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Managing Environmental Degradation: An Analysis of Environmental Governance and Its Impact in Egypt

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Abstract
Environmental degradation is threatening all countries alike. Egypt for years has been facing serious environmental threats but according to environmentalists Egypt is currently facing even more 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 the risk 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. In 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.

Egypt's environmental problems can no longer be ignored; the country needs immediate action in addressing several environmental issues, the most immediate environmental problems facing Egypt include unsafe water, inadequate sanitation, soil depletion, and air pollution. Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil and the destruction of ecosystems, having impact on our health, the quality of the food we eat, and the air we breathe. 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. Environmental governance is believed to represents a quantitative and qualitative breakthrough in improving the environment and solving its problems. This paper approached environmental governance using a pluralistic perspective, as it was addressed through analyzing its application on three dimensions; the multilateral, multi-level, and multi-instrumental dimensions. Applying each of these dimensions in the Egyptian case revealed and shed light on major problems in applying good environmental governance, thus limiting its effectiveness in handling environmental problems.

Hypothesis Statement: Solving environmental degradation worldwide entails interaction and cooperation. Environmental Governance with its multi-focus dimensions is the key to solving many of the environmental problems facing Egypt today.

Research Questions
1. What are the main drivers towards environmental degradation?
2. What are the environmental problems and their impact on the health of Egyptians' today?
3. What is Environmental Governance? How can it be addressed?
4. How is environmental governance being applied in Egypt?
5. Are there any obstacles facing Environmental Governance in Egypt?

Methodology: This paper is an exploratory case study, relying on the qualitative approach to research**.** Methods of data collection were through using secondary data, interviews and analyzing existing data such as archival documents.
Keywords: Environmental Governance, environmental degradation, public policy, Egypt

I. Introduction

The world today is facing is facing many challenges, among them is environmental degradation. The crisis caused by the impact of human activities on nature calls for immediate and proper application of environmental governance. This includes responses by international institutions, governments and citizens, who should meet this crisis by pooling the experience and knowledge of each of the agents and institutions concerned. Egypt is listed among the many countries that are facing severe environmental degradation. Environmental governance is believed to represents a quantitative and qualitative breakthrough in improving the environment and solving its problems.

Egypt is currently facing serious environmental challenges many environmentalists refer to it as an environmental crisis. 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 the risk to many Egyptians of acquiring various forms of cancer, respiratory disease 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 Egyptian government has realized the effect of the previous decisions taken over the years, theses decisions are the major cause of today's environmental problems.

II. Main Drivers of Environmental Degradation:

Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil and the destruction of ecosystems, having impact on our health, the quality of the food we eat, and the air we breathe. Environmental degradation is not only seen in the Egyptian case, it is considered a problem that may be called worldwide in nature, the damage done to our planet is irreversible. Human activities as well as population growth increases global consumption, it is essential that we measure nature's capacity to meet these demands. The Ecological Footprint has emerged as one of the world's leading measures of human demand on nature. Simply put, according to Ecological Footprint we are able to address whether the planet is large enough to keep up the demands of humanity. Before searching for solutions we must focus in on the causes for environmental degradation, the causes are complex and many, but if summed up by environmentalists and economists the primary causes are due to the following:

Economic growth –Environmental economists point to a close correlation between economic growth and environmental degradation, arguing for qualitative development as an alternative to growth. As a result to this conclusion, the past couple of decades have seen a drastic shift towards sustainable development. Underlining the importance of the misuse of natural resources and how this will affect future generations.

Consumption – The growth of consumption and consumerist ideology, is the major cause of economic growth, also concerns the development of irresponsible lifestyle in developed countries, such as the increase in the size and number of homes and cars per person. Whereas for developing countries the irresponsible lifestyle has two opposite directions; the first is similar to that prevails in developed countries; i.e. luxurious consumption, and the other form is due to the overconsumption of outdated technology. All are exerting pressure on the environment and natural resources.

Population growth – Forecasts predict 8.9 billion people on the planet in 2050. (AUC, 2013) This is a subject which primarily affects developing countries, but also concerns developed countries; although their demographic growth is lower, the environmental impact per person is far higher in these countries, and they are prone to increasing waves of immigration from poor developing countries. Demographic growth especially in developing countries needs to be addressed and tackled mainly by developing education, family planning programs and generally improving women's status.

III. Environmental Degradation in Egypt

Since the early 1960's Egypt's environmental problems have developed at an almost astronomical rate. From the attempt to industrialize dating back to the 1950's to the population explosion facing modern day Egypt, the pressures of development have had a serious impact on the country's environmental wellbeing. With eighty five percent of Egypt's land mass being uninhabitable and its population expected to surpass 120 million by the year 2020, (EEAA, 2013) the support of so many people is placing a great strain on Egypt's resources and it environmental resilience.

Over the past two decades inadequate attention has been given to the environment and the implications on health and productivity for Egyptians. These consequences have been most severe for Egypt's lower income brackets. Since it is often poorest who suffer most from the consequences of pollution and environmental degradation. Recent efforts have been focused on targeted groups who are known to be worst off and this target group is given priority by the Egyptian Government. According to the Egyptian Environmental Affairs Agency (EEAA, 2013) the list below is considered the priority group, but if added together it will almost be equal to 98% of Egyptian populous:

1- The one third of Egypt's population who are receiving inadequate sanitation;
2- The 10 million Egyptians without safe drinking water;
3- Over 40 million are exposed to unsafe conditions caused by smoke and soot;
4- The 12 million Egyptian farmer and indigenous people who rely on farm land and the desert and whose livelihoods depend on good environmental stewardship.

From Egypt's earlier attempts at growth, the Egyptian government has come to recognize that the protection of the environment is essential part of development. The government now clearly recognizes that without adequate environmental protection, development is undermined. The coming decade presents serious challenges for Egypt as a whole, politically, economically, environmentally and socially. As Egypt's population will grow from 90 million to 120 million, industrial output and energy use will likely have to triple and food

production will need to at least double yet again. This growth will bring with it the possibility of even more severe environmental damage. Alternatively, if early intervention and actions are taken, it could bring with it better environmental protection, cleaner air and water as well as the enhancement of the quality of life of many Egyptians. Finding solutions for alternative energy sources as well as proper water management must be on the top of the government's agenda. Looking back at the past made the current administration now realizes how the environment was completely ignored and acknowledging that the main source of the Egyptian environmental problem dates back to the 1960's with its main focus on rapid economic growth without any concern for the environment. Policy choices in the future will clearly play an important role in crafting and ensuring a better future for all Egyptians.

Egypt's Environmental Problems

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 accompanied by the inadequate policies initiated in the past. The Egyptian government is now well aware of the crisis the country is facing but the environmental protection measures that are being taken remain insufficient which is leading to even more environmental degradation. Among many environmental problems facing Egypt the most important are the following:

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 to over 90 million inhabitants of Egypt. 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. Water covers 75% of the Earth's surface, scarcity of water is one of the major problems concerning many countries in the Middle East Region. However fresh drinking water constitutes 0.7% found in rivers, lakes and underground. The Nile River, the longest river in the world of 4,258 miles, flows from the lakes of Central Africa to the Mediterranean Sea (El-Kammash, M, 2013). Its water resources are shared by eleven countries, 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).

"Egypt faces an annual water deficit of around 20 billion cubic meters" stated Khaled Wasef, Irrigation Ministry Spokesman; water is polluted when a direct or indirect change occurs in its elements or in its physical or chemical properties. The Nile faces daily pollution problems; there are several sources of pollution into the Nile, including industrial wastewater discharge, pesticide and chemical fertilizer residue from agricultural application, agricultural water drainage, radioactive discharge, and oil pollution. (Ayad, 2013)

The damage Egypt's development practices have caused to the environment are immense, water pollution is one of the major problems facing 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 although suspected to be severe will not be known for some time. 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 form aluminum, fertilizer, iron and steel production. 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, 1991) Since groundwater aquifers do not have the self-cleansing capacity of strong rivers like the Nile, once polluted they are difficult and costly to clean. (EEAA, 2013). Sewage wastes also among major pollutants of groundwater, as only 43.6% of total population are provided or linked with formal sewage networks, whereas the remaining 56.4% are either linked to informal ditches or trenches, or not linked to any drain at all (EEAA, 1999). This later percentage is mainly found in the 151 villages identified as the poorest ones, as 99% of population in such villages with no sewage network (EEAA, 2010).

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, 1991). 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% exceeded World Health Organization (WHO) guidelines for lead. (EEAA, 2010)

Air Pollution

Air Pollution is caused by the use of fossil fuels is another driver of environmental destruction. The burning of carbon based fossil fuels such as coal and oil, releases carbon dioxide into the atmosphere. One of the major

impacts of this is the climate change that is currently taking place on the planet, where the earth's temperature is gradually rising. Given that fuels such as coal and oil are the most heavily used fuels, this is a great concern to many environmentalists. (AUC, 2013) The Air Pollution problem facing Egypt has been accumulating for more than six decades, being traced back to the 1960's. As mentioned previously, the 1960's marked the beginning of the environmental problem in Egypt, with industrialization came factories without filters and outdated technology which was the start of environmental degradation. 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 also pose serious health hazard to virtually the entire Egyptian populous. 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. Transportation is responsible of almost 26% of dusts as air pollutants, more than 90% of carbon monoxide, and 50% nitro oxides (EEAA, 2008). Open-air waste-burning contributes seasonally to almost chronic disaster Egypt started to witness since autumn 1999. The Black Smog – as it's called- is a phenomenon Egyptians suffer from every year by the end of autumn and the beginning of winter resulting from the burning of rice straws after harvesting due to insufficient awareness and absence of proper technology that helps farmers to get rid of or make use out of their agricultural disposals (IDSC, Dec. 2011). Egypt currently does not meet WHO standards, in other those living Cairo 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 any safeguards (EEAA, 2013)

Another major source of air pollution is the windblown 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 (SO_2), nitrogen dioxide (NO_2) 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)

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 respiratory 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, 70's and early 80'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

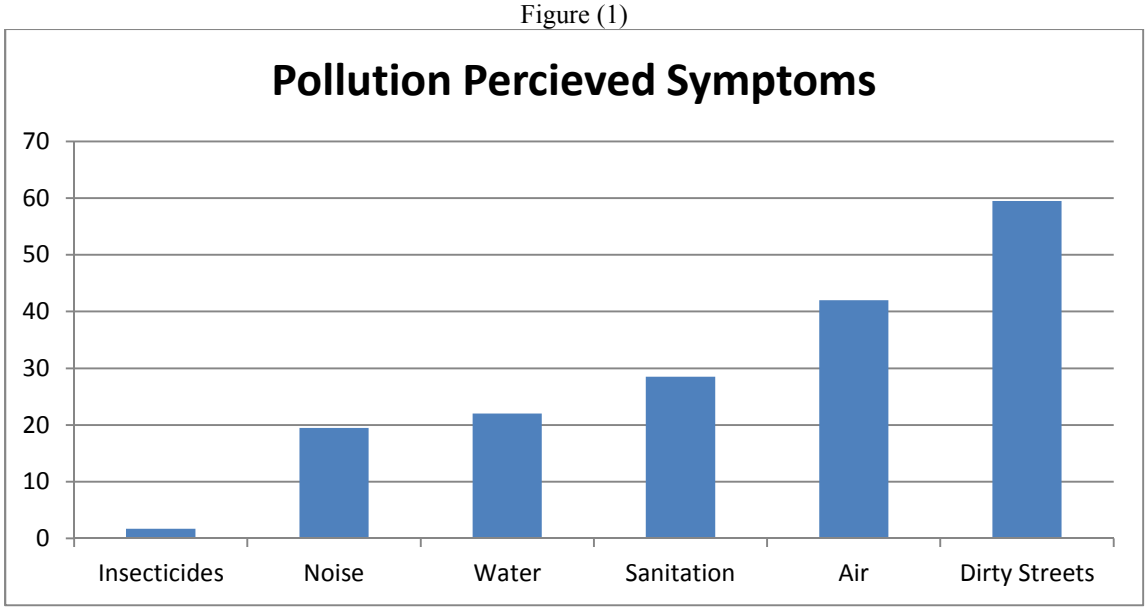
Destructive agricultural practices such as overuse of fertilizers and overgrazing lead to land degradation. The soil gets eroded, and leads to silting in rivers and reservoirs. Soil erosion is a continuous cycle and ultimately results in desertification of the land. Apart from land degradation, water pollution is also a possibility; chemicals used in farming can run-off into rivers and contaminate the water. Desertification, over fertilization 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).

Over and above the previously mentioned sources of soil degradation, the prevailed turbulence during the two Egyptian uprisings during the past four years has witnessed increasing and notable degradation due to

the construction on agricultural lands. To understand the scale of the tragedy caused by the absence of a Government strategy to address the housing issue of rural Egyptians, it is enough to know that the agricultural land during the twentieth century was about 6 million acres. After the construction of the High Dam in the 1970's and the reclamation efforts it increased to 8.2 million, yet still insufficient compared with today's population size (90 million). For the last 30 years the construction on agricultural land in Egypt has reached between 1.5 and 2 million acres of the most fertile lands of Egypt and the Nile Valley and its Delta. Some of this land was used for residential purposes, and some for projects (El-Naggar, 2011). All these harmful practices are related to inadequate investment in the agriculture sector, mismanagement of resources, minimal environmental impact awareness of farmers, and poor implementation of regulations. The following is a chart that represents a sample of Egyptians and how they perceive environmental problems facing Egypt.

Figure (1)

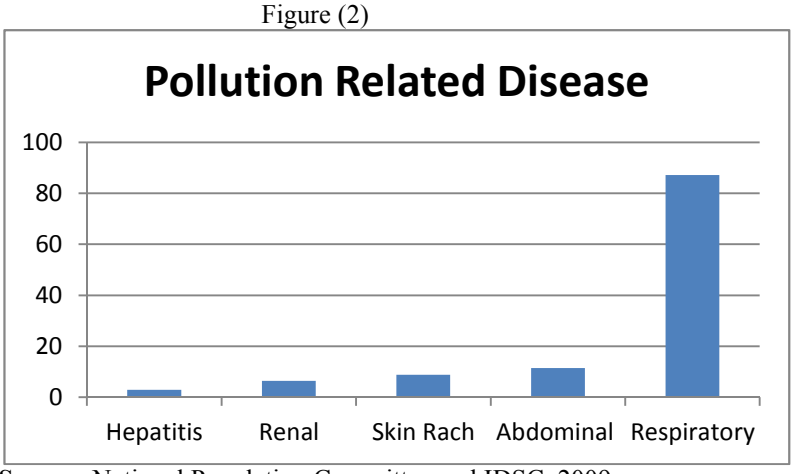


Source: PC and IDSC, 2009

IV. Pollution Related Diseases in Egypt:

There are some widespread diseases mainly attributed to different sources of pollution in Egypt. Bilharzia is a severe epidemic disease that results from infected water streams. Typhoid is yet another disease that results mainly from unsafe drinking water and improper waste disposal. According to the National Population Committee affected people are estimated to reach 56 thousand cases in 2015. Diarrhea among children under 5 years is another widespread disease, the percentage of affected children reached 8.5% in 2014; i.e., 103 thousands case per year. Furthermore, the most common of diseases affecting millions of Egyptian today is Hepatitis particularly Hepatitis C, it is the main health problem with an infection rate of 14.7% in 2010, which is increasing yearly. Pollution is also considered the main reason of severe respiratory problems, food poisoning, skin rash, and renal disease (National Population Committee and IDSC, 2009). A survey was done to prioritize the pollution related disease and this is represented in the diagram below.

Figure (2)



Source: National Population Committee and IDSC, 2009

V. 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 of both institutions is to preserve natural resources, biological diversity and national heritage in relation to sustainable development. The Egyptian government has developed several five-year environmental action plans known as the National Environmental Action Plan (NEAP) during 1997/98-2001/02, 2007-12 for dealing with the country's solid waste, air and water pollution problems. (EEAA, 2013). The plans 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 on the state of the environment which 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. Nonetheless, there were several scattered endeavors towards protecting the environment before 1994; such as Law 48 for 1982 to maintain water streams through preventing the dumping of untreated wastes. However; the existence of a complete formal framework for environment protection was introduced in Law 4/1994. The law has been amended in 2007 and is 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. (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 among others. (EEAA, 2013)

Egypt in Transition and the New Constitution:

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 18th January 2014. (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 not only by today's decision makers but by all Egyptians and hopefully this will lead us on the right track to Environmental reform and healthier new Egypt.

VI. Environmental Governance – Insight on Egypt:

Although there is little agreement about the exact meaning of the term governance, but overwhelming majority argues that governance is associated with government's declining ability to steer societal actors in a hierarchical top-down fashion through command and control regulation (Rüdiger K.W. Wurzel et al., 2013). Environmental Governance is the means by which society determines and acts on goals and priorities related to the management of natural resources. This includes the rules, both formal and informal, that govern human behavior in decision-making processes as well as the decisions themselves. Some 300 international environmental agreements have been adopted since the 1972 Stockholm Conference on the Human Environment. Environmental governance and law involves standard-setting, institutions and processes which guide the interaction of government and non-governmental stakeholders in implementing international agreements and ensuring environmentally sustainable development (unitar.org, 2015).

Therefore, Environmental governance can also be defined as the processes of decision-making involved in the control and management of the environment and natural resources. The International Union for Conservation of Nature (IUCN), defined Environmental Governance as the 'Multi-level interactions (i.e., local, national, international/global), but not limited to, three main actors, i.e., state, market, and civil society, which interact with one another, whether in formal and informal ways; in formulating and implementing policies in response to environment-related demands and inputs from the society; bound by rules, procedures, processes, and widely accepted behavior; possessing characteristics of "good governance"; for the purpose of attaining environmentally-sustainable development' (ICUN 2014)

According to the United Nations Environmental Program (UNEP) Environmental Governance at all levels national, regional and global is considered critical for the achievement of environmental stability and sustainable development. The UNEP is one of the main and very actors in global awareness of environmental degradation as well as one of the key initiators of environmental governance. (AUC, 2013)

Key principles of environmental governance include:

- Embedding the environment in all levels of decision-making and action
- Conceptualizing cities and communities, economic and political life as a subset of the environment
- Emphasizing the connection of people to the ecosystems in which they live

Moreover, Environmental Governance is perceived as a three-fold dimension process; multi-lateral, multi-level, and multi- instrumental process. Below is the application of the three dimensions on the case of Egypt.

A. Environmental Governance as a Multi- lateral Process:

The environmental management in Egypt depends on the cooperation of many different parties. We have the government as a key player represented in the Ministry of the State for Environmental affairs and its related body the EEAA which assists the initiatives that are implemented on the local level in the governorates concerning the issue of environmental management and the protection of the environment (MSEA, 2003). Accordingly, the most important part of governmental side is represented in the environmental affairs offices also known as Regional Branch Offices (RBO's) in the governorates which are given rights by the law in environmental management. Therefore, the Ministry of State for Environmental Affairs (MSEA) main objective is to implement a decentralized approach to environmental management through improving the environmental affairs offices in the governorates and specifying their roles.

Other organizations and methods are applied to be able to cope with the environmental problems facing Egypt today. These actors play an extremely important role that contributes to the success of environmental governance in Egypt. Of these actors are Non-Governmental Organizations (NGO's), having a strong NGO

community with a clear mandate to engage civil society, businesses, and the public sector can help Egypt tackle these issues more successfully. The following are examples of other actors involved in saving the environment.

Active Players in Environmental Protection in Egypt

Environment Protection Fund: Its aim is to encourage Investments in Environmental fields
The National Net to Detect Air Pollutants: It has widespread branches allover Egypt to sort and determine air pollutants types and levels to guide decision makers taking corrective actions.
The Public Egyptian Association to Protect the Environment and Society. Its aim is to enhance public awareness and to improve the environment via establishing environment friend projects and encouraging youth involvement in such projects.
The Academic Association for Environment Development. It is an NGO working under the premises of the Ministry of Social Security – as any other NGO.
The National Association For Environment Protection. It aims to protect the environment and wild life.

Source: Information and Decision Support Center (IDSC). The Pollution Endangers Egyptians Health, Monthly Report, Vol. 60, Dec. 2011. (Reference in Arabic).

The Multi-Lateral Perspective could be applied internationally, so another key player in tackling environmental problems in Egypt is the international community and its representative organizations. So we have what is called Multilateral Environmental Agreements (MEAs) that will be discussed further in the second dimension; i.e., the multilevel dimension. Until now, the formulation of environmental policies at the international level has been divided by theme, sector or territory, resulting in treaties that overlap or clash. For years countries have been introduced to MEAs which are agreements between several countries that apply internationally or regionally and concern a variety of environmental questions.

B. Environmental Governance as a Multi-Level Process:

Environmental Governance is divided into three sectors, Local Governance, State governance, and Global Governance. This multi-level interaction is seen by many as the key to resolving many of the world's environmental problems; the next portion of this paper will be focusing on this multi-level interaction and applying to the Egyptian case.

Local Governance

Sustainable development implementation and success should be based on local level solutions and initiatives designed with and by the local communities. Community participation and partnership along with the decentralization of government power to local communities are important aspects of environmental governance at the local level. Initiatives such as these are integral divergence from earlier environmental governance approaches which was driven by state agendas and resource control and followed a top-down or trickle down approach rather than the bottom up approach that local level governance encompasses. Local level governance shifts decision making power away from the state and/or governments to the grassroots. The environmental affairs offices in the governorates are known as Environmental Management Units (EMU's) or Regional Branch Offices (RBO) and they report directly to the Egyptian Environmental Affairs Agency (EEAA). According to the Ministry of State for Environmental Affairs, EMU's are considered a decentralized environmental management mechanism of the Egyptian Environmental Affairs Agency. The initiation of EMU's aimed to improve environmental conditions, develop environmental management capacity of institutions, and provide frameworks for compliance with environmental regulations. (EEAA, 2014)

The decentralization of environmental management project which led to the formation of the EMU's, was funded by the Japanese and Danish governments and put into action in 2003. Technical support was given buy the donors focusing on capacity building, giving intense training and support to all involved. The National Environmental Action Plan initial goal was to shift environmental management to the regional level, thus to have an EMU in all the 28 governorates in Egypt, with an environmental action plan for each governorate. The Helwan Governorate Environmental Action Plan is an example, the main objective being to improving the quality of the environment and hence improving the quality of life for the region residents. Helwan is located on the outskirts of Cairo and is considered one of t he severely polluted areas due to being the location of many industries. The scope of work included:

- Defining the main environmental issues and prioritizing actions to improve the indoor, outdoor and working environment and to reduce the negative environmental effects.
- Defining the region's future environmental vision, suggesting practical and cost effective solutions for the top priority environmental issues that concern the governorate.
- Setting of goals, strategies, and improving programs for directing and guiding the society on its different levels of authorities, organizations, and individuals, in order to achieve the governorate future environmental vision.
- Identifying the cost of the proposed interventions and establish a time-phased action plan for implementations.

- Identifying the institutional mechanism with clear roles and responsibilities for implementation, follow-up, monitoring and evaluation of the plan. (idcegypt.com, 2015)

However, till now, only five regional branches were constructed (Cairo- West Delta- East Delta- Central Delta- the Canal and Sinai) to foster decentralized environmental efforts. Work is still proceeding in three regional branches following Assiut- the Red Sea in order to assist North and South Upper Egypt, and the Red Sea to check the implementation of the environmental plans and law no. 94/4 and enhancing the environmental awareness (MSEA, 2015). Local level governance is important to bring back power to local communities in the global fight against environmental degradation.

State Governance

States play a crucial role in environmental governance; Governments should respect and support the commitment to implementation of international agreements. At the state level, environmental management has been found to be conducive to the creation of roundtables and committees. State governance includes several actors' political leaders, unions, businesses and non-profit organizations as well as environmental protection foundations. All of these actors play an equally important role in environmental protection and control. (Leach, 1997) The state is obliged to work and integrate with institutions and pressure groups and must participate in the process of environmental governance. The state must also attempt to link environmental management at both regional and local levels. (Leach, 1997) The State governance in Egypt is represented in the Ministry of State for Environmental Affairs (MSEA) and the Egyptian Environmental Affairs Agency (EEAA). In June 1997, the responsibility of Egypt's first full time Minister of State for Environmental Affairs was assigned as stated in the Presidential Decree no.275/1997. From thereon, the new ministry has focused, in close collaboration with the national and international development partners, on defining environmental policies, setting priorities and implementing initiatives within a context of sustainable development. According to the Law 4/1994 for the Protection of the Environment, the Egyptian Environmental Affairs Agency (EEAA) was restructured with the new mandate to substitute the institution initially established in 1982. At the central level, EEAA represents the executive arm of the Ministry. (MSEA, 2015) The main responsibilities of EEAA are to formulate environmental policies, prepare the necessary plans for environmental protection and environmental development projects, following up their implementation, and undertaking pilot projects. The EEAA is the National Authority in charge of promoting environmental relations between Egypt and other States, as well as Regional and International Organizations (EEAA, 2015).

Global Governance

Global governance is also known as world governance it is a movement towards political integration of transnational actors aimed at negotiating responses to problems that affect more than one state or region. At the global level there are numerous important actors involved in environmental governance and a range of institutions contribute to and help define the practice of global environmental governance. The idea of global environmental governance is to govern the environment at a global level through a range of nation states and non state actors such as national governments, NGOs and other international organizations such as United Nations Environment Program (UNEP). The UNEP's mandate is to be the leading global environmental authority. From delivering expert scientific assessments to providing international platforms for negotiation and decision making, UNEP has been fulfilling this mandate since 1972. (Henning, 1989). Hence, Global governance is perceived to be an effective form of multilateral management and essential to the international community in meeting goals of mitigation and the possible reversal of the impacts on the global environment. (Henning, 1989)

Another mechanism in Global Governance are Multilateral Environmental Agreements (MEA). MEA's are legally binding agreements between three or more states relating to the environment, legally binding with a primary stated purpose of preventing or managing human impacts on natural resources. MEA's main objective is the formulation of environmental policies at the international level, dividing them by theme, sector or territory this has resulted in treaties that overlap or clash. As of 2013 over 500 Multilateral Environmental Agreements (MEAs), including 45 of global scope involve at least 72 signatory countries. (Steiner, 2010) Further agreements cover regional environmental problems, such as deforestation in Borneo or pollution in the Mediterranean. Each agreement has a specific mission and objectives ratified by multiple states. (Taylor, 2013)

Many Multilateral Environmental Agreements have been negotiated with the support from the United Nations Environmental Program and work towards the achievement of the United Nations Millennium Development Goals as a means to implement sustainable practices for the environment and its people. Multilateral Environmental Agreements are considered to present enormous opportunities for greener societies and economies which can deliver numerous benefits in addressing food, energy and water security and in achieving sustainable development. (Steiner, 2010) These agreements can be implemented on a global or regional scale, for example the issues surrounding the disposal of hazardous waste can be implemented on a regional level as per the Bamako Convention on the Ban of the Import into Africa and the Control of Trans-boundary Movement and Management of Hazardous Waste within Africa which applies specifically to Africa, or the global approach to hazardous waste such as the Basel Convention on the Control of Trans-boundary

Movements of Hazardous Wastes and their Disposal which is monitored throughout the world.

The environmental governance structure defined by the Rio and Johannesburg Summits is sustained by UNEP, MEAs and developmental organizations consist of assessment and policy development, as well as project implementation at the country level. (Steiner, 2010). Lack of coordination between countries has affected the development of coherent governance. Countries do not follow a joint plan, resulting in overlaps and duplication. MEAs tend not to become a joint frame of reference and therefore receive little financial support. States and organizations emphasize existing regulations rather than improving and adapting them. (Steiner, 2010) But given the current situation regarding environmental and sustainable development issues and the lack of political will to reform, upgrading UNEP and providing it with "real authority as the 'environmental policy pillar' of the UN system, backed by normative and analytical capacity and with broad responsibility to review progress towards improving the global environment. Broadening the responsibility of UNEP may be seen difficult to implement within the near future but definitely it should be part of the action plan. (Steiner, 2010)

C. Environmental Governance as a Multi-Instrumental Process

Environmental Policy has been widely misperceived as inherently regulatory in nature (Rüdiger K.W. Wurzel et al., 2013). Nonetheless, In order to move from environmental government to environmental governance, soft instruments should be used alongside with hard policy instrument (i.e., traditional regulation). Soft policy instrument includes voluntary agreements, eco- management and audit schemes (EMAS). Voluntary agreements – as a first component of the soft policy- have been defined widely as "voluntary commitments of industry undertaken in order to pursue actions leading to the improvement of the environment" (OECD, 1994). The EU Commission defined it more narrowly as "agreements between industry and public authorities on the achievement of environmental objectives" (CEC 1996). Whereas the EMAS – the second component- is defined as "that part of overall management system which includes the organizational structure, responsibilities, practices processes, and resources for determining and implementing the environmental policy" (Council of European Communities, 1993). The EMAS expects participant organizations to review constantly their environmental impact and carry out regular audits by independent environment verifiers (CEC 2001).

In Egypt's case, the hard instruments are represented in the legal frame stated in Egypt's new constitution – addressed formerly, and Law 4/1994. As for the soft instruments, voluntary agreements are represented in the cooperation among different stakeholders mentioned earlier on the national level and the international level. At the national level, many cooperative projects were developed reflecting voluntary agreements between the government in one side and NGO's and civic society on the other side. Shorouk Project is an example of such a cooperation, it is a project for comprehensive rural development (1994-2005) in which civic voluntary contributions represented 29.1% of the total fund compared to 70.9% from governmental agencies and international donations. Shrouk sought to develop projects providing fresh water, sanitation, environmental improvement and other infrastructure projects. Villagers contributed with money, land, and even efforts (i.e., guarding the equipments and tools of the project) (IDSC, 2014).

For the last component in soft policy (EMAS), a clear institutional structure is obvious represented in the Ministry of State and EEAA and its regional branches, although notable interference and lack of coordination are major drawbacks. Moreover, the staff authority granted to the environmental government bodies makes them not efficient enough to detect environmental violating practices. Intrinsic auditing takes place also in compliance of Law 4/1994, as any new firm has to submit an environmental Impact assessment (EIA) report as a prerequisite among other legal requirements for its establishment. Further extrinsic auditing is being applied through what is called the Environmental Impact Index (EIP).

Egypt as a signatory of different environmental treaties is submissive to be indexed based on 25 criteria with a sum score of 100. The higher the score is, the better the rank of the country. The criteria include 6 main categories; health condition, quality of air, quality of water, biodiversity, natural resources, and climate changes. Worth noting that Egypt was ranked 68 of total 162 countries in 2010, compared to 85 of total 133 countries in 2006 (IDSC, 2011). For years Cairo was the second most polluted city in the world after Mexico City.

X. Institutional and Tactical Problems Facing Environmental Governance in Egypt:

Analysis of Finding:

Although it can be argued that Egypt adopts a comprehensive governance framework in dealing with environmental affairs, as seen above using the three-fold dimension model the results of this paper indicate little or minor enhancements have taken place in the Egyptian case. Putting into consideration the nature of environmental problems as for the vagueness the multi-causality for their occurrence, we can deduce some instrumental and tactical problems that tend to arise during environmental governance application. One of the major problems relates to the constantly increasing of population which represents a pressure towards minimizing the expected impact of any reform endeavors. (IDSC, 2014). Along with the increase in population the following are but a few of the problems hampering Egypt towards the road to proper implementation of environmental governance. The following problems are also considered the findings of this research:

1- Poor preparation of governmental officials to deal with other players as partners rather than within a frame of employee-citizen relation, the need for more civic engagement.
2- No clear prior legislative amendments concerning decentralization practices in the Law of local administration, resulting consequently in lack of coordination between planning and executive authorities.
3- Minor awareness is addressed towards human development, compared with the dedication towards developing physical establishments. Trivial portion of the projects – around 3-5%- only directed to increasing awareness, training, and rehabilitation.
4- Lack of cooperation between all parties, even between governmental agencies; i.e., MSEA. EEAA, and Social Development Fund, and other ministries.
5- No clear individual assessment for the needs of different villages. Therefore it may be evidenced that there is a government orientation towards specific environmental project; i.e., providing clean water, regardless to the priorities stated by local citizens.
6- No concurrent or periodic evaluation for environmental projects provided by neutral party not participating in project planning, implementation, or technical assistance.
7- The marginal role of mass media in promoting the awareness of environmental projects intended or taking place, minimizing thus civic engagement in such projects.
8- Lack of cooperation with the private sector, encouraging the implementation of the environmental standards as seen by the institutions involved, using incentives through policy instruments like economic incentives and market-based instruments such as taxes and tax exemptions.
9- No strict implementation of the environmental law 4/1994, very minimal arrests or legal penalties were activated to date.
10. Minor coordination concerning the treaties and agreements the Egypt ratified with others countries.

Therefore, in the Egyptian case the findings of this paper try to pin point the main problems hampering environmental governance. The main or ultimate goal is to be able to eliminate more environmental degradation through good environmental governance. Good environmental governance takes into account the role of all actors that impact the environment. From governments to NGOs, the private sector and civil society, cooperation is critical to achieving effective governance that can help us move towards a more sustainable future.

XI. Conclusion

Egypt is currently facing serious environmental challenges, by many called an environmental crisis. Egyptians are searching for a brighter future, after two uprisings a lot of pressure is directed towards the government to deliver. A brighter future for all Egyptians means a cleaner environment means health and prosperity. Decades of increased population growth, intense urbanization and virtually unchecked industrial pollution are significant pressures on the Egyptian environment. With the rapid population growth, overexploitation of natural resources, and ineffective implementation of environmental protection laws accompanied by the inadequate policies initiated in the past the Egyptian government is now well aware of the crisis the country is facing. Nonetheless, the environmental protection measures that are being taken remain insufficient which is leading to even more environmental degradation. Governmental institutions in Egypt have begun slowly to look at ways to correct the mistakes of the past. Since the 1980's the EEAA has been created to focus on environmental policy issues. Laws have been developed throughout years until the emergence of the last law 4/1994 which was amended in 2007. With the current Environmental legislation and Egypt's desperate need for foreign investment more pressure will be exerted on the environment.

Environmental governance is believed to represents a quantitative and qualitative breakthrough in improving the environment and solving its problems. The crisis caused by the impact of human activities on nature calls for immediate and proper application of environmental governance. This includes responses by international institutions, governments and citizens, who should meet this crisis by pooling the experience and knowledge of each of the agents and institutions concerned. This paper approached environmental governance using a pluralistic perspective, as it was addressed through analyzing its application on three dimensions; the multilateral, multi-level, and multi-instrumental dimensions. Applying each of these dimensions in the Egyptian case revealed and shed light on major problems in applying good environmental governance, thus limiting its effectiveness in handling environmental problems. The problems in Egypt are many and complex, but with the needed policy instruments and proper coordination and cooperation between all the parties involved this will mark the beginning of true environmental reform in Egypt.

References

American University in Cairo, (2013). “The Solution to Pollution – Scientists Find Answers to Cairo’s Garbage and Water Problems.” The American University in Cairo. Article published 13 Aug 2013.
Arab Republic of Egypt Ministry of Agriculture & Land Reclamation (2005), United Nations Convention to Combat Desertification, Desert Research Center “Egyptian National Action Program to Combat Desertification.”

Arab Republic of Egypt Ministry of State for Environmental Affairs (MSEA). (2011). "Egypt State of the Environment 2011." (In Arabic).
Ayad, A. (2013). "Water Quality and Cairo, is it safe?" Cairo From Below. Article published 5 Feb 2013. Al Ahram Newspaper.
CEC (1996). Communication from the Commission to the Council of the European Parliament on Environmental Agreements, COM (96) 561 final. Brussels: CEC.
CEC (2001). Commission recommendation of 7 September 2001 on guidance for the implementation of Regulation (EC) No 761/2001 of the European Parliament and of the Council allowing voluntary participation by organizations in a Community eco-management and audit scheme. Official Journal of the European Communities, 247, 44, 17 September 2001.
Eid, M., interview with the former head of EEAA, March, 2014
Environmental Quality International. (2011) Cultural Aspects Related to Garbage Collection in Cairo Governorate Cairo, Egypt (in Arabic)
Environmental Quality International. (2011) El Zabalin and Environmental Clean-up Efforts in the Cairo Governorate, Cairo (in Arabic)
Environmental Affair Agency (2013) The Egyptian Steel Industry and its Environmental Impact, EEAA Publication, Cairo (in Arabic)
El-Kammash, M., Hurst, E. & Smith. G. (2013). "Nile River." http://www.britannica.com/Nile-River – accessed on 3 March 2014.
Elnaggar. Ahmed (2011), Construction on agricultural land. How to solve the dilemma?, Ahram Daily Newspaper, April. http://www.microsofttranslator.com
Henning, D., Magnum, W. (1989), "Organizational and Administrative Aspect of Environmental Problems, Managing the Environmental Crisis**,** Durham, U.S.A
Information and Decision Support Center (IDSC). The Pollution Endangers Egyptians Health, Monthly Report, Vol. 60, Dec. 2011. (In Arabic).
IDSC, Monitoring and Evaluating the Role of NGO's in Infrastructure Improvement in Poor Villages, The Public Administration for Policies Monitoring and Evaluation, Report, June 2014. (In Arabic).
IUCN 2010 'Environmental Governance': Accessed 28 May 2014, www.iucn.org/about/work/programmes/environmental_law/
Leach, M., Mearns, R and Scoones, I. (1997), Challenges to community based sustainable development, in IDS Bulletin Vol. 28:4.
Newell, P. (2008). "The Political Economy of Global Environmental Governance". Review of International Studies. Vol. 5:2.
OECD (1994). Managing the Environment: The Role of Economic Instruments. Paris: OECD.
Research Institute of Soil, Water and Environment. Article: "Water Pollution." http://www.vercon.sci.eg/indexUI/uploaded/waterpolution3/waterpolution.htm : Accessed March 2014.
Rüdiger K.W. Wurzel et al., From Government Towards Governance? Exploring the Role of Soft Policy Instruments, German Policy Studies, Vol. 9: 2, 2013.
Steiner, A & Oviir, M (2010) 'Auditing the Implementation of Multilateral Environmental Agreements (MEAs): A Primer for Auditors' United Nations Environment Program.
Stone, Diane (2008). "Global Public Policy, Transnational Policy Communities and their Networks". Policy Studies Journal **36** (1): 19–38.
Taylor, Prue; Stroud, Lucy; Peters, Clark (2013). "Multilateral Environmental Agreement Negotiator's Handbook: Pacific Region 2013." Samoa / New Zealand: Secretariat of the Pacific Regional Environment Program / New Zealand Centre for Environmental Law, University of Auckland.
The Egyptian Organization for Human Rights. (2009). Report: "Water Pollution Time Bomb Threatening the Life of the Egyptians." (In Arabic)
The Official Site of MSEA, Achievements and Planned Activities for (2002-2003): Accessed January 2015
The Official site of MSEA-EEAA. http://www.eeaa.gov.eg/English/main/about.asp: Accessed January 2015
The Official Site of EEAA, The Environment Condition in Egypt, Information Report, 1999.
The Official Site of EEAA, Poverty in Egypt, Information Report, March 2010.
The Official Site of EEAA, A Study of Investment Opportunities in the Environment Field, 2008.
http://www.egyptindependent.com/news/report-80-assiut-residents-drink-unclean-water -Accessed January 2014.
http://mbe.oxfordjournals.org/content/381/3/20.full.pdf: Accessed November 2014
The Epidemiology and Iatrogenic Transmission of Hepatitis C Virus in Egypt: A Bayesian Coalescent Approach», http://mbe.oxfordjournals.org/content/381/3/20.full.pdf: Accessed April 2014
http://www.sis.gov.eg/Dustor-en001.pdf; Accessed December 2014
http://savethewater.org/egypt-and-water-pollution: Accessed November 2014

http://www.tadamun.info/2014/01/08/right-to-a-sustainable-environment-in-the-egyptian-constitution: Accessed December 2014
http://www.eeaa.gov.eg/English/main/law4.asp: Accessed December 2014
http://www.who.int/countryfocus/cooperation_strategy/ccs_egy_en.pdf: Accessed December 2014
http://www.unitar.org/environmental-governance-and-law: Accessed January, 2015.
http://www.idcegypt.com: Accessed January 2015

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