Environmental Reform in Egypt: The Past Mistakes, Present Situation and Future Perspectives

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Abstract

Government institutions in Egypt are slowly trying to look at ways to correct mistakes of the past. Egypt is currently facing serious environmental challenges; some scholars go far as saying it is an environmental crisis. The causes of these problems are complex, one intervening factor was prevalent, the institutional choices the Egyptian policy makers have made through the course of industrialization since the 1960's, 70's and 80's. These choices tended to downplay or ignore environmental consequences in favor of attaining the most rapid economic growth possible. Flawed institutional practices were the main contributor to the environmental problems facing the country today. This paper's main focus is to look into the original causes of the government is on the road towards environmental reform, beginning with environmental protection taking up several articles in the newly amended constitution of 2014. With a proactive constitution, policy makers in Egypt have started to take certain measures to reform, ensuring a sustainable future that allows for economic development along side environmental protection.

Statement of the Problem: Policy makers in Egypt must accept that the country is facing severe

environmental problems. The Egyptian Government is taking appropriate measures to ensure the countries future economic and ecological survival.

Questions of the Study:

1. What are the environmental problems facing Egypt today?

2. What ignited the current environmental problems?

3. Is the government aware of the severity of the environmental problems facing Egypt?

3. What measures can the current government take to begin environmental reform?

4. Is focusing on economic growth and development far more important than the environmental damage that will occur in the process?

Methodology: The methodology of this paper is an exploratory case study, relying on the qualitative approach to research. Methods of collection of data were mainly using secondary data, interviews, analyzing existing data such as archival documents.

Key Words: Environmental problems, Egypt, Air pollution. Water pollution, Soil degradation, Overpopulation, Industrialization, Institutional restructuring

I. Introduction:

Egypt is home to diverse ecosystems and 30 natural protectorates that cover more than 15% of Egypt's total area (MSEA, 2013), all which are susceptible to the deteriorating effects of unmonitored industrial activities, rapid population growth, overexploitation of natural resources, and ineffective implementation of environmental protection laws.

Protecting the environment is not a luxury that should be put into the agenda once basic needs are met. Environmental degradation impacts our health, the quality of the food we eat, and the air we breathe. Unsustainable consumption of natural resources coupled with climate change threatens national food security. If these are not basic needs then what is? Egypt is currently facing serious environmental challenges. Decades of increased population growth, intense urbanization and virtually unchecked industrial pollution are significant pressures on the Egyptian environment. Heavy metals in industrial wastes and emissions are contaminating air and water supplies, increasing then risks to many Egyptians of acquiring various forms of cancer, respiratory diseases and brain damage. The causes of these environmental problems are varied and complex, involving many aspects of recent Egyptian political, economic and cultural history. The core of this complexity lies one intervening factor that is extremely prevalent; this is the institutional choices that the Egyptian policy makers have made through the course of industrialization since the 1960's. These choices tended to downplay or ignore environmental consequences in favor of attaining the most rapid economic growth possible.

Today we can see the results of this shortsiegthed policy on the streets of Cairo or the waterways of the Nile. Many officials today have begun to re-examine the wisdom of these past policies, weighing any economic gains that might have been realized through rapid industrialization against the environmental costs that are

beginning to emerge and can no longer be ignored. While the development path has indeed brought some economic progress, Egypt still remains a very poor nation with severe environmental problems affecting the livelihood of the Egyptian populous. The next portion of this paper is dedicated to giving an overview of the main environmental problems facing Egypt today air, water pollution and soli degradation.

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II. Egypt's Environmental Problems:

Water Pollution:

The river Nile, the longest river in the world 4,258 miles (El-Kammash, M 2013), flowing from the lakes of Central Africa to the Mediterranean Sea. Its water resources are shared by eleven countries, namely, Tanzania, Uganda, Rwanda, Burundi, Democratic Republic of the Congo, Kenya, Ethiopia, Eritrea, South Sudan, Sudan and Egypt. Egypt and Sudan are the countries downstream of the river (El-Kammash, M 2013).

The damage Egypt's development practices have caused to the environment are immense one of them being water pollution. The Pharos once believed that the Nile was the cornerstone of their existence and they worshiped it like a god. They may have been correct in many aspects since the Nile represents primarily the only source of drinking water for over 90 million inhabitants of Egypt. Today, industrial and human waste is contaminating drinking supply; industrial emissions are greater in comparison to ten years ago. Since most of these emissions are not filtered, the consequences on human health, vegetation and aquatic life are severe.

Most cities and citizens of Egypt depend on the Nile as it forms the primary daily source of water. It is necessary for industrial and agricultural needs, drinking and daily use. "Egypt faces an annual water deficit of around 20 billion cubic meters" stated Khaled Wasef, Irrigation Ministry Spokesman (Research Institute of Soil, Water and Environment, 2014).

One of the principal origins of groundwater pollution is seepage from the improper use and disposal of heavy metals, synthetic chemicals and other hazardous wastes mostly from aluminum, fertilizer, iron and steel production. Egyptian Environmental Affairs Agency (EEAA) research indicates that the quantity of such compounds reaching groundwater from waste dumps appears to be doubling every five years. It is common in Southern Egypt to discharge waste directly into groundwater reservoirs. (Environmental Quality International, 2011)

EEAA monitoring of groundwater contamination has lagged behind monitoring of the Nile, but it now becoming an area of great concern as more groundwater pollution is detected.

Nevertheless, no real government policy is yet in place to deal with the problems associated with hazardous waste and the level of groundwater pollution in many areas has yet to be assessed. (Environmental Quality International, 2011) A recent Ministry of Agricultural review of fisheries productivity in the Nile found dissolved oxygen levels low enough to endanger fish populations. The problem gets worse where the Nile passes through large industrial areas like Cairo, Asyut or Southern Egypt. In a sample of fish caught in the Nile 49 percent exceeded World Health Organization (WHO) guidelines for lead and 81 percent for cadmium. (EEAA, 2010) Egyptian fishermen are losing their livelihoods because the fish can no longer survive in the water.

To date however, industrial polluters have continued to pollute unabated, despite laws which state they cannot pollute above certain levels. What we now see is uncontrolled polluted wastewater from leather tanning and dyeing processes, sugar distillation factories, chemical producing factories, building materials industry - including cement, the food canning industry, paper and wood pulp processing factories and the electrical industry (amongst many others).

Despite the argument that a level of deregulation is required to bring in investors to rebuild the economy in Egypt, if it comes at the cost of the lives of those supposedly benefitting from the economic improvement, then we cannot find that misuse of Egypt's main water source for the profit of the few at the top of the economic chain, outweighs the expense of Egyptians suffering from long-term illnesses like kidney failure, cancer or the Hepatitis C Virus (20%-10% of the population). High and increasing rates of renal diseases and renal failure: roughly 30% of which are caused by Schistosomiasis. The highest rates of Schistosomiasis contributing to renal failure are in Lower and Upper Egypt, the areas with least access to safe drinking water and sufficient sewage treatment infrastructure. (The Epidemiology and Iatrogenic Transmission of Hepatitis C Virus in Egypt, 2013).

Air Pollution:

Industrial development in the 1960's, 70's and 80's had a very serious impact on the quality of air Egyptians now breathe. Industrial emissions along with emissions from motor vehicles now pose serious health hazard to virtually the entire Egyptian populous. In term of suspended particle matter, Egypt currently does not

meet WHO standards. In other words Cairenes are subject to much higher levels of airborne dust and smoke than citizens of the world's largest industrial nations. This is largely the result of the fact that in the 60's and the 70's most of the industrial facilities were built with virtually no environmental safeguards. Cement factories built without any filters, aluminum smelters to date spills its industrial gases into the air without ant safeguards (EEAA, 2013)

The main air pollution problem in Egypt is the particulate matter. The most notable source of the dust and small particles is transportation, industry and open-air waste-burning. Another significant source is the wind blown from arid areas around Egypt (e.g. Western Desert). The air in Egypt is very thick, gray and there is a haze over Cairo. Furthermore, other forms of air pollution in Egypt are: sulfur dioxide (SO₂), nitrogen dioxide (NO2) in urban areas. As well as carbon monoxide (CO) in streets, due to the excess amount of cars exhaust and factories pollutants. The sky is gray rather than blue, which is very similar to the gray skies in Mexico City and Beijing. (The Egyptian Organization for Human Rights, 2009) The Egyptian Ministry of Health estimates that if industrial emissions were reduced to meet WHO standards, an estimated 100,000 lives could be saved every year. (The Egyptian Organization for Human Rights, 2009)

Pollution in Cairo, Egypt		
Air Pollution	94.19	Very High
Drinking Water Pollution and Inaccessibility	61.63	High
Dissatisfaction with Garbage Disposal	93.02	Very High
Dirty and Untidy	92.44	Very High
Noise and Light Pollution	75.60	High
Water Pollution	78.57	High
Dissatisfaction to Spend Time in the City	83.33	Very High
Dissatisfaction with Green and Parks in the City	92.07	Very High
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Figure 1: Pollution in Cairo

Source: www.who.int, 2014

The economic costs of dealing with these environmental problems are also increasing. The government is now witnessing an incredible surge in the costs of medical care to treat cancer patients and those individuals with resperitory disease. Over 340 million (US\$ 10 million) is spent annually to provide care for Egypt's cancer sufferers of all ages especially children, an increase of almost 40 percent since 1990. (Eid, 2012) These increased costs are likely to have several causes but according to the EEAA the main factor is the legacy of industrialization throughout the 1960's and 70's. According to the former head of the EEAA Mr. Eid greatly believes that Egypt has been sacrificing human health for the sake of economic growth and increased production which now clearly costing the Egyptian government more than it ever anticipated. (Eid, 2012)

Soil Degradation:

Desertification, overfertilization by farmers and salinization is becoming the primary causes of serious degradation of Egypt's limited fertile lands, with profound consequences for Egypt's agricultural industry. The 1992 National Report for the Rio conference and Egypt's five year National plan list "increasing green spaces" as a top priority of a ranked-item agenda. (EEAA, 2013) Soil degradation through desertification and salinization have been the main sources of declining yields, especially in the poorest farm areas where technology to combat this phenomenon is not available. (Eid, 2012) About two million new acres of farmland have been reclaimed through specialized irrigation practices, offsetting the 1.5 million lost acres to urbanization. (Eid, 2012)

Desertification and land degradation are significant threats to Egypt's arable land and consequently national food security. Desertification is the loss of fertility in arable land through losing its bodies of water and thus its ability to grow crops and vegetation. With only 3% of Egypt's total area suitable for vegetation and increasing human needs, preventing the loss of any arable land to desertification should be a national priority. In Egypt there are several factors causing desertification, including intensive cultivation and overuse of pesticides, inefficient and poorly managed irrigation networks that distribute low quality water contributing to increased soil salinity, and seawater intrusion in coastal areas which is detrimental to harvest potential (Ministry of Agriculture & Land Reclamation et al., 2005). The salinity levels of underground water resources are increasing due to overexploitation for irrigation (MSEA, 2001). All these harmful practices are related to inadequate investment in the agriculture sector, mismanagement of resources, minimal environmental impact awareness in farmers, and poor implementation of pollution control regulations.

III. The Role of Egypt's Institutions in Environmental Policy:

Flawed institution practices have contributed to Egypt's environmental problems. Institutional structures, processes and philosophies of relevant government organizations and agencies have played a central and integral role in determining economic development priorities in Egypt, including their resulting environmental consequences. Institutional structures also play an integral role in trying to find policy solutions to these problems. The success or failure of effectively factoring the environment into policy considerations all depend on the level to which environmental policy has been institutionalized into the regular apparatus of government decision-making. Institutional factors play a role at every level and every stage of the implementation and administration of any kind of policy. From the initial stages of policy formulation, where the highest levels of leadership determine priories and goals, to the day to day implementation of these priorities, this ongoing complex institutional dynamic defines the environmental policy process. Maximizing the understanding and effectiveness of these processes will be critical to finding solutions to Egypt's current environmental situation. Therefore, Egypt's success in overcoming it environmental challenges will depend on how successfully it manages to institutionalize effective policies to the end. The institutional role is the most essential element that determines environmental policy effectiveness. The report published at the 1972 United Nations Conference on the Human Environment in Stockholm claimed the success in overcoming environmental problems were dependent on institutional strengths and weaknesses than other areas of public policy. (Henning, 1989) For example, when dealing with the issue of industrial waste partially includes responsibilities of the industry, energy and commerce sectors as well as public health and transportation among others. Any policy that would hope to be successful must incorporate inputs and expertise from each of these areas. This inter-sectoral character requires a holistic coordinated approach to policy where elements of separate areas impacted by a particular issue are incorporated into a comprehensive policy. This coordination can only happen if the institutional structures and practices are in place to facilitate. (Henning, 1989)

Government institutions in Egypt have indeed slowly begun to look at ways to correct the damage caused by the policies of the past. Since the 1980's, environmental protection laws have been developed but not implemented. An Environmental Affairs Agency (EEAA) and Ministry of Environment has been created to focus specifically on environmental policy issues. The Egyptian government has developed its own National Environmental Action Plan (NEAP) to provide a policy framework for environmental reform which has been updated several times. Major political institutions, parties and high level officials are beginning to show public support for incorporating environmental considerations into development policy.

IV. Environmental Legislation in Egypt:

The Egyptian Environmental Affairs Agency is the highest authority in Egypt for promoting and protecting the environment. The Ministry of State for Environmental Affairs (MSEA) and its executive arm, the Egyptian Environmental Affairs Agency (EEAA) considers the management of natural resources to all of Egypt's national policies and projects. The main objective is to preserve natural resources, biological diversity and national heritage in relation to sustainable development. The Egyptian government has developed five-year environmental action plans (1997/98-2001/02, 2007-12) for dealing with the country's solid waste, air and water pollution problems. (EEAA,2013) The plan's priorities include preparing feasibility studies for proposed development projects, urging companies to work toward ISO 14000 environmental standards certification and urging the use of scientific management techniques and waste recycling to preserve natural resources. The Ministry (MESA) is also responsible for publishing an annual report she is passed on to the President, People's Assembly and the Prime Minister, the last report published was in 2012.

The Egyptian Environmental law was introduced in 1994 and according to the current Minister of Environment "Law 4/1994 has a greater role with respect to all governmental sectors as a whole. The law has been designated as the highest coordinating body in the field of the environment that will formulate the general policy and prepare the necessary plans for the protection and promotion of the environment. It will also, follow-up the implementation of such plans with competent administrative authorities." (EEAA, 2013) Egypt is also a signatory to various conventions concerning environment protection, among which are The African Convention on the Conservation of Nature and Natural Resources, The Vienna Convention for the Protection of the Ozone Layer, The Convention for the Prevention of Pollution from Ships, The Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution and The Brussels Convention on Civil Liability for Oil Pollution Damage. (EEAA, 2013)

The Egyptian Environmental Affairs Agency (EEAA):

In the case of many bureaucracies the fight to establish the EEAA was a long one. Ministries were reluctant to let an outside agency interfere with what they thought was their jurisdiction. But finally, The EEAA became a legal entity in 1988 receiving it own budget allocations and formal status by decree of the Prime Minister and the People's Assembly. The EEAA main operational bodies are a department of environmental quality as well as a separate unit for policy and evaluation. All units report to the director who is also referred to as the CEO. The EEAA is supervised by an advisory board which is chaired by the Minister of Environment and includes the EEAA director and representatives of six sector ministries, business associations, universities and NGO's. In addition to EEAA's presence on the institutional level the creation of regional branches to oversee the implementation of environmental policy in Egypt's 28 governorates is in the works, each governorate will have its Environmental Management Unit (EMU). (EEAA, 2013)

The EEAA was envisioned to be the central body to be entrusted with monitoring all area of economic and political activity across the institutional spectrum making sure the environmental considerations were incorporated into policy objectives. Upon formulation the government entrusted the EEAA with a mandate to act in four principal areas of environmental policy. First, enacting of environmental legislation, regulating future businesses and business environmental behavior. Second, to ensure accountability of public investments and public enterprises in case of any wrong doing. Third, environmental monitoring, having over 75 inspectors nationwide and over 60 professional reviewing environmental impact studies. Together they help indentify current or potential environmental hazards and propose approaches for their solutions. (EEAA, 2012) Finally, the EEAA has been also developing a nationwide environment awareness program, warning the populace of existing environmental hazards and educating the public about environmental clean-up efforts. The EEAA is situated within the authority of the Ministry of Environment and the minister by decree is currently supervising the operations of EEAA.

V. The EEAA and Institutional Performance:

To enhance the status of the EEAA the Ministry of Environment was created in 1999. The position and status of the EEAA and its ability to successfully promote environmental policy is subject to debate. The efficiency of EEAA institutional performance is under great scrutiny. In reality the Minister of Environment is not able to exercise the coordinating role of integrating environmental concerns into the portfolios of other ministries. Egypt's bureaucracy and lack of institutional flexibility coupled with inadequate budget for the Ministry of Environment and the EEAA along with inter-ministerial rivalry and lack of coordination all impede the efficiency of the Ministry and the EEAA. The complex world of environmental development and development policies, new information, new problems and ever-changing political winds can all regularly test any institutions ability to maintain and effective and clear focus.

VI. The Beginning of Environmental Reform in Egypt: Egypt after the Uprisings

The Arab Spring brought with it hopes and dreams for a better Egypt. To achieve socio-economic development the Egyptian government needs to re-invent and re-think its role to be able to solve the major problems facing the country especially after two revolutions, January 25th, 2011 and June 30th 2013. The problems facing Egypt today, among them range from sky rocketing unemployment, lack of proper education and healthcare as well as environmental problems. With a new beginning came a new constitution, the Egyptian Constitution of 2014 was passed in a referendum in January 2014. The constitution took effect after the results were announced on 18 January. (Dustor, 2014) In Egypt's new constitution environmental issues and protection is mentioned in chapter 2 in several articles.

The constitution first recognized the environment in an amendment to the 1971 constitution in 2007, which added Article 59. The article stated that "safeguarding the environment is a national duty" and that measures taken should be regulated by law. The 2012 constitution went a step further, although a small one, and added the right to "a healthy, undamaged environment" and committed the state to safeguard the nation from pollution, singling out some environment features most important to our everyday life, such as the Nile (article 19), farmlands (article 15) and natural resources (article 18). Article 20 commits the state to protect Egypt's coasts, seas, waterways, and lakes and guarantees their maintenance and the removal of any illegal encroachments from them. (Sustainable Environment in the Egyptian Constitution, 2014)

The 2014 constitution recognizes citizen's right to a healthy environment and commits the state to its protection and using natural resources in such a way that fulfills sustainable development and ensures the rights of future generations (article 46). For the first time, the constitution includes citizens' right to enjoy lakes,

beaches, waterways and other natural protectorates and prohibits their usage in "ways that conflict with its nature" (article 45). It also commits the state to protecting endangered species and the humane treatment of animals (article 45), as well as enabling the activities of fishermen without harming the environment (article 30). Similar to the 2012 constitution, the 2014 constitution addresses farmland (article 29) and the Nile in article 44, committing the state to their protection, prohibiting their pollution and committing the state to removing any encroachments. The 2014 constitution adds the state's commitment to support scientific research related to water security (article 44) and renewable energy sources (article 32). (Sustainable Environment in the Egyptian Constitution, 2014) This is a step forward, greater awareness is now seen and hopefully this will lead us on the right track to Environmental reform.

VII. The Need for Environmental Reform

Before we start with the reform process establishing monetary value for the environmental consequences of creating the public sector industries over the last three decades is what the current government is working on. The justification of monetary valuation is important because it can be used as an indicator to measure the gains and losses in welfare. The "price" for environmental damage is estimated to cumulative damage until 2011 around US\$ 3 billion. (EEAA, 2012) This will continue to increase unless the government starts on the road to reform, starting with the restructuring of the current institutions involved in environmental protection. With growing population and industrial demands, environmental damage in Egypt is only expected to increase. The constitution is now considered proactive to make the right to a healthy and sustainable environment a national priority, before we confront more environmental and health catastrophes. (EEAA, 2012). For a comprehensive adoption of this right, the following aspects need to be addressed:

- The National Environmental Action Plan (NEAP) must reflect a nationwide strategy that will provide assistance to local governments develop their administrative capacity assisting them in implementation of the NEAP.
- The role of different government entities in protecting the environment should be clearly defined to avoid bureaucratic ambiguity, conflict, or evasion of responsibility. Making way for more institutional coordination of policy between all the relevant actors. The EEAA must become more streamlined and proficient and the National Environment Action Plan (NEAP) must be supported by adequate enforcement of the law (Environmental Law 4/1994).
- Egypt should do everything to exploit to the fullest the resources, expertise and finances of the international community to supplement its core national environmental policy structure. Egypt stands to gain tremendously from prudent cooperation with its foreign partners. Furthermore, it can as a major regional economic and political power play a significant role in coordinating international and regional policies.
- Citizens' full capacity to organize collectively and engage in public debate about environmental concerns.
- Promoting public awareness about environmental issues, showcasing the long-term negative impacts some common practices have on our health and environment.

VIII. Conclusion:

Egypt faces serious environmental challenges that can no longer be ignored. Steps must be taken to address this situation, without aggressive and comprehensive corrective measures the situation will deteriorate further. Cairo is considered one of the most polluted cities on Earth as well as one of the fastest growing. Population is expected to grow year by year which in turn will worsen the situation. Clearly current trends of the Egyptian Government cannot continue, Egyptian political officials must take steps to ensure that the current directions of development are altered to a more sustainable and humanitarian path. Great strides have been made over the past two decades in improving awareness of economic development's environmental costs. Laws have been passed, environmental agencies have been founded and some improvements have occurred. The environmental cause is gaining momentum, the initiatives have to be encouraged and improved upon to ensure their effect is maximized. The effectiveness and capabilities of the institutions involved will determine the success of environmental policy and protection in Egypt and in turn the chance for a sustainable future.

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