ICTs and environmental sustainability:

Mapping national policy contexts – Egypt baseline study

Leila Hassanin & Nahla Hassan

Association for Progressive Communications (APC) and Arabdev
May 2011

Table of Contents

1. Introduction

The research for this report was mostly done before the 25 January 2011 revolution, and completed one day after 11 February 2011. It therefore offers a perspective on status of information and communications technologies (ICTs) and environmental sustainability, the use of ICTs to adapt to and mitigate climate change, and the management of e-waste, under the last period of the Mubarak regime. The change of mood needed to use ICTs effectively to meet the challenge of climate change and to attend to the negative environmental consequences of e-waste is currently being felt in the recent political changes. There is a sense in which the societal mindset and the aspirations of the people are primed for a collective and holistic approach towards greening ICTs in Egypt, an attitude that was lacking in practice and concept before.

Since the late 1990s Egypt has promoted ICTs as one of its main economic growth engines. The government has positioned the private and public ICT sector (together with the Ministry of Communication and Information Technology (MCIT)) as a flagship sector. The former minister of MCIT became the country's prime minister.

One result of this policy has been a rapid diffusion of mobile phones, Egypt being one of the highest mobile phone users in Africa and the Middle East. Although computer ownership has not surged as rapidly as mobile phones, the former has seen a constant increase of ownership across most sectors of Egyptian society.

ICTs have been used for over a decade for environmental monitoring and reporting and are becoming pertinent for climate change adaptation. The nexus of ICTs and environmental sustainability in Egypt, at present, can be felt in the reduction of carbon emissions through ICTs, with an emphasis on public-private enterprises and the attraction of direct foreign investment (DFI). However, much work remains to be done.

This report is part of a five-country study commissioned by the Association for Progressive Communications (APC). The other countries offering similar overviews are Bangladesh, India, Mexico and Costa Rica.

This report looks at attempts at using ICTs to mitigate and adapt to climate change as well as e-waste management in Egypt. It documents the key stakeholders involved, offers an overview of the policy and legislative context, analysis challenges and trends, and, finally, identifies several key areas for civil society advocacy.

2. Overview of key findings

2.1. Policy, legislation and regulation

- Law No. 4 of 1994, and its amendment Law No. 9 of 2009, governs environmental protection in Egypt. The law has no special stipulation for ICT climate change mitigation or adaptation. There are also no policies or regulations governing the use of ICTs to combat or adapt to climate change in Egypt.
- There are also no policies or legislation governing ICT e-waste management. The closest reference is Law No. 4's provision regarding hazardous waste and materials, covered in Part 1, Chapter 2. There are also no plans, at present, to amend Law No. 4 and Law No. 9 to include e-waste.
- In the absence of policies, laws and, in most cases regulations, there are several recent initiatives addressing ICTs, climate change and sustainable environment in the form of loosely defined strategies, roadmaps and memorandums of understanding (MoUs). But these documents have not yet materialised into substantive work to combat climate change or to manage the growing problem of ICT e-waste.
- MCIT launched the Green ICT Strategy in 2010 and signed an MoU with the Ministry of State for Environmental Affairs (MSEA) in February 2010. The strategy does not demand the creation of policies to govern the greening of ICTs. It also does not require companies to safely dispose of ICT e-waste, which has allowed scrap-dealers to control the market.
- The only regulations controlling ICT e-waste have been set by the Ministry of Trade (MoT) requiring that imported computers be no more than five-years old from production date. A second regulation, which is indirectly relevant, requires that any product brought into the country has a certificate of origin from the country of manufacturing.
- Hazardous waste trading and handling without a proper licence is a criminal act according to Law No. 4, carrying a penalty of a prison sentence of no less than five years and a fine of no less that LE 5000 (USD861.00), with an upward reach of LE500,000 (USD86,066.00). This might present a legal loophole in the law that can be used to mandate safe handling of ICT e-waste.
- An enforcement mechanism for Law No. 4 is in place giving authority to so-called 'environmental inspectors'. The environmental inspection department is part of the minister's office in MSEA. However, Egyptian ICT companies are not manufacturers[1] and as such do not produce "waste" as defined by the law that should be handled in an enviromentally safe manner. They therefore do not fall within the jurisdiction of the MSEA.[2]

[1] The companies assembled IT products only.
[2] Essam Abdel Allim, BCRC Interview, January 19th, 2011

2.2. Collaboration, accountability and ownership

- The use of ICT tools – mostly databases – for monitoring and reporting of climate change adaptation, mitigation and environmental sustainability overall is lacking a focal agency. Line ministries like MSEA have their own databases and the sharing of information and data with Egyptian Environmental Affairs Agency (EEAA) is not always adequate. Data is often outdated, sporadically collected and is analysed by different stakeholders using different methods. Though EEAA and MSEA are the lead environmental agencies, they lack the institutional and financial capacity to carry out their role.
- MCIT is the driving force for extending ICT services in the country. Some of the available applications developed by MCIT address climate change issues such as the greening of ICTs and the establishment of IT tools for monitoring and reporting on climate change and developing environmental baselines. Yet sectoral cross-collaboration is weak.
- Without policy frameworks, laws, regulations and collaborative macro planning by the leading authorities, the different stakeholders are developing strategies, plans and cooperative agreements that are directed by their sectoral interests and by what markets demand at the time. There is little coherence in the myriad of initiatives and no proper follow-through in many of the strategies, plans and initiatives laid out.
- This fragmentation is also found in the waste sector. There are data gaps regarding the numbers of computers and mobile phones in Egypt. The absence of studies and reliable quantitative data makes it a challenge to assess the size of the problem and to plan appropriate e-waste management systems.
- The private sector seems to be taking the lead in e-waste management in Egypt. Small individual efforts are being made by telecommunication and computer companies to improve their e-waste management.
- The involvement of civil society in e-waste management is limited and is mostly concentrated in the hands of groups traditionally involved in waste handling and recycling.

2.3. Awareness

- There is low awareness among the public regarding the concept of green ICTs.[3] Although MCIT and EEAA have drawn up plans to increase public awareness, the issue is not a main concern with other decision-makers due to more pressing climate change issues like sea water level rising and air quality.
- MCIT has been championing green ICTs, but primarily as a strategy to attract foreign investment.

[3] The concept of energy use rationing by turning and unplugging ICT equipment and low carbon computing for example is not prevalent. Neither is the awareness of e-waste hazards.

- The health and environmental risks of ICT e-waste handling and dismantling is also not common knowledge. EEAA, MSEA and MCIT have several initiatives to raise public awareness planned, but not much has been implemented so far that reaches a critical mass when it comes to changing public behaviour. It is also notable that there is no apparent coordination with the Ministry of Health, even though this is a public health issue.

3. Objectives of study

This research explores present initiatives, challenges and gaps in the use of ICTs for environmental sustainability, with an emphasis on climate change mitigation and adaptation and the management of ICT e-waste in Egypt. The report analyses the availability and lack of policies, laws and regulations that are shaping the greening of ICTs, the use of ICTs for climate change mitigation and adaptation, and the production, procurement, use, and disposal of ICT equipment. The research also looks at the role of ICTs in providing climate change monitoring and reporting needs. In regard to e-waste management the analysis focuses on the 'initiators' and how these forward-thinking stakeholders work with partners from other sectors.

This study offers a much-needed synopsis of how ICTs are used in Egypt for environmental sustainability and how the challenge of ICT e-waste is being handled. The research also highlights present gaps and possible advocacy tasks for civil society.

The study is part of the newly-created programme by the Association for Progressive Communications (APC) in the field of ICTs and environmental sustainability. It accompanies an inventory of sustainable tools and practices, and policy research into ICTs and environmental sustainability in four other countries: India, Bangladesh, Mexico, and Costa Rica. The survey, inventory and research have been made possible through funding from the International Development Research Centre (IDRC). This research and other activities in the APC programme area can be accessed on the organisation's website: www.apc.org.

4. Methodology

In this report, 'ICTs and environmental sustainability' is a broad and inclusive definition. It involves the environmentally sound and sustainable management of ICTs, including their production, use, re-use and disposal. Importantly, it also involves using ICTs to mitigate, and adapt to climate change. Finally, ICTs can be used more generally in support of environmental causes, or as tools to assist in protecting and preserving the environment. The particular focus of this report is on e-waste and climate change.

A desk review and in-depth guided interviews with key stakeholders were undertaken to write this report. The desk review covered primary and secondary material provided by the stakeholders and online literature on ICTs and climate change and ICTs and e-waste management in Egypt. Laws and regulations governing these fields have been analysed.

A total of fifteen in-depth interviews were conducted with key stakeholders in the public and private sectors and in civil society. The interviews were focused on the stakeholders' activities and plans, on how they understand the field and how they interact with their counterparts.[4]

[4] Interview matrix in Appendix A.

5. Overview of context

With the rise of sea water levels, Egypt's north coast is already under stress and if current conditions continue one-third of the Delta could be inundated, displacing people, reducing agricultural production and destroying main industrial centres.[5] Egypt has been using monitoring systems using ICTs since the early 1990s to adapt to these environmental challenges.

As a non-annex I country to the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol Egypt is exempt from meeting specific emission quotas. Despite that, the government has been taking mitigation measures to lower its non-renewable energy consumption.[6] Egypt has been using hydropower since the Aswan Dam erection in the 1950s, and is becoming a leader of wind energy in the region. The country has been using gas instead of fuel oil, where possible, for industry and transportation and is exploring renewables like solar energy.

Egypt is mitigating its energy production, mainly petroleum, by shifting to natural gas extraction and use. Wind energy is currently the most promising renewable energy source, wind energy farms in Zafarana on the Red Sea coast are the main producers.[7] Despite the government's focus on energy mitigation MCIT has indicated that it plans to use renewable energy in the ICT sector.

Egypt is one of the most densely populated countries in the Arab region, with over 80 million citizens. The ICT market has a broad domestic base and demand for its services and equipments. It continues to grow exponentially. The number of ICT companies in Egypt has increased from 185 companies in 1998, to 1,625 companies in 2005[8]; with a dramatic rise to 3,245 companies in June 2009.[9] The number of internet users increased from 9.7 million users in June 2008 to 13.5 million users in June 2009 – an increase of 39.2%.[10]

There are three mobile phone operators in Egypt. The number of mobile phone users increased from 32.7 million users in June 2008 to 48.3 million users in June 2009, an increase of 47.7%.[11] In October 2010 there were 65.5 million subscribers, an increase of 23.6% from October 2009.[12] There was an increase in mobile diffusion of 12.63% in one year alone, from 63.53% in 2009 to 76.16% in 2010. [13] Mobile access now has the highest diffusion of all telecom services in Egypt.[14]

[5] Hassanin, L. Egypt: ICTs and environmental sustainability. GISWatch 2010. http://www.giswatch.org/country-report/2010-icts-and-environmental-sustainability/egypt
[6] EEAA. Egypt: Second National Communication to the UNFCCC. May 2010. http://www.eeaa.gov.eg/English/reports/CC/doc/CCCD-Egypt-SNC.pdf
[7] McGrath, C. Desert Winds Stir New Hope. IPS News. 9 Sep., 2009. http://ipsnews.net/news.asp?idnews=48377
[8] MCIT. Egypt Open for Business: Explore ICT Opportunities. ITU Telecom World 2006. http://www.egyptitutelecom.gov.eg/business.html
[9] Egypt in Figures 2010, Central Agency for Public Mobilization And Statistics (CAPMAS). Available on the internet: http://www.capmas.gov.eg/pdf/egypt/eco/84.pdf
[10] CAPMAS figures available on the internet: http://www.capmas.gov.eg/pages_ar.aspx?pageid=296
[11] Ibid.
[12] ITU. Egypt's mobile subscription increase. 13 Jan., 2011. http://www.itu.int/ITU-D/ict/newslog/Egypts+Mobile+Subscriptions+Increase.aspx
[13] MCIT. http://www.mcit.gov.eg/Indicators/IndicatorsPDF/ICT_Indicators_BulletinQ2-2010.pdf
[14] Hassanin, L. Egypt: Access to Infrastructure. GISWach 2008. http://www.giswatch.org/country-report/2008/egypt

Because of this Egypt has one of the highest mobile density rates in Africa and is competing for the top spot in the Middle East. Internet diffusion is not as strong, and for fourth quarter 2010 was around 30%. Regionally, however, it is still among the highest.[15]

These ICT rates need to be put into perspective. Gartner estimated that the international ICT industry accounts for around 2% of global carbon dioxide (CO2) emissions, the same as aviation.[16] This emission estimate does not account for consumer mobile and computer use.[17] The CO2 emissions in Egypt are therefore a minute fraction of its national and of the global emissions, making it a low priority for the government in light of pressing climate change issues like sea level rise, and dwindling water and energy resources.

[15] MCIT, ICT Indicators in brief., December 2010. http://www.mcit.gov.eg/Upcont/Documents/DecIndicatorsBrief_en.pdf

[16] This estimate of global CO2 emissions includes "the in-use phase of PCs, servers, cooling, fixed and mobile telephony, local area network (LAN), office telecommunications and printers. ... [and] an estimate of the embodied (that used in design, manufacture and distribution) energy in large-volume devices, namely PCs and cell phones. It also included all commercial and governmental IT and telecommunications infrastructure worldwide."

[17] Gartner Research Inc. Gartner Estimates ICT Industry Accounts for 2 Percent of Global CO2 Emissions. Press Release. 26 April, 2007. http://www.gartner.com/it/page.jsp?id=503867

6. Key stakeholders and initiatives

The use of ICT tools for environmental monitoring and reporting has been ongoing for over a decade in Egypt. So the use of ICTs to analyse, store and retrieve data for environmental monitoring and in climate change adaptation strategies is relatively entrenched. Climate change mitigation, aside from renewable energy sourcing, is a new area that is being explored on a pilot phase by MCIT.

E-waste, as a component of hazardous waste management, is in its very early stages, though the problem of e-waste is quickly growing.

There are a number of diverse stakeholders already involved in both these areas in the public, private and civil society sectors. This includes public-private partnerships and potential private-civil society partnerships.

6.1. Government initiatives

Both MCIT and MSEA, as well as EEAA, MESA's executive arm, are key stakeholders. The Ministry of Water Resources and Irrigation (MWRI) is the main player in the water sector. Environmental monitoring is also used by several other ministries such as the Ministry of Agriculture. The Egyptian Ministry of Trade is an indirect stakeholder as it is responsible for the procurement of goods from abroad. A representative from EEAA sits on one of the Ministry's Trade and Environment committees to promote environmentally sound trade policies.

The Egyptian Environmental Affairs Agency (EEAA)

EEAA was established according to the Law No. 4 of 1994 for the Protection of the Environment and was the first institution responsible for co-ordinating environmental affairs in Egypt. Subsequent to the formation of MSEA in 1997, EEAA was restructured and became the executive arm of the Ministry.

EEAA has been using ICTs for communication and data storage and retrieval tool since 1997, when it established one of its main information systems, the Egyptian Environmental Information System (EEIS), funded by Canadian International Development Agency (CIDA).[18] Many databases, spanning nearly every environmental sector from biodiversity to air quality monitoring, have subsequently been set up, most of them through donor financing.

The Ministry of Communication and Information Technology (MCIT)

Egypt's efforts in mainstreaming green ICT initiatives and strategies are relatively new. However, two initiatives by MCIT and MSEA were started in 2010.

The first involved the signing of an MOU between MCIT and MSEA in February 2010.[19] The MoU aims to reduce the adverse environmental impact that is generated by the diffusion of ICT devices. The MoU addresses ICT e-waste and the need to dispose of it in environmentally sound ways.

[18] EEAA. http://www.eeaa.gov.eg/English/info/project_details.asp?project_id=23
[19] http://www.mcit.gov.eg/ProjectDetails.aspx?ProjID=141&Cat=1&SubCat=22

According to the two-year protocol, co-operation will take place in three programme areas. The first focuses on raising awareness about green ICTs. This entails several tracks, including the formation of a joint task force of experts drawn from the public and private sectors, as well as international organisations and civil society organisations. Workshops and seminars will be organised for this purpose.

The second, parallel initiative, is the launch of a green ICT strategy by MCIT in 2010. The MCIT green ICT strategy rests on three pillars: raising awareness;[20] using ICTs for sustainable development by assisting other sectors to become greener; and carbon emission reduction and working on greening the ICT sector.[21] According to MCIT's minister, Tarek Kamel, the ministry is "actively improving ICT procurement regulations in line with green requirements."[22] The Ministry is also involved in reviewing and modifying the specifications of telecom equipment so that ICT products meet with green standards in government procurement requests.

The ministry's pilot model for implementing green ICTs is to reduce the carbon footprint of the Smart Village Cairo,[23] a premier IT business park, and its spin off, the Maadi Technology Park. The minister has encouraged organisational change, including promoting tele-working, e-government and e-health, among others. MCIT is also planning a public awareness campaign regarding the environmental impact of ICTs.[24]

Regarding e-waste, the ministry is planning to conduct an e-waste assessment for Greater Cairo in co-operation with the World Bank.[25] It also launched a new e-waste collection initiative called "Green ICT for every household" in collaboration with Hewlett Packard (HP), Microsoft, Intel, The Egyptian E-Waste Recycling Company (EERC), the Egyptian Chambers of Commerce and MSEA (on 17 January 2010).

ICTs for environmental monitoring and reporting

EEAA and MWRI are using ICTs extensively for environmental monitoring and reporting. MCIT is often involved in setting up these IT systems.

EEAA's Egyptian Environmental Information Systems (EEIS) serves to collect and classify environment information and data relating to EEAA departmental activities. The system provides EEAA management and different sectors, governorate branches and collaborative organisations with data for planning and decision-making.

[20] Though the "strategy" did not outline how awareness raising is planned to make the public aware of the importance of greening ICTs.
[21] Dr. Tarek Kamel's Speech at the Inaugural session of the ITU 5th Symposium ICTs, the Environment and Climate Change. Cairo 2 November 2010. Available on the Internet: http://www.mcit.gov.eg/Uploads/Documents/Speech_Dr_Kamel_5th%20ICT%20Symposium2010122294118.pdf.
[22] Ibid.
[23] Smart Villages Company: http://www.smart-villages.com/docs/cairo.aspx
[24] Ibid.
[25] Ibid.

The EEIS also provides:

- Free environmental information to the public, specialists, and researchers
- Identification of governmental and EEAA activities
- Provision of public service and support
- Environmental education and awareness to the public
- A forum for community feedback. The website is regularly updated with new information on the policies, activities, and services of the government and EEAA. A public complaints system has also been established for receiving the environmental inquiries and complaints via the website.

EEAA is currently strengthening its climate change monitoring capacity through the UN's Global Environment Facility.

MWRI[26] uses ICT tools to manage water channels and canals through its Water Resources and Irrigation Management project. The ministry monitors surface and subterranean water quality and quantity through a network that uses an IT based environmental monitoring system (EMS). The EMS provides decision-makers with water usage and quality data, and future water management scenarios. The system also contains data on water pollution in the monitored areas.

Another major initiative using ICT sfor adaptation in the water sector is the Nile Forecast Center (NFC) established in 1992. The NFC is using ICTs for its Monitoring, Forecasting and Simulation project (MFS).[27] The MFS provides analyses and forecasts of floods reaching the Aswan High Dam, as well as satellite imagery.

6.2. Private sector initiatives

The main use of ICTs for climate change adaptation and mitigation takes place in the government and private sectors. Private sector stakeholders fall into the categories of mobile operators and computer software companies. One private sector initiative was found involved in e-waste recycling

Mobile Operators

Mobinil

Mobinil was the first mobile operator in Egypt and has now over 30-million subscribers nationwide. According to Sherif Issa, head of the Environment, Health and Safety department at Mobinil, the company uses renewable energy through solar cells in some of their mobile towers test sites. Mobinil has transformed 100 of their 4,600 mobile tower sites from diesel power to solar power.

[26] MWRI: http://www.mwri.gov.eg/En/index.htm
[27] NFC: http://www.emwis-eg.org/recersh%20%20and%20devolpment%20-%20other-1%20-Nile%20Forecast%20Center.htm

Mobinil went digital offering prepaid phone minutes recharged over the phone through its "Charge on the go" campaign, instead of the traditional charging card. The campaign sold the equivalent of about 400-million charging cards, saving money, fuel and other transactions by using a dial-in payment option instead of the traditional hardcopy cards that consumers purchased at different outlets.[28]

In 2002 Mobinil initiated e-waste collection initiatives independently of any government pressure. The first involved internal procedures for recycling computers and computer products, and the second was a bigger scheme to collect and recycle mobile phone batteries.[29] It is also in partnership with Microsoft in an e-waste initiative (see below), and involved in a community recycling project in Old Cairo (see below).

Vodafone

Like Mobinil, Vodafone uses solar power for its towers, and it requires that any other mobile carrier wanting to share the tower use equipment powered by renewable energy to reduce carbon emissions.[30]

Vodafone had introduced a handset recycling initiative in more than twenty countries including Egypt. Handset recycling bins were placed in Vodafone and affiliated dealer stores where customers can leave their old used handsets for recycling, as well as receive an incentive recharge card valued at LE 10 (USD1.72). The initiative has collected 2,190 handsets in Egypt,[31] though we were not able to ascertain over what time-frame.

Computer software companies

Microsoft

Microsoft Egypt is involved in a number of e-waste management initiatives and aims to reduce its carbon footprint in general. It is partnering with Mobinil Egypt in implementing an e-waste management project called "Revive". The project aims at expanding the life-span of end-of-life computers. The project, which only started in October 2010, involves the donation of Microsoft Egypt end-of-life computers loaded with Microsoft software free of charge. To date the company has donated 25 computers for recycling and 11 second-hand computers to an NGO called Spirit of Youth.

Besides the "Green ICT for every household" initiative, Microsoft is setting up a project called "TechHope". This initiative aims to train volunteer IT students and set ICT clubs to combat illiteracy in community-based organisations (CBOs) and charity organisations. TechHope is an initiative that is tied in with MCITs plan to spread ITs and IT skills among CBOs.

The company also holds "Green Days" – a training event targeting NGOs and CBOs on how to reduce the their carbon footprint and reduce waste. The company also donates free

[28] Hossam, A. Interview, 15 Dec., 2010.
[29] For further details about Mobinil initiatives, please see Appendix 1: "Mobinil Waste Management Profile".
[30] Interview, 19 Dec., 2010.
[31] For further information about Vodafone activities please visit: http://www.vodafone.com.eg/en/AboutUs/CorporateResponsibility/CommunitySupport/Environment/index.htm

software to these NGOs and any other NGO that approaches them. Microsoft Egypt's Ghada Khalifa says that this is part of Microsoft's commitment to the community.[32]

E-waste recycling enterprises

The Egyptian E-Waste Recycling Company (EERC)

The Egyptian E-Waste Recycling Company (EERC) was established in early 2010, and started its operation in June 2010. EERC is the first company in this line of business, according to the company's General Manager Ahmed Salem: "When we went to register [the company] there was no code for 'e-waste recycling companies' in the registry. The sub-category was created to accommodate our work".[33]

EERC focuses on computer refurbishing. They would like to expand into having a complete recycling system, which is a costly investment, but the available computer e-waste they are able to get hold of does not justify such an expense. EERC would need to secure at least one tonne of computer waste per day (approximately fifty computers) to make a recycling line economically viable.

The company's first challenge was to assess the available volumes of computer e-waste in Egypt given there is no quantitative data on e-waste volumes to date. EERC's competitors include the scrap dealers, who dismantle ICT waste to the elements they can use and then drop the remaining scrap into big steel barrels and burn them to melt the precious metals that they then sell off. The health and environmental risks of this practice is enormous and many scrap dealers have pulmonary diseases.

As mentioned, EERC is part of the "Green ICT for every household" initiative. The initiative will create collection points for e-waste. Salem elaborates: "When you give us your computer, printer, photocopier and so forth, you will get a voucher for a certain amount depending on the state of 'your waste' and you can use this discount voucher at any of the participating companies".[34]

6.3. Civil society initiatives

Egyptian civil society has been involved in environmental protection for many years. However, to date only a handful of NGOs are involved in e-waste management, most of them in dry cell collection in collaboration with the mobile phone operators.

A Cairo-based development company, the Community and Institutional Development (CID) Company has undertaken a more sustainable approach in partnership with a small, local NGO from the Zabaleen, the garbage collectors' community in Old Cairo, called the Spirit of Youth (SOY). CID along with SOY collected old computers from corporations and individuals. With the financial support of Mobinil, girls and women involved in the project received training on safely dismantling and refurbishing the computers. Refurbished computers are then resold at affordable prices ranging from LE 300 (USD51) for a Pentium 3, suitable for games, to LE 400 (USD68) for a Pentium 4 more suitable for computer applications. Some monitors were turned into TV sets and sold. Computer components that contain gold

[32] Interview with Ms. Ghada Khalifa, Citizenship Lead, Microsoft Egypt, January 23rd, 2011
[33] Interview with Mr. Ahmed Salem, General Manager, 29 Dec., 2010.
[34] Ibid.

and platinum are kept aside for future sale outside of Egypt because there are no entities in the country that can extract these minerals without severe implications on human health.

6.4. Multilateral organisations

International and regional organisations have also started some initiatives dealing with the e-waste problem both locally and regionally.

UNDP Egypt environment programme

UNDP's environment programme is currently partnering with MCIT in developing an e-waste management proposal for Egypt that will be presented to the Global Environment Fund (GEF). According to Mohamed Bayoumi, the head of the environment department at the UNDP Egypt office, UNDP could assist relevant stakeholders in providing a system for sorting and dismantling of e-waste. The creation of a network involving private and public enterprises along with NGOs could be a first step towards institutionalising e-waste management.

Other initiatives by UNDP Egypt have involved introducing energy management systems into government buildings.

Centre for Environment and Development of the Arab Region and Europe- CEDARE

CEDARE, based in Cairo, has been involved in a number of ICTs and environmental sustainability initiatives. These include the Green ICT Group affiliated to MCIT, involvement in a conference in November 2010 organised by the International Telecommunications Union (ITU) which was dedicated to ICT and climate change, and running a forum on e-waste management.

E-Waste Management Forum, an initiative driven by CEDARE[35] – Solving the E-waste Problem (StEP)

CEDARE, along with public-private and multilateral partner organisations, held the first e-waste management forum in Cairo in February 2009.[36] The forum called for innovative and competitive solutions in e-waste management. In pursuit of this goal, delegates highligh-

[35] The Forum partners are: Ministry of Environmental Affairs, Egypt, • Ministry of Communications and Information Technology, Egypt, Centre for Environment and Development for the Arab Region and Europe (CEDARE), • United Nations Environment Programme (UNEP/ROWA), United Nations Industrial Development Organization (UNIDO), Egypt National Cleaner Production Centre (ENCPC), United Nations University (UNU), Solving the E-waste Problem (StEP) Initiative, International Telecommunication Union – Arab Region Working Party (ITU-ARWP), Basel Convention Regional Centre for Training and Technology Transfer for Arab States (BCRC-Cairo), World Bank, Egyptian Company for Mobile Services –Mobinil, Zain.

[36] CEDARE e-waste forum: https://docs.google.com/viewer?a=v&pid=gmail&attid=0.2&thid=12c99d61f9470b88&mt=application/pdf&url=https://mail.google.com/mail/?ui%3D2%26ik%3De102194f83%26view%3Datt%26th%3D12c99d61f9470b88%26attid%3D0.2%26disp%3Dattd%26zw&sig=AHIEtbSoDePxQgLcYGl_kkjSykxlYiB6BQ

ted the environmental and health consequences and potential business and job opportunities that managing e-waste could offer.

The main objectives of the forum were to share knowledge, lessons learned and best practices regarding e-waste management. The forum also created a networking platform for stakeholders to explore potential business opportunities in the future.[37] A second forum was held in Morocco in November 2010, focusing on green business opportunities.[38]

CEDARE is currently busy with an e-waste assessment for Egypt. This is the first survey of its kind, and our interviews showed that nearly all stakeholders eagerly await the results of the assessment and the quantitative data it would provide. The assessment is in line with the MoU signed between EEAA and MCIT in February 2010, which stipulates that one needs to be done. CEDARE, along with EMPA, the Swiss research centre, are supposed to implement this project in greater Cairo. However, the go-ahead has not yet been given by the respective ministries.

ITU Regional Office for the Arab Region

The ITU Regional Office in Cario works on the priorities set by governments and responds to requests for technical support. Currently, the regional office is working on the 2009-2012 action plan agreed with Arab governments. It focuses on broadband access for all, digital Arabic content and cyber security. However, the plan does not take greening ICTs or e-waste into consideration.

The ITU is currently engaged in the area of climate change at a global level. "At the global level, the ITU is working on enhancing the use of ICT for environmental emergency responses. The ITU 5th Symposium on ICTs and the Environment and Climate Change, in Cairo last November was directed by our global headquarters, we were not really involved. They did it in collaboration with MCIT," explains Nefertiti Ali, Senior Advisor at the ITU Regional Office.[39]

Basel Convention Regional Centre for Training and Technology Transfer (BCRC)

The Basel Convention Regional Centre for Training and Technology Transfer for the Arab States (BCRC-Egypt) is hosted in the Centre for Environmental Harm Mitigation at Cairo University. BCRC Egypt has undergone major changes in management in the last three years. This has affected the centre's capacity to carry out its mandate. Before August 2008, the centre was active in developing and conducting training programmes, workshops, seminars and associated projects in the field of environmentally sound management of hazardous wastes, transfer of environmentally sound technology and minimisation of the generation of hazardous wastes, with specific emphasis on training of trainers and the promotion of ratification and implementation of the Convention and its instruments.

[37] For further details about the forum held in Cairo visit: http://ewasteforum.cedare.int/.
[38] For further details please visit: http://www3.cedare.int/index.php?option=com_content&view=article&id=113%3Ae-waste-2010&catid=34%3Ahighlights&lang=en
[39] Interview, 28 Dec., 2010.

According to the centre's director, Mostafa Hussein Kamel, BCRC played a major role in developing a decree by the Egyptian Ministry of Trade that bars the import of computers older than five years. Current Activities of BCRC Egypt include compiling inventories of e-waste, an assessment of recycling facilities in the Arab States, a review of national legislation of the Arab States, a review of technical guidelines on used oils, and documenting the possibility of incinerations of obsolete pesticides.[40]

[40] Mostafa Hussein Kamel, Director Center For Environmental Hazard Mitigation/ BCRC, Interview, 19 January, 2011.

7. Policy and legislative analysis

7.1. Legislative and policy context

Egypt's 2010 ICT strategy released in May 2007 reinforced the government's commitment to ICTs as one of the driving forces towards economic growth in Egypt. The strategy had a three-pronged approach, focusing on restructuring the ICT sector by developing state-of-the-art telecommunication infrastructure and export of services, reforming the postal service, and improving the framework governing the use of ICT networks and services. The second arm of the strategy focused on ICTs for development focusing on increasing ICT access to all, ICT for life-long learning and education, ICT for health, e-content and e-government. The third focus of the strategy was on innovation and ICT industry development.[41] However the environmental impact this leapfrog in ICTs would have was not considered. The Cairo Road map that came out of the ITU symposium is the start of making the environmental link with the ICT sector..[42]

7.2. Green ICT Strategy

It is only in recent years that Egypt started to draw the link between ICTs and possible environmental challenges. In 2010 MCIT launched its Green ICT Strategy with the objectives of:

- Setting fundamentals and national policies for green ICT
- Bridging the gap between ICTs and the environment, and policy-makers and stakeholders
- Raising public and consumer awareness about ICT environmental threats and opportunities
- Building capacity and training cadres in the field of green ICTs
- Maximising the diffusion of green ICTs in all sectors
- Considering environmental criteria in ICT public procurement and use
- Deploying smarter and greener ICT solutions (including launching pilot models such as the Smart City) [43]
- Minimising ICT-related disposal through "reduce, reuse and recycle" policies
- Using ICTs for climate change adaptation in monitoring and reporting systems.

MCIT, along with partners from the private sector, claims that it will fund the necessary activities planned in the strategy.[44] According to MCIT's Hoda Shakra there are a number of activities that will run for the next two years. Shakra explained that MCIT is a "service providing" ministry and therefore has some discretionary income in addition to its allocated state budget and donor funding, that enables it to plan and implement activities with other stakeholders. Although this strategy is an obvious start, the key constraints and challenges

[41] Egypt's ICT Strategy 2007-2010. Ministry of Communication and Information Technology. May 2007.
[42] Ms. Nefertiti Ali Interview.
[43] Egypt Green ICT Strategy.
[44] Hoda Shakra, MCIT, Interview, February 10th, 2011.

require concerted efforts to create a nation-wide greening of ICTs, especially in the absence of concrete policies, laws and regulations.

Egypt is a MENA leader for renewable wind energy and has plans to increase its wind production capacity to 7200 MW by 2020. The country's plans also include an increase in solar power plants.[45] These renewable energy sources would feed the greening ICT plan laid out by MCIT.

Although MCIT has only started to implement activities under this strategy in February 2010, sporadic activities have taken place prior to this. MCIT co-organised the above mentioned 5th Session of the ITU on ICTs and Climate Change in Egypt in November 2010. The ministry also partnered with Microsoft Egypt on "Connect-Green Days" to promote awareness amongst civil society organisations. MCIT has produced a flyer explaining green ICT concepts in both Arabic and English. Shakra explains: "Although our efforts have been sporadic to date, the existing workplan includes more concrete steps. We are currently putting together a work plan to spread awareness to schools and universities about green ICT".[46] In August 2010 MCIT held a three-day camp in partnership with Vodafone Egypt. The Camp targeted youth aged 12 to 16 years of age. "The camp focused on introducing youth to the basic concepts of environmental preservation. We also discussed global warming, climate change and green ICT," says Shakra.[47]

Egypt's Green ICT Strategy will adopt a multi-stakeholder approach to address various challenges. MCIT works with partners in developing and implementing awareness activities. According to the strategy, MCIT will leverage existing capacities, and work for and with the community to raise awareness on green ICT.

Planned activities under the strategy include:

- Establishing a Virtual Green ICT Community of Expertise (CoE)
- Organising tailored workshops and forums targeting the public and NGOs
- Developing content, including producing pamphlets and guides to raise awareness in the public and private sector, and among the citizens.
- Organising summer camps on green ICTs.[48]

Shakra explained that until recently the link between ICTs and the environment was not very clear to all. Therefore part of the MCIT's strategy focuses on developing green ICT skills and forming local cadres capable of moving forward on key issues. According to the strategy, activities planned to develop green ICT skills include developing e-learning training courses on green ICT as well as e-waste management; developing training programmes in different universities; and developing a academic programme in partnership with Nile University, including an interdisciplinary masters degree.[49]

[45] The World Bank. Egypt: Renewable Energy and Clean Transport Are Cornerstones of Low Carbon Growth. http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK%3A22203619~pagePK%3A64257043~piPK%3A437376~theSitePK%3A4607,00.html
[46] Ibid.
[47] Ibid.
[48] Egypt Green ICT Strategy, MCIT, February 2010.
[49] Ibid.

MCIT's academia outreach activities also include, in partnership with Oracle, the establishment of an "environment working group" made up of university students; organising workshops and seminars on green ICT and e-waste management; directing students to the right channels of different partners and NGOs in order to help them accomplish their different environmental objectives; and an annual evaluation of the environmental performance of the five universities in Egypt.[50]

It is not clear why MCIT is not coordinating with the Ministry of Education (MoE) on integrating green ICT concepts in school curricula. The same goes with a lack of collaboration with the Ministry of Higher Education to offer green ICT courses at national universities in Egypt to benefit the highest number of students.

Shakra explained that MCIT is in the process of creating a to raise awareness, and to list events about green ICTs in Egypt and elsewhere, as well as information about e-waste management.

The strategy acknowledges that e-waste management and green ICTs lack the necessary regulatory framework: "We know that the biggest producer of e-waste in Egypt is the public sector, and this is why we plan on working on creating a legal framework to help regulate the situation," says Shakra. There are, for instance, plans to participate in proposing legislations and regulations to support the management of e-waste. However, Shakra explained that this in particular will not be without its challenges: "MSEA is a state ministry meaning that it has the jurisdiction to enact laws and follow-up on their implementation. That includes taking the appropriate legal measures to sue violators. This is not the case with MCIT. We can only regulate the ICT market. Violators are pursued by the National Telecommunication Regulatory Agency (NTRA). So this is not going to be a challenge-free endeavor".

According to the strategy, greening ICT activities include setting environmental conditions and specifications on the public procurement of ICT goods, in line with the global trend; compiling instruction booklets on "ICTs and eco-friendly usage"; encouraging research and development in the design and manufacturing of ICT products; and using ICTs as catalyst for mitigation in other sectors. Other greening activities include the promotion of smart buildings and use of smart grids: "When the Smart Village was envisaged, the environment didn't rank high on the agenda. We are currently trying to turn our own MCIT building into a smart building. At present neither our ICT equipment nor our power outlets, bulbs…etc. are smart," explains Shakra. Currently, only one building in the Smart village is LEED certified,[51] and only one building will be LEED certified in a new IT park in Maadi: "This is a new area that we are slowly walking into and some of the steps to green buildings should have been made at the planning phase," explains Shakra.

The move to turn MCIT's building into a greener unit is commendable. Though there would have been no cost to mandate each MCIT staff member to hibernate their computers and paraphenalia during the day when they are not in use and to shut down every ICT equipment that does not need to be on after working hours. The energy savings of such an en-

[50] Egypt Green ICT Strategy.
[51] LEED is an internationally recognized green building certification system.

deavour over 6-12 months could have been used to lobby the same changes with other government, public and private entities.

According the strategy, other greening ICT activities are planned in collaboration with Microsoft Egypt. ICTs can help measure carbon footprints and track progress against carbon reduction goals and information enables consumers to consider carbon footprints when choosing products and services. MCIT will work collaboratively to provide energy efficiency improvement in its operating systems; provide energy saving tools to customers; and provide best practices, technical guidance and emissions accounting and management tools. Other greening activities planned include applying green requirements on new buildings in the Maadi technological area, working on LEED certifying the MCIT premises, and establishing pilot projects for applying green ICT applications in smart villages.

MCIT also plans to support the MSEA in establishing a climate change database centre. The centre will host all the data relevant to climate change and will be used as a basis for analysing actions related to climate change mitigation and adaptation in the different sectors. MCIT has been active in developing several climate change adaptation and envioronmental monitoring and reporting databases for a number of line ministries and agencies like the MWRI, MSEA and EEAA.

This is taken by some as a serious effort by the government to reduce its carbon footprint. Shakra explained that when the e-government initiative started, the government's intention was to usher in a new era and facilitate service provision for the citizens: "Environment was not yet on the agenda. However, of course, the new services available reduces the carbon footprint and helps promote a paper-free culture."

An e-waste assessment report covering Greater Cairo is being planned, but has yet to get off the ground. Shakra explained that identifying a reputable organisation to conduct the assessment was not without its challenges: "The finances are not the key problem; but we had to make sure that EMPA[52] and CEDARE are the right entities to conduct this assessment. There is a large amount of money involved and we have to justify it," explained Shakra. Furthermore, due to recent events in Egypt, this assessment is likely to be postponed. "We were ready to sign and start the work. Then the recent events put a freeze on activities for now and it is difficult to say when it will actually start".

Other e-waste management-related activities planned under the strategy include the implementation of community awareness programs about e-waste threats and opportunities; and supporting the participation of IT companies and institutions to start the implementation of pilot projects for e-waste management in 6th of October City.

7.3. Global and regional policy context

Egypt is a signatory to the Multilateral Environmental Agreements (MEAs) of the Kyoto Protocol, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the UNFCCC, the UN Convention for Biodiversity (UNCBD), and the UN Convention to Combat Land Degradation (UNCCD).

[52] EMPA. http://www.empa-me.com/default.aspx

Because of this EEAA is obliged to have indicators to monitor and report on progress towards the millennium development goals (MDGs) and has a special focus on climate change adaptation issues in Egypt. The agency set up the Strengthen the Monitoring and Reporting Systems of the MEAs Project (SMRES)[53] and is now in the process of developing indicators, finding ways to collect data sustainably, and storing it for monitoring and reporting within EEAA's departments, and between it and line ministries and other stakeholders However, it is not clear how this can be accomplished with EEAA's notorious problems with data gathering, monitoring and enforcement.

When it comes to e-waste management, CEDARE and the Basel Convention are the main stakeholders, with the former playing a visible role in Egypt. According to CEDARE's Dr. Allam, "e-waste is a lost opportunity in Egypt and the region. The key constraint in Egypt is that recycling of e-waste is not yet profitable because there is not enough volume of e-waste to sustain a viable economic project. The solution could be regional".[54]

According to CEDARE, for a computer recycling project to be economically viable, it needs a minimum input of 20,000 computers per year. Egypt does not yet have this level of ICT e-waste, underscoring the need for regional thinking and regional solution seeking. [55]

CEDARE is a regional partner in the United Nations University's StEP initiative.[56] Another major partner in StEP is HP through its environmental initiatives[57]. StEP focuses, among other things, on the life cycle of e-waste through maximising resource use and reuse of equipment, enhancing supply chains, closing material loops (i.e. offering cradle-to-cradle solutions) and reducing environmental pollution.

HP is a lead player in the ICT sector and it has been offering green ICT turnkey solutions to other companies like Nokia and Procter & Gamble. Its solution suite covers e-waste, chemicals and energy. HP equipment that is sold in the MENA region is produced to conform to EU regulations and is therefore conforming to greening guidelines. The company is also active in awareness-raising and offers low-carbon solutions like virtual collaborations, among others.[58] It has been building awareness in the MENA region and beyond through StEP and partnerships, one of which is with CEDARE.

At present disassembled metal e-waste from MENA countries can only be fully recycled by being shipped to smelters in Europe (e.g. Umicore[59], Boliden[60] and Sims Recycling Solutions)[61] among others. The recovery of precious metals in e-waste needs sophisticated technology and is therefore costly, though its processing is mostly cost-effective and sustainable in the long term. E-waste contains, among other things, gold, silver and platinum, and some rarer metals like palladium, ruthenium and iridium. One of the main income sources from e-waste recycling is metal recovery.

[53] SMRES: http://www.smres.org/
[54] Hossam, A. CEDARE, interview, 15 Dec. 2010.
[55] Ibid.
[56] StEP. http://www.step-initiative.org/initiative/index.php
[57] HP Environment. http://www.hp.com/hpinfo/environment/
[58] HP IT Solutions for Low Carbon Economy.
http://www.hp.com/hpinfo/globalcitizenship/environment/products/lowcarbon-solutions.html
[59] Umicore. http://www.umicore.com/en/ourBusinesses/recycling/
[60] Boliden. http://www.boliden.com/www/en/bolidenen.nsf/
(WebPagesByID)/A10208A688B50B5BC12570C00048AC05?OpenDocument&CategoryNr=01
[61] Sims Recycling Solutions. http://simsrecycling.com/

In contrast to CEDARE, HP's Hervé Guilcher does not think that it is economically feasible for the MENA region to have a regional recycling facility. The USD1-billion investment for an e-waste recycling facility with a smelter would only be recovered in approximately 150 years due to the relatively low volumes of waste.[62]

China has the global monopoly over rare minerals as it mines about 95% of global rare metals.[63] The country is already restricting exports of these minerals in lieu of its own manufacturing needs in the present and near future.[64] These rare earth elements are funamental to new greening technology. In addition, there will be an exponential growth of battery production in the coming decades. All of these developments will mean that global supply will be substantially lower than demand for these resources. This situation makes recycling to extract exotic metals critical.

Guilcher stresses the importance of looking at e-waste as a "resource market". He says that without understanding this premise, legislators can develop laws and regulations that kill opportunities because they are not aware of how precious this "waste" is. "Regulators should not put breaks on these resources," he says. Instead they need to put in place policies and laws that deal with waste as a potential resource for income and not a problem that needs to be contained.[65] He further emphasises that policies and laws need to fit the human, political and business situation of the country. They should address health and environmental concerns, but also provide business opportunities.

7.4. National policy and legislative context

At present green ICT strategies being developed by the cooperating stakeholders, MCIT and EEAA being at the forefront, are being set up in a policy and legislative vacuum. The Law of the Environment, Law No. 4, does not deal with ICTs and their environmental impact. According to EEAA there are no plans at present to amend the law to ensure that ICTs and their applications are not endangering the environment.

E-waste management is partially covered by part one, chapter two of Law No. 4, which deals with hazardous materials. However, since Egyptian ICT companies are not producers of ICT materials and only assemble imported parts, they are not known to be engaged in industrial activities that could produce industrial pollutants. As a result they are not covered by the regulations set forth in this part of the law. In other words, they do not fall under the jurisdiction of the MSEA and EEAA. The same applies to non-ICT companies not engaged in industrial activities that use ICTs. The disposal of regular office equipment is not governed by laws that protect the environment from e-waste. The MoU signed between MCIT and MSEA does not propose a review of the regulations governing ICTs and their safe disposal.

[62] Mr. Hervé Guilcher, HP Responsible for Environmental Programs Europe, Middle East and Africa, interview 9 Feb., 2011.
[63] Evans-Pritchard, A. World faces hi-tech crunch as China eyes ban on rare metal exports. The Telegraph. 24 Aug., 2009.
http://www.telegraph.co.uk/finance/comment/ambroseevans_pritchard/6082464/World-faces-hi-tech-crunch-as-China-eyes-ban-on-rare-metal-exports.html
[64] Ibid.
[65] H. Guilcher, interview.

Is this due to a lack of political will to face up to a growing problem? It could also be part of the general institutional culture within the government that only regulates after a problem becomes so big that it is impossible to ignore.

Most multinational ICT companies operating in Egypt do not have "take-back" policies for products sold to consumers, though many of these companies abide by the the Waste Electrical and Electronic Equipment Directive (WEEE)[66] directive in Europe. The absence of regulations on safe handling and disposing of electronic waste allows these companies to dispose of electronic waste in any manner they see fit.

There are no laws or regulations requiring ICT and non-ICT companies to plan for and use environmentally sound policies for the disposal of their ICT e-waste. This could be part of the requirement for obtaining a business license, for example. There are regulations and constant monitoring of mobile phone test sites to ensure that mobile operators are abiding by radiation requirements. However, the same does not apply to the disposal of handsets and mobile batteries.

The absence of laws and policies regarding the safe handling and safe disposal of electronic products allows unqualified individuals and entities to handle and dismantle the waste with serious health and environmental risks. Furthermore, the procurement policies of the government and public sector make it hard for legitimate disposal stakeholders, at present only one private sector company and one civil society organisation, to access the necessary raw material to sustain their businesses. However, the recycling processes of the latter two are only partial recycling processes and it is not clear what is being done with the toxic elements that are not easily extracted or that need more sophisticated recycling procedures.

Government procurement policies also make it hard for government entities to donate or safely dispose of their ICT end-of-life products. These policies are tangled in red tape so strong as to be a barrier to private sector attempts at making ICT e-waste recycling financially viable.

[66] WEEE directive: http://ec.europa.eu/environment/waste/weee/index_en.htm

8. Findings and analysis

There is little uniformity in the amount of awareness regarding the impact of ICTs on the environment overall. MCIT is spearheading a green ICT strategy, though at the time of the interviews it was mainly still on paper. Implementation now has stopped due to the regime change. The health, environmental and management ramification of the ICT e-waste issue has brought MCIT, EEAA and MSEA together, but again only on paper, and their agreements still need to be put in force. It should be mentioned that a key in handling e-waste in Egypt is that most of MSEA's and EEAA's staff lack the necessary expertise on the subject.

The low accountability and the blurring of responsibilities among the main stakeholders is an impediment to decisive and effective action to improve how ICTs can be made more environmentally sustainable in Egypt.

Activities begun, or in the pipeline, during the Mubarak regime have been fragmented. For example, greening ICTs activities that MCIT was implementing or planning to were mostly pilots. There were limited clear collaborations with other ministries and agencies.

8.1. Awareness issues

The awareness about the positive and negative impacts ICTs have on climate change and waste management is limited in Egypt. MCIT has an awareness campaign planned that touches upon greening ICTs and e-waste, though it is at present too early to determine its success. There is hardly any public debate about the health risks and environmental impacts of e-waste management, nor its potential for generating green businesses. The lack of adequate baseline data makes it difficult to articulate the challenges and potential so that they become clear to all stakeholders.

At the government level, the handling of ICTs for climate change mainly involves adaptation through monitoring, analysing, archiving and reporting. MCIT is one of the few government entities that has begun a greening ICTs initiative.

The understanding of the impending e-waste problem is also not uniform. EEAA recognises that e-waste has the potential of becoming a problem: "E-waste is not a problem in Egypt yet, but it will be so in five years," says Mawaheb Abu El-Azm, EEAA's Executive Director.[67] However, EEAA and MSEA are on the same page with MCIT when it comes to climate change.[68] The Cairo Road Map is the platform from which MCIT and MSEA launched a Green ICT Strategy engaging the private sector in ICTs and climate change.

The signing of an MoU between MCIT and MSEA could be a positive step towards addressing ICTs and environmental sustainability. Even though preparations for the signing of this protocol had been on-going for two years before the signing on February 2010, the MoU's first activity of assessing e-waste quantities in Egypt has not yet been implemented. Finan-

[67] Interview with Dr. Mawaheb Abu El Azm, Executive Director EEAA, 9 December , 2010.
[68] EEAA, ITU, MCIT. Cairo Road Map: ICTs and Environmental Sustainability. 5th ITU Symposium, ICT, the Environment and Climate Change. November 2010. http://www.itu.int/dms_pub/itu-t/oth/06/0F/T060F0060160001PDFE.pdf

cial and political constrains are listed as some of the impediments.[69] Though a recent speech by Tarek Kamel, Minister of MCIT, given at the 5th ITU Symposium on ICTs and Climate Change held in Cairo in November 2010 mentions the assessment,[70] concrete steps towards it are still missing.

There is a low awareness of the health and environmental risks that individuals engaged in the dismantling and handling of ICT e-waste are subjected too. There is also no public awareness or debate regarding the health and environmental risks inherent in this type of waste, despite plans by MCIT. This lack of awareness is reflected in the unsafe handling of end-of-life mobiles, batteries, and computers by the consumers who dispose of them as part of general solid waste.

In general Practices by ICT companies do not necessarily show high levels of commitment to environmentally sound practices. This is mainly due to the lack of regulations and policies governing greening ICTs.

This situation is not particular to Egypt. The ITU regional office for the Arab states does not directly work on issues pertaining to ICTs and environmental sustainability. There is not enough demand yet from Arab governments, including Egypt, on issues to do with ICTs and climate change.

8.2. Accountability and ownership issues

It is not clear who "owns" the e-waste management issue in Egypt. On the one hand MSEA and MCIT are involved because of the environmental and ICT dimension. However, that does not mean that either is the "owner" of the problem. Ownership seems to have been evaded by some stakeholders to deflect potential blame. This lack of clear accountability has resulted in blurred responsibility and ineffective results.

One can understand the predicament of e-waste if one looks at what is happening to conventional waste in Egypt. No specific parties are clearly responsible for solid waste management; the lines are blurred even at the municipal levels. The Ministry of Local Development has the biggest responsibility when it comes to solid waste, but there are many other ministries and entities involved as partial players, including MSEA. There will be no change without laws, policies and the ability to effectively enforce them.

There are also no clear co-ordination lines explaining where each relevant ministry's role begins and ends. This is a key issue for planning and accountability.

Most relevant to accountability are issues of effectiveness of environmental monitoring mechanisms. There are many environmental databases and ICT monitoring and reporting tools run by the various governmental stakeholders. However, these instruments suffer from a shortage of data, and inadequate data quality. Further, the developmental aid mindset of projects continues to hamper the full use and lifetime of the available databases. For example, EEIS links EEAA offices to facilitate information-sharing and inform policy decisi-

[69] Hossam Allam explained that this type of assessment is costly and that there does not seem to be enough finances with the various stakeholders for the project to go forward. Interview, 15 Dec., 2010.
[70] Dr. Tarek Kamel's Speech at the Inaugural session of the ITU 5th Symposium ICTs, the Environment and Climate Change. Cairo 2 November 2010. Available on the Internet: http://www.mcit.gov.eg/Uploads/Documents/Speech_Dr_Kamel_5th%20ICT%20Symposium2010122294118.pdf.

ons. However the data in the database is not updated frequently enough nor is the data in itself timely nor accurate in many instances. Furthermore, some of these databases require input from several line ministries who may not always be willing or able to provide the required data.

Institutional cultures that are relatively closed when it comes to data sharing impede the flow of information for planning, monitoring, and evaluation. No number of databases will enable the use of raw data and information towards a sustainable environment in the absence of legal obligations to provide this data.

The ongoing SMRES project referred to earlier aims to improve and delineate monitoring and reporting capabilities and roles among the different stakeholders. To do this SMRES' goal is to strengthen data management, including the gathering, processing, sharing and utilisation of data. SMRES is also considering the financial sustainability of monitoring and reporting mechanisms. However the project is facing challenges, including the institutional culture and bureaucratic approach to government management, and financial sustainability.

According to Law No. 4 and its executive regulations, the EEAA is responsible for monitoring environmental activities in the governmental, public and private sectors. However, EEAA has not been given the financial, institutional and enforcement means to fully carrying out its mandate.

Finally, Egypt is a consumer of ICTs, not a producer; therefore ICT companies and other companies using ICTs do not fall under the jurisdiction of the MSEA and EEAA.

8.3. Division of labour and partnership issues

The Egyptian case shows that it is relatively easy to set up an environmental monitoring or analysing system using ICTs. The problem lies in ensuring data flow into these databases is adequate, timely, consistent and of quality. Collaboration for data sharing between and among stakeholders is relatively low. The same has also been found within departments of the EEAA. Some interviewees cited cultural reasons, as well as institutional and enforcement weaknesses. For example there are inadequate intra-stakeholder work groups that could facilitate regular transfer and exchange of data for sectoral and national benefits.

Greening ICTs is spearheaded by MCIT with EEAA as more of a pro-forma partner. The initiative is just starting, and it remains to be seen with the recent political changes if MCIT will continue with its plans. It was noted that many activities in the greening ICT strategy lack a systemic outlook and approach. There are few partnerships with other ministries and governorates that could yield changes at a broader level.

At present the only government agencies involved in e-waste management are MCIT and MSEA/EEAA. There are other ministries that should be involved such as the ministry of health, ministry of trade, ministry of education and ministry of local development, to mention a few. This poses serious challenges for the future of any plan to tackle the problem. The lack of effective co-ordination mechanisms between these agencies could pose a problem to future approaches to greening ICTs and to e-waste management in Egypt.

Even the "partnership" between MCIT and MSEA is not straightforward. It is not clear who is responsible for what part of the co-operation agreement. According to the protocol, MCIT will fund activities envisaged under the protocol. The protocol does not clarify EEAA's role.

Lacking in the interviews, the official meetings, and the documents review is the mention of the Ministry of Local Development, the Cairo or the Giza Cleanliness and Beautification Authority (CBA) and private solid waste collection companies. The only solid waste stakeholders referred to were NGOs from the semi-formal Zabaleen district and the Community and Institutional Development group (CID). The Zabaleen are Cairo's initial garbage collectors and recyclers, though the Zabaleen are only handling a small percentage of Cairo's waste today.[71] There was also no mention of a national plan for e-waste that targets at least Egypt's main industrial cities.

Civil society is treated as a passive recipient for awareness-raising and education. The public is not included as a full partner; for example through encouraging the energy- saving use of ICTs and setting up recycling points at source in offices and homes.

It seems that e-waste management has been "taken over" by a small group of stakeholders. Other relevant stakeholders are not part of the core group involved in the discussions – for example municipalities are absent and so are the private waste collecting companies that handle most of greater Cairo's waste. Neither are all relevant UN [72]and other international organisations part of the discussions. Civil society organisations[73] are also absent despite their recognised role by both the public and private sectors.

MCIT partners with private sector companies such as Microsoft and others to deliver ICT projects for development. Whether these partnerships will be extended to ICTs for environmental sustainability in the absence of regulations and policies is doubtful.

8.4. The challenge restated: The problem of e-waste as an example of the current crisis

As mentioned, Egypt does not have a "take-back" policy that would mandate companies to recycle their obsolete products, and pilots that have been initiated are voluntary. Neither is there an obligation to at least partially recycle end-of-life equipment, such as batteries. Such regulations are needed. As stands, anybody can handle used computers and mobile phones without being subject to regulations and legislation that governs the safe handling and disposal of old technology. Recently there was an influx of cheap mobile phone batteries into the market. They cost LE7 (USD 1.21) and last for one month. The questions can be raised: How were they allowed into the country? How will they be handled? What problems will result from that?[74]

[71] Rashed, D. Cairo cleanup conundrums. Al-Ahram Weekly. 23-29 Oct., 2003. http://weekly.ahram.org.eg/2003/661/eg6.htm
[72] Some examples are WHO and Unep.
[73] Some NGOs from the Zabaleen and CID are the exception.
[74] Allam, H. Interview, 15 Dec., 2010

Issa elaborates on the regulatory vacuum in the country: "Our waste is valuable because when we auction them we can get financial income for the company. Our last auction was sold at LE5-million (USD 861,000). We are not required to investigate the bidders or their activities or what they will do with the waste. The auction includes both electronic and none-electronic materials. Giving away computers and or other electronic equipment cost us money."[75] Issa further states: "we do not have a policy that requires the company to safely dispose of computers, but we have created internal awareness so that the guy in charge of the warehouse passes a computer that is still operational to me, instead of adding it to the storage inventory. I think this is a good start." [76]

The absence of regulations is also a problem for recycling companies. Finding raw material is EERC's biggest challenge. Computers from the government, public and large companies are often not sold off after they reach end-of-life for security reasons related to data security and because of challenges around inventory management. The government is one of the main potential sources of end-of-life computers, if the inventory rules are changed. At present the end-of-life computers are put into storage. Salem cites that the Ministry of Education alone has been purchasing 10,000 PCs yearly for the last decade. But due to the inventory problem it is hard for EERC to access the ministry's end-of-life computers. Instead the small to medium private sector is EERC's main source of e-waste. The company buys the scrap material at auctions or through contact.[77]

Salem notes that at present EERC does only partially recycling and uses many of the components for refurbishing. The company sells the refurbished computer at between LE 400-600 (USD70-100). When asked if there is demand for refurbished computers with all the new and cheap computers on the market he explains that most of the so called "new computers" are refurbished, or at best, "repackaged" computers – these PCs have a big market in Egypt. Salem elaborates: "There are at least 150,000 used computers that enter Egypt on a yearly basis from Europe and the United States. I am sure of this figure; I used to work in this market in the States and this is a small estimate of the imported equipment. There used to be at least 30 to 40 used PC containers shipped monthly from the US. People prefer brand-name computers that are used or refurbished than locally assembled computers. They live longer and perform better. These brand-name computers are also preferred to the cheap Chinese models".[78]

The difficulty in mapping the e-waste situation in Egypt is compounded by the absence of ICT e-waste data. The Central Agency for Public Mobilization and Statistics (CAPMAS)[79] does not collect this data, so it is hard to know how many computers, batteries, and mobile phones are disposed of. According to Allam this is impacting on the ability of stakeholders to plan.[80]

There is no consensus as to the size and magnitude of the e-waste problem in Egypt. On the one hand, EEAA does not deny the impact that ICT e-waste will have on the environ-

[75] Interview, 19 Dec., 2010.
[76] Mobinil donates these PCs to some NGOs in their network.
[77] Ahmed Salem Interview
[78] Ibid.
[79] CAPMAS: http://www.msrintranet.capmas.gov.eg/pls/fdl/tst12e?action=&lname=
[80] Allam, H. CEDARE. Interview, 15 Dec., 2010.

ment within five years.[81] However, without an official assessment of the problem there is no agreement as to the urgency of managing ICT e-waste. This absence of concrete data is coupled by the absence of information about the numbers, types and age of ICT products being imported. This makes it difficult to estimate the number of available mobile phones and computers in Egypt. Further, the BBC reported that Egypt is a dumping site for e-waste, especially from Europe.[82] However these allegations are not shared by the authorities.

E-waste management is a part of a larger solid waste management issue in Egypt. Accountability for solid waste management in Egypt has stirred much debate in recent years. The government has contracted foreign companies for garbage collection which has been met with opposition from many agencies. E-waste collection is already facing difficulties due in part to the absence of ownership of the problem.

In addition there is little co-ordination between stakeholders. There is no coherent process of import and manufacture, sell, take-back and recycle, for example. The lessons learned from the private sector initiatives are valuable to anyone dealing in the sector in Egypt. For example, Mobinil's battery collection initiative turned out not to be sustainable because Mobinil compensated its consumers with free recharging cards. Issa recalls: "I could not maintain this for long. We collected about 30,000 batteries in three months and then, honestly, we ran out of money for this."[83]

Vodafone, Mobinil's competitor, collected handsets. Their experience does not encourage replication. Customers do not possess the necessary awareness to hand over their end-of-life mobiles without any compensation. Mobinil started a scheme to collect handsets internally, but even its highly paid staff have asked to be paid for their old phones.

Mobinil has sold the used batteries collected in the UK. However, it found this process very stressful. The company had the co-operation of EEAA because they were trying to dispose of e-waste. But the UK regulations and the shipping following the Basel Convention directives required much paper work and there were many regulations in the destination country that had to be followed.[84]

Despite Egypt, being a signatory to the Basel Convention, and implementing many of its clauses, there is only lax regulation banning the import of used computers. To date it is allowed to import used computers that are up to five-years old. The Ministry of Trade had issued this five-year cut off, and is now working on a more stringent regulation. Yet Allam is concerned that e-waste is currently being dumped in a "politically correct" manner by saying that we are "bridging the e-gap" by importing used, cheap computers.[85] Salem expects that the stringent regulations of the Minister of Trade requesting a certificate of origin for all imports will make it difficult, if not impossible, to get used computers into the country and this "e-waste" dumping will stop – though computer prices will soar.[86]

[81] Abul el Azm, M. EEAA. Interview, 9 Dec., 2010.
[82] Lewis, A. Europe breaking electronic waste ban. BBC. 4 Aug., 2010. http://www.bbc.co.uk/news/world-europe-10846395
[83] Sherif Issa Interview
[84] Ibid.
[85] Allam, H. CEDARE. Interview, 15 Dec., 2010.
[86] Ahmed Salem Interview

9. Advocacy opportunities

Decision-makers and planners should be made aware that before they develop an environmental database they need to arrange structural issues like data flow among stakeholders, and ensure the systematization of data and specimen collection and analysis procedures. The financial and operational needs for the sustainability of these databases and the creation of a mutually agreed goal for what the collected data is going to be used for also needs to be clear.

The Greening ICT Strategy is a cross-sectoral initiative. While MCIT is a main stakeholder, there need to be more line stakeholders involved, besides EEAA and MSEA. The strategy has many initiatives planned, but it lacks vital coordination with the Ministries of Education, Health, Trade, Construction, amongst them. Cross-ministry co-ordination will mean that pilots of a bigger scale can be set up. These pilots can then actually be used for policy and legislative purposes to provide change at a systemic and national level.

The lack of legislation governing e-waste management in Egypt is an opportunity to change the outlook of legislators so that they begin to see e-waste as a "resource" that can provide economic revenue if it is collected and handled properly. This will need awareness raising and the education of legislators, policy and decision-makers.

The time is ripe for awareness raising for greening ICTs and e-waste handling on a national scale. Egyptian society is eager to build a better, healthier and more environmentally conscious future. During the Tahrir protests a recycling system to sort organic from non-organic waste was set up in the square by SOY. This is the first one in a public place and the first one at source. Despite there being no recycling schemes at the household level, The recycling was done properly by the thousands of people in the square. This is a small example of how things can easily be changed. Income generation and work opportunities for youth are especially needed.

Social media networks are an ideal tool to raise public awareness regarding ICTs and sustainable environment, especially among younger Egyptians. This media is especially useful for "non-paternalistic" advocacy campaigns and to recruit social commitment and input to such initiatives. To date, however, ICT social networks have not been used by national authorities for their work. This is a lost opportunity.

Traditional media is an indispensable supplement to the ICT social networks to reach a wider public and to reinforce messages sent through the networks.

Civil society organisations can spread more face-to-face oriented awareness about the health and environmental risks associated with the unsafe handling of e-waste and the environmental issues of greening ICTs overall in rural areas and some urban slums.

10. References

EEAA. Egypt: Second National Communication to the UNFCCC. May 2010. http://www.eeaa.gov.eg/English/reports/CC/doc/CCCD-Egypt-SNC.pdf

EEAA. The Arab Republic of Egypt: Initial National Communication on Climate Change. Prepared for the UN Framework Convention of Climate Change (UNFCCC), June 1999. http://unfccc.int/resource/docs/natc/egync1.pdf

EEAA. Egypt National Environmental, Economic and Development Study (NEEDS) for Climate Change. For UNFCCC. April 2010. http://www.eeaa.gov.eg/English/reports/CC/doc/CCCD-NEEDS%20Final%20report-May27-1.pdf

EEAA, ITU, MCIT. Cairo Road Map: ICTs and Environmental Sustainability. 5th ITU Symposium, ICT, the Environment and Climate Change. November 2010. http://www.itu.int/dms_pub/itu-t/oth/06/0F/T060F0060160001PDFE.pdf

EEAA. Climate Change Public Awareness in Egypt. Presentation, date not present. http://unfccc.int/files/cooperation_and_support/education_and_outreach/application/pdf/egypt_gambia.pdf

EEAA and Danida. National Strategy for Environmental Communication (NSEC). 2005. http://www.eeaa.gov.eg/english/reports/NSEC-en.pdf

El-Halawany, R. Egypt: Foreign garbage collection companies to remain operational until contract expires. Daily News Egypt. 9 Nov., 2009. http://www.zawya.com/Story.cfm/sidZAWYA20091110054500/Egypt:%20Foreign%20garbage%20collection%20companies%20to%20remain%20operational%20until%20contract%20expires/

Environmental Protection Law 4 of 1994 for the protection of the Environment. http://disarmament2.un.org/committee1540/Datasheets/Egypt%20Act%20No%204%20The%20Environmental%20Protection%20Law.pdf

Environmental Protection Law Amendment Law 9/2009. http://www.eeaa.gov.eg/english/main/law4.asp

Epstein, J. From Cairo's trash, a model of recycling - Old door-to-door method boasts 85% reuse rate. SFGate.com. 3 June, 2006. http://articles.sfgate.com/2006-06-03/news/17300948_1_cairo-trash-collectors-garbage-collection

Evans-Pritchard, A. World faces hi-tech crunch as China eyes ban on rare metal exports. The Telegraph. 24 Aug., 2009. http://www.telegraph.co.uk/finance/comment/ambrosee-vans_pritchard/6082464/World-faces-hi-tech-crunch-as-China-eyes-ban-on-rare-metal-exports.html

Gartner Research Inc. Gartner Estimates ICT Industry Accounts for 2 Percent of Global CO2 Emissions. Press Release. 26 April, 2007. http://www.gartner.com/it/page.jsp?id=503867

Georgy, R.Y. and Adel Tawfik. Energy Efficiency and Renewable Energy: Egypt - National study's summary. New and Renewable Energy Authority (NREA), UNEP, MAP and Plan Bleu. March 2007. https://docs.google.com/viewer?a=v&pid=gmail&attid=0.1&thid=12e0438cd26fd177&mt=application/pdf&url=https://mail.google.com/mail/?ui%3D2%26ik%3De102194f83%26view%3Datt%26th%3D12e0438cd26fd177%26attid%3D0.1%26disp%3Dattd%26zw&sig=AHIEtbRCPt-JifmRrlX5WVUpT1qM_6Ad3BQ

Guilcher, H. E-waste management: the view of HP. Presentation at CEDARE E-waste management forum, 9-10 Feb., 2009, Cairo, Egypt. http://ewasteforum.cedare.int/Presentations/Session_VI/hp.pdf

Guilcher, H. From e-waste to resources: a recipe from Hewlett-Packard. Presentation at CEDARE E-waste management forum, 23 Nov., 2010, Marrakech, Morocco. http://ewasteforum2010.cedare.int/Presentations/Session_II/1_HP.pdf

Hassanin, L. MENA: ICTs and environmental sustainability. GISWatch 2010. http://www.giswatch.org/en/2010-icts-and-environmental-sustainability/middle-east-and-north-africa

Hassanin, L. Egypt: ICTs and environmental sustainability. GISWatch 2010. http://www.giswatch.org/country-report/2010-icts-and-environmental-sustainability/egypt

Hassanin, L. Egypt: Access to Infrastructure. GISWach 2008. http://www.giswatch.org/country-report/2008/egypt

Lewis, A. Europe breaking electronic waste ban. BBC. 4 Aug., 2010. http://www.bbc.co.uk/news/world-europe-10846395

McGrath, C. Cairo Sinking in Garbage. IPS News. 18 Sep., 2009. http://ipsnews.net/news.asp?idnews=48491

McGrath, C. Desert Winds Stir New Hope. IPS News. 9 Sep., 2009. http://ipsnews.net/news.asp?idnews=48377

MCIT. Egypt Open for Business: Explore ICT Opportunities. ITU Telecom World 2006. http://www.egyptitutelecom.gov.eg/business.html

MCIT and EEAA. Egyptian Green ICT Strategy. Powerpoint presentation. No date given. https://docs.google.com/viewer?a=v&pid=gmail&attid=0.1&thid=12e10a76521965cd&mt=application/vnd.ms-powerpoint&url=https://mail.google.com/mail/?ui%3D2%26ik%3De102194f83%26view%3Datt%26th%3D12e10a76521965cd%26attid%3D0.1%26disp%3Dattd%26zw&sig=AHIEtbSSr6zi4bT5XVL18wzcVBRv_4qymw

MCIT. Egypt's ICT Strategy 2007-2010. May 2007. http://www.mcit.gov.eg/Content.aspx?Cat=9 and for the complete document: http://www.mcit.gov.eg/Upcont/Documents/Egypt-ICT-Strategy.pdf

MCIT. Egypt Smart ICT Policies: Snapshots. Presented at OECD, September 2010. http://www.oecd.org/dataoecd/25/38/46137669.pdf

Memorandum of Understanding (MoU) on Green ICT Strategy. MCIT and MSEA, press release. https://docs.google.com/viewer?a=v&pid=gmail&attid=0.1&thid=12db1ac8c72d64b4&mt=application/vnd.openxmlformats-officedocument.wordprocessingml.document&url=https://mail.google.com/mail/?ui%3D2%26ik%3De102194f83%26view%3Datt%26th%3D12db1ac8c72d64b4%26attid%3D0.1%26disp%3Dattd%26zw&sig=AHIEtbTIyY-eSUQ3bxuMPSseFo8hKPhcKQ

Mediterranean Environmental Technical Assistance Programme (MCTAP). Solid Waste Management: Egypt. http://www.metap-solidwaste.org/fileadmin/documents/country_data/SWM_Egypt_A4.pdf

Mohsen, A. and A. Ekdawi. Investing in renewable energy for Egypt's future. Al Masry Al Youm. 22 June, 2010. http://www.almasryalyoum.com/en/opinion/investing-renewable-energy-egypts-future

New & Renewable Energy Authority, Egypt. Implementation of Renewable Energy Technologies – Opportunities and Barriers: Egypt Country Study. 2002. http://www.uneprisoe.org/RETs/EgyptCountryStudy.pdf

Online Nigeria. E-waste campaign attracts more stakeholders. 26 July, 2010. http://news2.onlinenigeria.com/news/breaking-news/49234--waste-campaign-attracts-more-stakeholders.html

Rashed, D. Cairo cleanup conundrums. Al-Ahram Weekly. 23-29 Oct., 2003. http://weekly.ahram.org.eg/2003/661/eg6.htm

Salahudien, H. Greening-out ICT business. The Egyptian Gazette. 9 Feb., 2010. http://213.158.162.45/~egyptian/index.php?action=print_news&id=2883

World Bank. Egypt: Renewable Energy and Clean Transport Are Cornerstones of Low Carbon Growth. http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK%3A22203619~pagePK%3A64257043~piPK%3A437376~theSitePK%3A4607,00.html

11. Appendices

Appendix 1

List of People/organizations interviewed

Time	Date	Organization	Position	Name	
10:00 AM	8 December, 2010	CID	Managing Director	Dr. Laila Iskander	1
11:00 AM	9 December, 2010	Egyptian Environmental Affairs Agency (EEAA)	Director	Dr. Mawahib Abu El Azm	2
12:00 PM	9 December , 2010	EEAA	Head Hazardous & Toxic Waste Department	Eng. Adel el Shafei	3
1:00 PM	9 December, 2010	UNDP/EEAA	Project Officer	Ms. Yasmin Fouad	4
1:00 PM	15 December, 2010	CEDARE	Regional Programme Manager, Strategic Concerns Program	Dr. Hossam Allam	5
11:00 AM	19 December, 2010	Mobinil	Head Environment, Health and Safety Department	Mr. Sherif Issa	6
11:00 AM	28 December, 2010	ITU Regional Office for the Arab Region	Senior Advisor	Ms. Nefertiti Ali	7
3:00 PM	28 December, 2010	UNDP Egypt.	Assistant Resident Coordinator and team Leader Environment Program	Mr. Mohamed Bayoumi	8
12:00 PM	29 December, 2010	Egyptian E-waste Recycling Company (EERC)	General Manager	Mr. Ahmed Salem	9
10:30 AM	19 January, 2011	Center For Environmental Hazard Mitigation/ BCRC	Director	Dr. Mostafa Hussein Kamel	10
11:00 AM	19 January, 2011	Center For Environmental Hazard Mitigation/ BCRC	Manager Air Quality Lab & National Air Quality Monitoring Network	Dr. Essam Abdel Halim	11
11:00 AM	19 January, 2011	Center For Environmental Hazard Mitigation /BCRC	Assistant Professor of Chemistry	Dr. Ahmed Fahmi	12
2:00 PM	23 January, 2011	Microsoft Egypt	Citizenship Lead	Ms. Ghada Khalifa	13

3:00 PM	9 February, 2011	HP	Responsible for Environmental Programs in Europe, Middle East and Africa	Mr. Hervé Guilcher	14
2:00 PM	10 February, 2011	MCIT	Information and Environment Officer	Ms. Hoda Shakra	16

Appendix 2

Agreements, plans, strategies, and reports towards Greening ICTs in Egypt[87]

New & Renewable Energy Authority, Egypt. Implementation of Renewable Energy Technologies – Opportunities and Barriers: Egypt Country Study. 2002.[88]

This report is mainly under the energy sector domain, but it relates to greening of ICTs. The report is a bit dated and therefore precedes Egypt's planning for green ICTs, which began recently in 2010.

EEAA. Climate Change Public Awareness in Egypt. Presentation, date unknown.[89]

The presentation is an example of the activities EEAA is conducting. Though when trying to access the "Bezra" ('Seed' in Arabic) initiative, an ICT-based children education programme, the website listed points to a domain name only. It is not uncommon to see a lot being "produced" by the government sector in an attempt to show its efficiency. It is not clear how effective, integrated and long-lived such initiatives are.

EEAA, ITU, MCIT. Cairo Roadmap: ICTs and Environmental Sustainability. The 5th ITU Symposium on ICTs, the Environment and Climate Change, 2-3 Nov. 2010, Smart Village, Egypt.[90]

The fifth Symposium was hosted and co-oganized by MCIT and MSEA. Its main written output is the Cairo Roadmap.

The Cairo Roadmap is to date the most articulate outline for proposed activities to integrate ICTs for environmental sustainability. Though it is not clear that there are the adequate legal and regulatory frameworks, nor the institutional and financial resources needed to turn the roadmap into an implementable masterplan.

[87] Some of these documents are mentioned in other sections of the report. This is an overview.
[88] NREA and UNEP. Implementation of Renewable Energy Technologies - Opportunities and Barriers: Egypt Country Study. 2001. http://www.uneprisoe.org/RETs/EgyptCountryStudy.pdf
[89] Hegazi, O. Climate Change Public Awareness in Egypt. Presentation by EEAA official to UNFCCC. No date given.
[90] EEAA, MCIT, ITU. Cairo Roadmap: ICTs and Environmental Sustainability. The 5th ITU Symposium "ICT, the environment and Climate Change", 2-3 November, Smart Village, Egypt. http://www.itu.int/dms_pub/itu-t/oth/06/0F/T060F0060160001PDFE.pdf

EEAA and Danida. National Strategy for Environmental Communication (NSEC). 2005.[91]

The report deals with the fractioned databases. Though it is from 2005, not much has been done to remedy the situation.

EEAA. Egypt National Environmental, Economic and Development Study (NEEDS) for Climate Change. For UNFCCC. April 2010.[92]

EEAA. The Arab Republic of Egypt: Initial National Communication on Climate Change. Prepared for the UN Framework Convention of Climate Change (UNFCCC), June 1999.[93]

EEAA. Egypt: Second National Communication (SNC) to the UNFCCC. May 2010.[94]

Memorandum of Understanding (MoU) on Green ICT Strategy. MCIT and MSEA, press release.[95]

Law 4 of 1994 for the protection of the Environment[96] *and its Amendment Law 9/2009.*[97]

This is the law that governs environmental protection in Egypt and that established EEAA and MSEA. The amended law does not mention greening ICTs nor e-waste management.

MCIT. Egypt's ICT Strategy 2007-2010. May 2007.[98]

It is telling that this document does not contain one mention of climate change, renewable energy, or greening ICTs. Neither does it mention e-waste. The strategy is focused on making the Egyptian ICT sector competitive internationally as an export vehicle and focuses on attracting foreign direct investment. Subsequent greening ICT initiatives seem to have become a vehicle for attracting foreign investment and making the Egyptian ICT sector and its "exports" as an outsource market more acceptable to regulations in developed countries, for example the WEEE in Europe.

[91] EEAA and Danida. National Strategy for Environmental Communication (NSEC). 2005. http://www.eeaa.gov.eg/english/reports/NSEC-en.pdf
[92] http://www.eeaa.gov.eg/English/reports/CC/doc/CCCD-NEEDS%20Final%20report-May27-1.pdf
[93] EEAA. The Arab Republic of Egypt: Initial National Communication on Climate Change. Prepared for the UN Framework Convention of Climate Change (UNFCCC), June 1999.
[94] http://www.eeaa.gov.eg/English/reports/CC/doc/CCCD-Egypt-SNC.pdf
[95] Memorandum of Understanding (MoU) on Green ICT Strategy. MCIT and MSEA, press release. http://موقع.وزارة-الاتصالات.مصر/MediaPressSer_Details.aspx?ID=1672&TypeID=1
MoU: https://docs.google.com/viewer?a=v&pid=gmail&attid=0.1&thid=12db1ac8c72d64b4&mt=application/vnd.openxmlformats-officedocument.wordprocessingml.document&url=https://mail.google.com/mail/?ui%3D2%26ik%3De102194f83%26view%3Datt%26th%3D12db1ac8c72d64b4%26attid%3D0.1%26disp%3Dattd%26zw&sig=AHIEtbTIyY-eSUQ3bxuMPSseFo8hKPhcKQ
[96] Law 4/1994, http://disarmament2.un.org/committee1540/Datasheets/Egypt%20Act%20No%204%20The%20Environmental%20Protection%20Law.pdf
[97] Law 9/2009. http://www.eeaa.gov.eg/english/main/law4.asp
[98] MCIT. Egypt's ICT Strategy 2007-2010. May 2007. http://www.mcit.gov.eg/Content.aspx?Cat=9 and for the complete document: http://www.mcit.gov.eg/Upcont/Documents/Egypt-ICT-Strategy.pdf

MCIT. Egypt Smart ICT Policies: Snapshots. Presented at OECD, September 2010.[99]

Presents an outline of MCIT's plans for greening ICTs. There are no concrete activities nor a specified time frame.

MCIT and EEAA. Egyptian Green ICT Strategy. Presented at the 5th ITU Symposium, November 2010.[100]

This is an updated version of the ICT strategy that incorporates some greening initiatives.

[99] MCIT. Egypt Smart ICT Policies: Snapshots. Presented at OECD, September 2010. http://www.oecd.org/dataoecd/25/38/46137669.pdf
[100] MCIT and EEAA. Egyptian Green ICT Strategy. Presented at the 5th ITU Symposium, November 2010. http://www.itu.int/dms_pub/itu-t/oth/06/0F/T060F0060150001PDFE.pdf