case of slow-onset hazards, including water and land degradation). In these cases, economic factors could be incorporated, since migrants in this category have the opportunity to consider that their economic situation would deteriorate due to environmental degradation.
- Environmentally motivated migrants (those who *may leave* a progressively worsening environment as a means of pre-empting the most severe impacts, usually in the case of a progressive loss of ecosystem services, including rising sea levels and desertification). In these instances, economic factors could also be incorporated, since migrants in this category have given thought to their future economic situation and are attempting to create a new economic scenario for their future elsewhere.

These definitions do not contradict Hugo's suggestion that "population mobility is probably best viewed as being arranged along a continuum ranging from completely voluntary migration, in which the choice and will of the migrants is the overwhelmingly decisive element encouraging people to move, to completely forced migration, where the migrants are faced with death if they remain in their present place of residence" (1996: 107).

## **AGRO-ECOLOGICAL ZONES AND MIGRATION IN EGYPT**

Ninety-seven percent of Egyptian land is desert and only 5 percent is actually occupied, by about 75 million people (Central Agency for Population Mobilization and Statistics [CAPMAS], 2007). Less than four percent of the land is appropriate for agriculture (Ministry of Water Resources and Irrigation Planning Sector, 2006). Most of the total area of Egypt (one million square kilometres) is arid and hyper-arid. Wind erosion affects about 90 percent of the total country area (Kholly, 1985). The country is divided into the following agro-ecological zones: the North Coastal Belts; the Nile Valley; Inland Sinai and the Eastern Desert; and the Western Desert, Oases and Southern Remote Areas (Arab Republic of Egypt Ministry of Agriculture and Land Reclamation, 2005). Agriculture production is mainly concentrated in the Nile Valley and Nile Delta, with the Nile River as the main source of irrigation and a population density of around 1,000 people per square kilometre (CAPMAS, 2007). Given these facts and figures, there is a strong probability of a link between desertification and all related environmental problems on one hand, and migration on the other.

Migration in Egypt is generally divided into internal and international migration. Historically, Egypt was a country of immigrants rather than emigrants; however, due to political, demographic and economic pressures in the 1950s, emigration became, temporarily, appealing to Egyptians. Migration from Egypt can be classified as temporary migration when migrating to Arab countries, such as Saudi Arabia, Libya, Kuwait, the United Arab Emirates, Qatar, Yemen and Oman, and as permanent migration to other countries, such as the United States, Canada, Italy,

Australia, Greece, the Netherlands, France, England and Germany (CAPMAS, 2001). Given this paper's focus on internal migration, it is important to note that environmental problems generally affect farmers and pastoralists who cannot afford to leave the country due to financial conditions and cultural reasons. While moving from the extreme south to the extreme north or vice versa within the borders of Egypt (a span of around 1,200 kilometres) is classified as internal migration, moving from one point in the Egyptian part of the city of Rafah to another point in the same city in the Gaza Strip (eastern Egypt) or from the Egyptian city El-Salloum to the Libyan city El-Mossaed (a span of around one kilometre) is classified as international migration.

The trends of internal migration in Egypt have generally been from the south to the north (to the Suez Canal zone), from Egypt's hinterland to Cairo and Alexandria, and from Egypt's centre to its peripheries (Zohry, 2005). Typical rural–urban migration decreased as a proportion of total migration from 24.6 percent to 13.1 percent between 1976 and 1986, remaining at that level between 1986 and 1996. Urban–rural migration increased from 6.5 percent to 10.3 percent of the total inter-governorate flows between 1976 and 1986, rising to 23 percent in 1996. Urban–urban migration is the highest, and fluctuated from 64.3 percent in 1976 to 72.9 percent in 1986, dropping to 60.4 percent in 1996. Rural–rural migration was the least significant type of movement, at around 4 percent at the time of each census (Zohry, 2002).

It is difficult to find a direct link between the large areas in Egypt that are affected by environmental problems and migration, since previous studies focus on migration flows without taking environmental problems into account. Moreover, the Egyptian government's introduction of desert reclamation projects in the 1980s encouraged people living along the Nile Valley to move to these newly reclaimed lands, which would indicate that Egypt's desert areas are also often destination areas for some migrants. The exact number of these migrants is, therefore, not documented.

Figure 1: Reclaimed desert lands



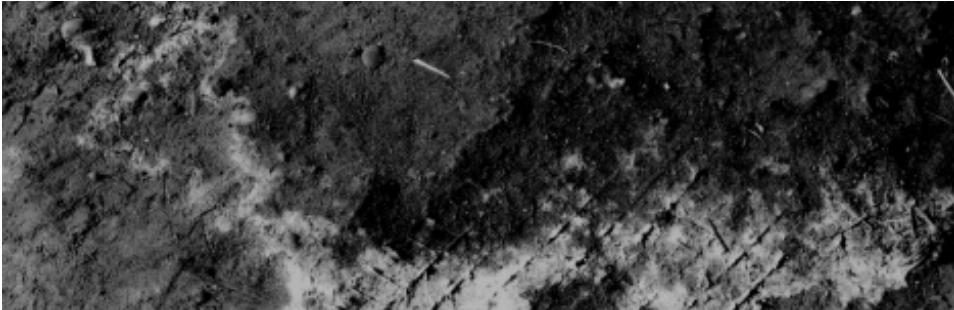
The three zones that mainly rely on groundwater for irrigation in Egypt are the reclaimed desert lands in the fringes of the Nile Valley (Figure 1), the Inland Sinai Desert and Eastern Desert, and the Western Desert, including oases and remote southern areas. With regard to the North Coastal zone, there are no reliable figures available on groundwater quantity and usage, but seasonal rain water is the main source of irrigation.



## ENVIRONMENTAL DEGRADATION IN EGYPT

Figure 2: Soil salinity

Environmental degradation in Egypt is reflected in various phenomena, among which are the following: salination, wind erosion, sand dune encroachment, urban encroachment, and soil scraping. One of the major causes is salination —



a number of irrigated farmlands in the Nile Valley and Delta, as well as the newly reclaimed desert lands, are suffering from soil salinity (Figure 2). Soil salinity has led to a reduction in productivity and increased the length of time required for reaching an acceptable productivity level for these lands, in turn, causing loss of effort, money and time. In order to compensate for the low productivity caused by soil salinity, organic fertilizers were used excessively, irresponsible agricultural management techniques were adopted, in addition to employing excess irrigation, which only served to enhance the problem, creating a vicious circle.

Figure 3: Water pollution



At the beginning of the 1970s, the impact of soil pollution due to the excessive use of chemical fertilizers after the construction of the Aswan High Dam in the late 1960s became apparent. Adding to the problem, many nutrient elements of the Nile Valley and Delta soil were depleted by extensive and frequent cropping, unsustainable irrigation water management and improper agricultural practices (Abdel-Wahab et al., 2000).

Once the dam was completed, the annual additions of fertile sediments to the soil decreased; consequently, they lost much of their organic matter, total nitrogen and other nutritive elements (Science Research Academy, 2000). Excessive use of chemical fertilizers continued, due to intensified

agricultural production in an attempt to reach the highest production possible per unit area. Soil pollution has also increased due to the misguided use of different pesticides. Wastewater drainage and industrial leakage into watercourses have exacerbated the problem, due to poor and inadequate implementation of pollution control regulations (Figure 3).

Wind erosion — due to Egypt's arid climate and the increasing effects of climate change — is a major cause of land degradation, occurring in the Western and Eastern Deserts as well as the inland Sinai and coastal zones. Sand dunes and other sand forms are the most vulnerable to wind erosion and deposition in the coastal and inland deserts. Since wind erosion clearly leads to the drifting of surface soil layers, agricultural development, rural and urban settlements, road traffic and public health are all negatively affected.

Sand dunes occur not only in the Western Desert, encroaching on fertile sedimentary land, but also, to a lesser extent, in the Eastern Desert; they can lead to severe damage to lands and, in extreme cases, completely destroy villages (El-Hinnawi, 2001). The advancement of sand dunes into fertile land is only expected to increase as climate change and its impacts gain momentum in the coming years.

Two man-made problems that contribute to land degradation are urban encroachment and soil scraping. The expansion of cities and villages, and the establishment of industrial facilities and infrastructure, has led to an increase in urban encroachment in Egypt. Urban encroachment reduces the land available for planting and cropping. Government action on this issue occurred in 1996, with a military order to stop and eliminate urban encroachments, which significantly limited such phenomena, but this order came relatively late to curb and stop its undesirable effects. Soil surface scraping for manufacturing red bricks had a negative impact on fertile lands. This activity has almost disappeared as a result of legislation issued in 1983 and amended in 1985 (Arab Republic of Egypt Ministry of Agriculture and Land Reclamation, 2002). This law strictly forbids soil scraping.

In concrete numbers, around 30 percent of Egypt's irrigated farmlands suffer from salinity. Of the northern cultivated lands and both Middle and Southern Delta regions, 60 percent and 20 percent respectively are considered to be salt-affected soils (Ouda, 1999: 37). Wind erosion affects about 90 percent of the total country area. On average, the rate of soil loss due to wind erosion in the Western Desert Oases is estimated to be between 4.5 and 66.9 ton/hectare/year (Arab Republic of Egypt Ministry of Agriculture and Land Reclamation, 2002). The area affected by sand dunes is estimated to be 1.6 million feddans.<sup>4</sup> Since the 1960s, land productivity has decreased as a result of sand dunes by about 25 percent (Arab Center for the Studies of Arid Zones and Dry Lands, 2000). The annual water erosion rate is estimated to be between 0.8 and 5.3 ton/ha/year (Arab Republic of Egypt Ministry of Agriculture and Land Reclamation, 2005).

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4 A feddan is an Egyptian/Arabic scale unit for measuring land size. 1 feddan = 24 kirat = 300 kassabas = 4201 m<sup>2</sup> (0.42 hectare).

From this brief overview of environmental degradation in Egypt, one can sense the serious environmental problems that Egypt is facing, especially given that these problems directly relate to the livelihoods of all Egyptians. To what extent are deteriorating economic and environmental conditions affecting livelihoods and to what extent are these economic and environmental factors causing displacement and migration in Egypt? These questions were addressed during the study's field work component, and are analyzed in the sections below. The target group was mainly internal migrants — those who had moved from one region to another region within the country.<sup>5</sup>

<sup>5</sup> Due to time and budget constraints, it was not possible to include international migrants in the sample and, therefore, the focus was on internal migration.

## RESEARCH METHODOLOGY AND GEOGRAPHIC SCOPE

A two-month field-research undertaking in the frame of the Environmental Change and Forced Migration Scenarios research project financed by the European Commission in the Sixth Framework Programme, took place in Egypt in 2007, producing a qualitative study based on two types of data collection: information collected through questionnaires with people who had left their homes for other cities/regions and expert interviews (with government officials, representatives of non-governmental organizations [NGOs] and university professors).

The migrants interviewed were people who had: left the Nile Valley and Delta for the slums of Cairo; left the oases and moved to Cairo city centre; moved from one area to another within the Nile Valley and Delta; or moved from fertile lands to the newly reclaimed desert lands. Information regarding their personal experiences was gathered, as well as stories about their parents, relatives and friends. Areas of focus were selected based on the identification of environmental hotspots in Egypt, while interviewee selection within these areas was done randomly, due to the limited awareness of the topic of environmental migration and the difficulties of accessing the target groups. The areas visited were, therefore, mainly villages where farmers who may have suffered from environmental degradation live, but also destination areas where people have settled.

The questionnaire was structured to include open-ended and closed questions, and covered other non-environmental factors that could have led to the migration of the interviewees, such as poverty and social problems. In particular, an attempt was made to discern the environmental factors that are contributing to deteriorating economic and livelihood conditions — in particular, when these conditions influence the decision to migrate. The questionnaire consisted of 31 questions divided into five sections:

- General introduction questions (original location, current location, whether environmental problems affected the decision to migrate at any point in the history of the interviewee);

- Specific questions regarding the process of migration and the reasons that influenced their decision (more detailed questions included environmental, economic, political and social factors);
- Questions regarding livelihood, environment and migration (questions that directly linked the interviewee's standard of living and economic situation to their decision to migrate);
- Questions regarding access to services (for example, schooling, medical services, credits and loans) that may have played a role in the decision to migrate; and
- Questions regarding the characteristics of the interviewee (for example, age, sex, education, marital status, and number of children).

In order to avoid the pre-orientation of interviewees, the questionnaire began with general questions pertaining to the reasons why the interviewees and their families migrated, and gradually shifted to the nature of their work, which was mainly farming and cattle herding. The questionnaire also included explicit questions about environmental problems that may have influenced the interviewee's decision to migrate.<sup>6</sup>

Thirty-one questionnaires were filled out in total, 26 with people who have left their home region and five with people who have stayed. It is important to highlight the drawbacks associated with the limited number of questionnaires filled out in the field, especially given the wide geographical distribution of the interviewees throughout the country. Due to cultural reasons — in Egypt, males are responsible for their households and usually make the decision to migrate for the family — all the interviewees were males. Participant ages varied between 24 and 47. Locations visited include the newly reclaimed desert lands in Khatattba (Beheira) Western Cairo, El-Hossinia (Bahr El-Bakar) in the eastern part of the Nile Delta, Janakleese (Noubaria) in the western part of the Nile Delta, Doweika (a slum in Old Cairo) and Boulak (Cairo).

In addition to the questionnaires, 19 experts within 14 institutions in Egypt (See Annex) were interviewed to gather information on current thinking and trends within the subject area. Due to the lack of environmental migration specialists and experts, most of the interviews were conducted with either environmental or migration experts. Representatives from NGOs involved with humanitarian relief as well as UN programs were also interviewed.

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<sup>6</sup> Not all of those interviewed had made the decision to migrate themselves; some of them had to move with their parents during childhood or had not yet been born when the move occurred. The latter was particularly apparent in the case of surface scraping and urbanization in the 1980s.

## FINDINGS

Several key findings emerged from the data collected, both from the expert interviews and the migrant questionnaires. Most of the experts rejected the idea that there is a direct relationship between the environment and migration, reasoning that migration is mainly induced by poverty and unemployment. They emphasized the influence of economic

push factors in the regions of origin, and the economic pull factors in the regions of destination. Initially, environmental factors were not mentioned explicitly as a reason for moving to new areas by the migrants themselves, but poverty and unemployment were pointed out as the more specific reasons for migration. Following an in-depth analysis of the survey results, environmental issues were pinpointed to be a common root cause for migration, especially in the case of people migrating from rural areas. The decline in crop yields due to environmental degradation was identified as the main reason for interviewee unemployment or economic deprivation. They attributed the recent dip in crop yields to desertification — the most significant environmental problem in Egypt. It may take generations for its effects on migration to be fully observed.

The questionnaire revealed another set of findings. A total of 72 percent of the migrants interviewed indicated that environmental problems had affected their decision to move, with 69 percent of them making the decision to move without anyone's influence. The remainder migrated as a result of their families' decision to do so. In all, 48 percent of migrants anticipated future environmental problems would affect their decision to migrate to another location, 63 percent of them are planning to leave current location due specifically to environmental problems. Interviewees who were not willing to leave were either attached to their regions or have adapted to the environmental problems they now face.

Migration is particularly discernible within the Nile Valley and Delta. For the most part, migration from this region is a result of declining income and high rates of unemployment among farmers due to lower crop yields caused by environmental degradation. The information gathered shows that cultural differences have prevented the majority of these migrants from moving to the capital. Among this group, some left their original towns in the Nile Valley and the centre of the Delta for the Eastern and Western Delta, where the Egyptian government has initiated two major projects close to the Bahr El-Bakar Canal and the Noubaria Canal, respectively (Afifi, 2009b). When asked about the conditions under which he moved and his family's current living conditions, an interviewee who left his hometown and moved to the Eastern Delta answered:

The main reasons why I moved were poverty and unemployment caused by deteriorating soil quality. Nevertheless, I am seriously thinking of going back to my hometown or moving to a third area, since my family and I are suffering from poor access to clean water...Moreover, the infrastructure and housing are insufficient for a decent life. In addition, the schools are mainly primary rather than secondary, and I don't know whether there would be secondary schools for my children when they reach that age or not.

Despite moving to these lands with the promise of labour, many migrants were under- or unemployed as a result of soil and water salinity problems. Some of them had migrated a second time to a different area within the newly reclaimed desert lands, after the landowners had sold their holdings when faced with insufficient financial means to dig for new groundwater.

Other migrants within the Nile Valley and the centre of the Delta had moved with their parents, who were peasants or farmers in the early 1980s. Many landowners with fertile lands decided to use their land to construct new buildings or begin surface scraping for manufacturing red bricks (Afifi, 2009a). The migrants interviewed indicated that their parents neither owned the lands nor had signed contracts that would preserve their right to stay or even provide compensation. To save their livelihoods and maintain the same level of income, these people had to seek other jobs. Since surface scraping took place mainly in the 1970s and 1980s, the second generation of the people who originally suffered displacement from this activity was interviewed. One of the interviewees, whose parents had to leave the land due to soil scraping, said:

It was sometime in the early 1980s when my father and mother were working as peasants in a very fertile area. I lived with them there and can remember that we stayed there just before my elementary schooling. Then the soil was scraped by the owner of the land in order to use it in making red bricks for construction. I still remember that my parents were very sad and upset about it. They used to have many conversations about the future of the family and how they would raise and feed me and my siblings. My father was thinking of travelling to a Gulf country...he even tried but could not get a contract.

A number of survey participants left their oases in the Western Desert mainly to seek a better livelihood and standard of living in Cairo after the sand dunes prevented them from planting and shepherding properly in their original home areas. The same applies to interviewees who suffered from the effects of wind erosion, which deteriorated the soil in which they planted, leading to enormous declines in their income. The sand dunes in the Western Desert completely consumed some villages, such as the old Ganah and the Moschée village within the Kharga Oasis. Original inhabitants of the village migrated; however, there are no reliable statistics that show the number of displaced people or their destination regions. A severe case was presented by a former farmer and shepherd in the village of Ganah in the Kharga Oasis in the Western Desert, who moved to the Doweika slum due to severe water shortage. The interviewee contended:

I find the place here very humiliating for me. I thought that Cairo would be more inviting and more pleasant. Since I do not have much money, I had to live in this slum. I was complaining about the water shortage in my original place and thought that this would not be a problem when I get closer to the Nile. However, I discovered that this is not the case. Sometimes tap water does not appear for three continuous days. The same applies to electricity. I find it very hard to live here. In Kharga, the weather was very healthy; I spent a long time in the fresh air, but here there is no proper airing system. I hardly see the sun from my apartment, which I am sharing with five others. I almost don't get any fresh air. At the same time, I do not get any economic benefits from living here. The money that I get from my job I spend on daily stuff to survive, since here it is very expensive. I think I would like to go back to Kharga. At least I was used to the life there.

## CONCLUSIONS AND RECOMMENDATIONS

The majority of internal migrants interviewed consider poverty and unemployment to be the main causes for their decision to migrate. It was established that these two factors are either wholly or partially caused by environmental degradation. In addition to the push factors of poverty and unemployment — and by extension environmental degradation — there are important pull factors that support the migration of Egyptians, such as higher living standards in urban areas. Further inquiry revealed that the majority of people who contemplate leaving their current residence would leave only if their livelihoods were threatened or compromised, for example, in the cases of surface scraping or urbanization. Generally speaking, those vulnerable to environmental degradation — farmers and pastoralists — are the most likely to migrate. This group's decision to migrate is heavily influenced by the financial implications that result from environmental degradation. Another factor influencing the decision to migrate is whether or not the migrant or would-be migrant owns the land. Typically, landowners leave only if there are absolutely no other alternatives available. In Egypt, distance does not play a considerable role when migrating, as long as the move is within the country, the migrant has the financial and social means to move and the new location offers improved living conditions from their current situation. Evidence for this latter point was observed through the stated intentions of a number of survey participants who are considering returning to their hometowns, since the conditions of their new location did not meet their expectations. The Egyptian government does not yet consider environmental migration to be an urgent issue, but it is interested in internal and international migration in general, without directly relating it to environmental factors.

There is no doubt that environmental degradation has a negative impact on the economic conditions of many Egyptian farmers and pastoralists, who are often forced to migrate in search of a better livelihood. What is needed is a government strategy that will address and mitigate the effects of environmental problems. Such a strategy would assist potential migrants who wish to remain on their lands, either through the use of incentives, coping mechanisms or by providing alternative livelihoods. At the very least, they could offer relocation services to avoid overpopulation in urban areas.

Additional data and analysis are required to fully understand environmental migration in Egypt, North Africa and the entire continent. A database that tracks migrants within Africa, and the regions they travel from and to, is needed. Such a database would require a commitment by African governments, not only to invest sufficient resources, but also to collaborate with neighbouring and other governments in order to accurately record migration across borders. It is also essential to design questionnaires targeting non-migrants — those people who insist on staying in their place of origin despite environmental degradation. Data collected from this target group would enable a more robust understanding of environmental migration.

Government funding, if allocated to the newly reclaimed desert lands, would help to prevent and resolve salinity problems and attract more farmers to these crucial agricultural regions. In addition, projects that support communities in halting the encroachment of sand dunes — which has been seen to erase entire communities in Egypt — and other sources of environmental degradation would, in turn, prevent job loss and possibly create new jobs as well as prevent mass migration. These policy recommendations offer sustainable solutions to addressing the issue of environmental migration, which will, at the very least, require additional data and analysis within the research community along with targeted investment and resources at the government level.

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## ANNEX

Expert interviews were conducted in Cairo, Egypt, at the following:

1. Office of the UNHCR
2. Regional Communications Service Centre of the International Committee of the Red Cross
3. Minister's Office for Research and Special Studies, Arab Republic of Egypt Ministry of Irrigation
4. Arab Republic of Egypt Ministry of Planning and Economic Development
5. UN Information Centre
6. Arab Republic of Egypt Ministry of Environment; Ministry of Environment
7. Migration and Refugee Center, American University
8. UN Development Program Office
9. International Fund for Agricultural Development
10. Arab Republic of Egypt Ministry of Manpower and Emigration
11. Center of Desert Researches
12. Egyptian Humanitarian Relief and Rehabilitation
13. Faculty of Economics and Political Science, Cairo University
14. Arab Republic of Egypt Ministry of Agriculture



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