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SKILLS FOR GREEN JOBS

EGYPT



Decent Jobs for Egypt's Young People



Canadian International
Development Agency

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développement international





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SKILLS FOR GREEN JOBS

Egypt

Foreword

The move towards a greener economy for Egypt has the potential to create more jobs, generate more technologies, and draw greater investments to the country. Egypt currently has limited natural resources, numerous key environmental challenges, and skill shortages - all of which constrain the country's transition into a greener economy. Egypt's large and rapidly growing population places even more pressures on the country to quickly attain sustainable economic growth, and at the same time address Egypt's pressing environmental issues. Possessing the correct skills for green jobs is thus identified as a first prerequisite for the country's transition into a greener economy.

This study identifies the key environmental challenges facing Egypt and the necessary policy responses required to address such challenges. This study was extracted from the Skills for green jobs: A global view. Synthesis report based on 21 countries, which are available at: http://www.ilo.org/skills/what/projects/lang--en/WCMS_115959/index.htm (the ILO website) and <http://www.cedefop.europa.eu> (Cedefop website; look under Skills Needs theme). The Egyptian case is one of 21 country studies conducted by the ILO Skills and Employability Department together with the European Centre for the Development of Vocational Training (Cedefop) as part of a global research project within the ILO's Green Jobs Initiative. The study was launched by the ILO, the United Nations Environmental Programme (UNEP), the International Organisation of Employers (IOE) and the International Trade Union Confederation (ITUC).

The overall Green Jobs Initiative aims to assist governments and partners to align their employment and environmental objectives in order to potentially create more decent jobs in greener economies. This Egypt-specific study identifies the obstacles for integrating the development of skills into the necessary strategies and policies. The study examines the strategy required for skills development which corresponds to greening the Egyptian economy, such as in the economic sectors of energy, manufacturing, agriculture and waste management. In a context where environmental policies are not well enforced, it is even more important to ensure that people are aware of environmental risks, know the rules in place, and possess the right skills to green their work practices. The study thus demonstrates the strong role of education and training in Egypt not only to prepare youth for the labour market, but also to ensure that jobs contribute to preserving and restoring the environment. This includes creating new jobs and, to a much larger extent, greening existing jobs in the country and undertaking the necessary needed changes. Case studies are used to illustrate good practices in skilling for a greener economy. Finally, the study concludes with policies and recommendations specific for Egypt.

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Decent Jobs for Egypt's Young People

SKILLS FOR GREEN JOBS

Egypt

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List of acronyms and abbreviations:

BOD	Biological Oxygen Demand	IDSC	Information and Decision Support Centre
CAA	Competent Administrative Authority	IEO	International Employers Organization
CAPMAS	Central Agency for Public Mobilization and Statistics	IFOAM	International Federation of Organic Agriculture Movements
CARE	An international NGO working in the development field in Egypt	ILO	International Labor Organization
CCIMD	Centre for Curriculum Development and Instructional Materials Development	IMC	Industrial Modernization Centre
CDM	Clean Development Mechanism	IPM	Integrated Pest Management
Cedefop	European Centre for the Development of Vocational Training	ITC	Industrial Training Council
COAE	Center of Organic Agriculture in Egypt	ITUC	International Trade Union Confederation
CP	Cleaner Production	LM	Labor market
CSDC	Construction Skills Development Council	MED TEST	A project funded by the United Nation Industrial Development Organization
CVT	Continuing Vocational Training	MoE	Ministry of Education
DfID	UK Department for International Development	MoH	Ministry of Housing
DNA	Designated National Authority	MoME	Ministry of Manpower and Emigration
EBA	Egyptian Biodynamic Association	MoT	Ministry of Tourism
EB-CDM	Egyptian Bureau	MoTI	Ministry of Trade and Industry
EC-CDM	Egyptian Council for Clean Development Mechanism	MPN	Mean Probable Number
EOA	Egyptian Center for Organic Agriculture	MSEA	Ministry of State for Environmental Affairs
EEAA	Egyptian Environmental Affairs Agency	NEAP	National Environmental Action Plan
EETEO	Egyptian Education, Training and Employment Observatory	NREA	New and Renewable Energy Authority
EIA	Environmental Impact Assessment	NSSP	National Skills Standards Project
EMU	Environmental Management Unit	RBO	Regional Branch Officer
ENCPC	Egyptian National Cleaner Production Centre	RE	Renewable Energy
ETPs	Enterprise Training Partnerships	SCHRD	Supreme Council for Human Resource Development
EU	European Union	SEAM	Support for Environmental Assessment and Management
EUREPGAP	Euro-Retailer Produce Working Group for Good Agricultural Practices (the global partnership for safe and sustainable agriculture)	SEKEM	An Egyptian organic farming initiative - the transliteration of a hieroglyph, meaning "vitality"
FAO	Food and Agriculture Organization	SFD	Social Fund for Development
GDP	Gross Domestic Product	TOE	Ton Oil Equivalent
GEAP	Governorate Environmental Action Plan	TTC	Tourism Training Council
GHG	Greenhouse Gases	TVET	Technical Vocational Education and Training Committee
GoE	Government of Egypt	UNEP	United Nations Environment Programme
		USAID	United States Agency for International Development



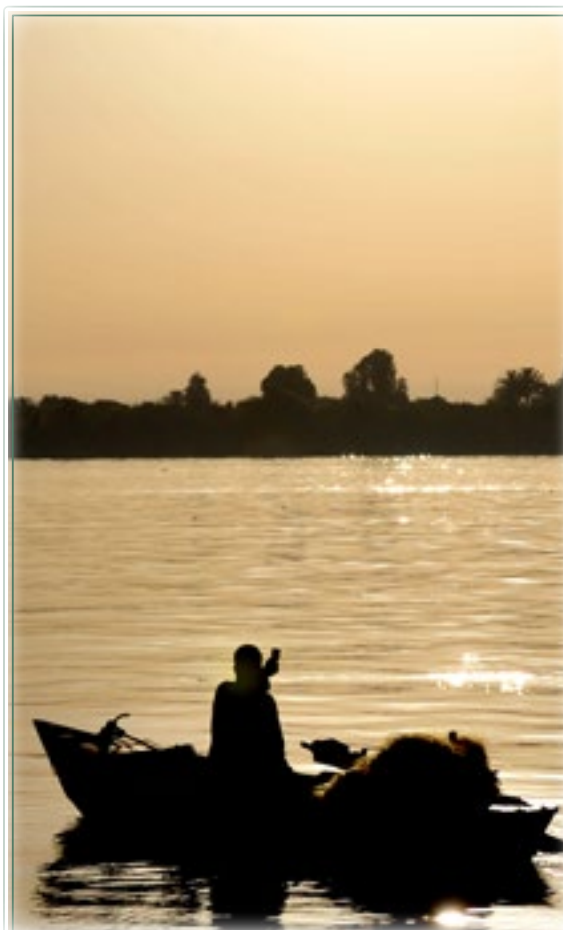
Key challenges and priorities for a green economy

There is an increased burden on Egypt's limited natural resources, due to rapid population growth coupled with unsustainable economic activities. As a result, environmental challenges exist in the following areas: air and water quality, waste management, coastal pollution, nature protection and desertification.

Air quality is deteriorating in Egypt, particularly in Cairo and Alexandria, where more than 80 per cent of the country's industrial activities take place. Water quantity and quality are both negatively impacted, and unsustainable usage of Nile water is one of the main contributing factors. The waste management system of both hazardous and non-hazardous municipal, agricultural, construction/demolition and industrial waste is inefficient.¹ With regard to nature protection, there are 27 protected areas in Egypt covering almost 15 per cent of the country's territory. Egypt has significant natural heritage; however, a rapidly growing population places an increasing pressure on natural resources, resulting in habitat destruction.

The above environmental challenges have contributed to climate change threats. Serious ecological problems are manifested in shoreline erosion in coastal zone areas, and the Delta region faces problems of possible flooding, due to rising sea levels. In addition, agricultural productivity could be negatively impacted by the increase in average temperatures. Human health hazards are also prone to increase, as climate change may lead to possible outbreaks of vector-borne diseases.²

In 2004, Egypt's total CO₂ emissions were estimated at 158 million metric tons, 1 per cent of the total world emissions;³ however, emissions escalated by 40 per cent between 1996 and 2004 in Egypt. A number of sectors are major contributors to GHG emissions in Egypt, primarily the energy sector (around 22 per cent), manufacturing (19 per cent), the transport sector (18 per cent), agriculture (15 per cent), small combustion (9 per cent), non-combustion emissions in industry (9 per cent) and waste (5 per cent).



¹ EU, Egypt Country Strategy Paper 2007–13.

² Egyptian Environmental Affairs Agency, <http://www.eeaa.gov.eg/English/main/Protectorates.asp>

³ Data calculated in 2007 by the Carbon Dioxide Information Analysis Centre, based on data mainly collected by country agencies for the United Nations Statistical Division.

The environmental response strategy and the role of skills development

General environmental strategy

The need to attain sustainable economic growth and development is recognized by the Government of Egypt and reflected in national socio-economic plans produced by the Ministry of Planning. Specific environment policy-making and planning is largely mandated to the Egyptian Environmental Affairs Agency (EEAA). EEAA has a wealth of strategies and plans, which tackle different aspects of environmental issues.

The 1970s and 1980s were marked by economic development, which was achieved at the expense of over-exploitation of natural resources and degradation of the environment at large. During this period, Egypt was in a state of “Environmental Neglect”,⁴ with serious problems pertaining to lack of water supply and sanitation, land degradation and waste management. A number of heavy polluting industries also emerged during this time, some of which were located on the banks of the Nile.

In 1994, Egypt worked on improving the legal framework for environmental protection by drafting Law No. 4/1994 and its executive regulations. The law redefined the role of EEAA, granting it new responsibilities including the formulation of strategies, policy directives and management guidelines in different environmental areas. This development led to increased political support for environmental protection. The five-year EEAA work plan 2002–07 spelled out priorities, including capacity building, both within EEAA and at the local governorate levels. The plan had a directive dedicated to environmental education, training and awareness, which aimed at raising public awareness of environmental issues and development of human resources within the field of the environment.⁵

The National Environmental Action Plan (NEAP) covers the period 2002–17 and addresses key environmental issues, such as water quality, air quality, management of land resources, desertification, protection of the marine environment, solid waste management, biodiversity and biological safety.⁶ The NEAP recognized the importance of developing Governorate Environmental Action Plans, although their implementation was largely constrained by lack of financial and technical capabilities. In 2002, EEAA also issued the National Strategy for Cleaner Production to better define cleaner production.

However, there exists a number of constraints facing environmental strategy formulation and implementation. There is a lack of an integrated approach in developing environmental strategies, plans and programmes, which results in duplication and/or conflict in implementation. There is also a lack of proper enforcement of legislation already adopted, and sometimes a need for more detailed and elaborate legislation to protect the environment. Implementation mechanisms in support of environmental strategies, plans and programmes are largely missing, leading to ad hoc uncoordinated implementation efforts, which jeopardize the achievement of objectives.

⁴ The World Bank, Country Environment Analysis of Egypt, 2005.

⁵ EEAA Five-Year Plan (2002–07).

⁶ Ibid.

Green response to the current economic crisis

Like many countries, the Government of Egypt has adopted a policy focusing on fiscal stimulus plans and a marginal relaxation of the monetary policy to combat the impacts of the current economic crisis. The Minister of Finance stressed the need to focus equally on “sustainable long-term growth and competitiveness”, not only to overcome the current crisis, but also to prepare Egypt for responding to global changes and needs in the markets beyond the crisis.

GDP growth fell to 4.1 per cent in the last quarter of 2008 compared to 7.2 per cent in the previous fiscal year. It is estimated that this will result in a loss of up to half a million jobs.⁷ Egypt’s unemployment rate increased to 9.4 per cent in the first quarter of 2009, compared to 8.8 per cent in the previous quarter.

To-date, Egypt does not have an explicit green response to the current economic crisis, highlighting the fact that greening the economy in Egypt is still at an embryonic stage.

The skills development strategy in response to greening

The mandate for skills development through education and training in Egypt is shared between many ministries. In pursuit of enhancing the coordination for identifying the skills and specializations required in the labour market, both at policy and strategic level, a number of coordination mechanisms have been developed at different levels:

► The Council for Human Resources Development, the Human Resources Development Committee and the Technical Vocational Education and Training Committee set policies and provide the strategic direction for human resources development in Egypt.

► Three Training Councils have been set up with the purpose of coordinating and enhancing the quality and relevance of the provision of training activities to the three economic sectors.

► Twelve sectoral Enterprise Training Partnerships⁸ act as a feedback mechanism between employers and the technical education and training systems. These Enterprise Training Partnerships were established with the aim of developing and strengthening a demand-driven approach for the formulation and provision of training services.

However, there is an absence of a representation of the Ministry of State for Environmental Affairs, which clearly reduces the prospects that these mechanisms would address for skills development in relation to environment and sustainability issues.

On the operational level, an institutional arrangement for the early identification of skills requirements, labour market forecasting and the transfer of the findings into occupational profiles and curricula does exist. However, none of the existing labour market forecasting mechanisms in Egypt, until early 2010, had addressed or analysed skills for green jobs. Moreover, no entity is currently responsible for collecting systematic data on the skills and knowledge base of the workforce necessary to sustain the shift to a

⁷ EGYPT: Workers Reeling Under Financial Crisis, <http://ipsnews.net/news.asp?idnews=47234>

⁸ As part of the TVET Reform Programme – a 66 million Euro Project, co-financed by the EU and the GoE, under the auspices of the MoTI, for a duration of six years, that commenced in mid-2005.

greener economy. On the other hand, there is a good understanding of green skills requirements among organisations concerned with the environment and various agencies implementing and piloting different mitigation measures for climate change and environmental degradation.



The lack of a skills development strategy in response to greening could be attributed to the lack of coordination between the multiple ministries and agencies working in education and training, and businessmen and those working on environmental issues.⁹ Furthermore, there is an apparent separation between the environmental policies and the skills development policies, as none of the main environmental institutions has a role in the policy and strategy formulation process or mechanisms. Opening communication and collaboration channels between the various organisations concerned with the environment and the various organisations and agencies active in education and training is crucial for paving the way for a skills development strategy that would address the future needs of greening.

⁹ Seventeen institutions are involved in environmental matters in Egypt, including the MSEA, NREA, EEAA, MED TEST ENCP, COAE, EC-CDM and UNEP.

Skills in transition to a greener economy

Green structural change and retraining needs

Green restructuring and its impact on the labour market

Resources are being directed towards adopting and undertaking mitigation measures to combat climate change and other environmental challenges. As a result, some sectors and economic activities, especially those with high environmental impacts, are experiencing major employment shifts, as they strive to eliminate their negative impacts on the environment.



The Government is directing mitigation measures towards the energy sector to combat the impact on the environment, as well as to meet the short- and long-term national energy demand. Wind power development has become a prominent industry, as wind resources are among the best in the world; there is availability of ample land with low alternative economic value; and an increasing demand for electricity and other sources exists. The benefits of developing this industry include saving natural gas and oil; protecting the environment through the use of clean energy; contributing to capacity building and knowledge transfer; contributing to developing remote desert areas; and stimulating local manufacturing for about 25 per cent of the wind projects' material.¹⁰ Analysing the employment trends related to wind energy to-date, we can observe the following:¹¹

- ▶ The El-Zafarana Wind Farm Project: 60 engineers and operation and maintenance specialists employed.
- ▶ The Hurghada Wind Farm Project: 50 engineers and operation and maintenance specialists employed.
- ▶ The Gabal El-Zeit Wind Farm Project: The development of this project is still at the feasibility phase, but will be constructed on the Red Sea coast, and is expected to cost USD 880 million and to be developed in 2010. When operational, the plant will generate an output of 350 GWh per year, cut CO₂ emissions by 500,000 tons per year and is expected to employ up to 40 workers for plant maintenance, in addition to more than 100 workers in the construction of the wind farm.¹²

¹⁰ Energy Efficiency and Renewable Energy, Egypt – National study's summary, 2007.

¹¹ Interview with Eng. Ashraf Abdel Meged. NREA Consultant, April 2010.

¹² Ministry of Investment. <http://www.gafinet.org/English/SectorsValuePreposition/Renewable%20Energy%20value%20proposition-2010.pdf>

In addition to the direct employment in the wind farms, local manufacturers and suppliers of equipment are also expected to increase significantly in the market. Furthermore, the Government of Egypt is attempting to develop selective wind turbine components and commence local manufacturing of turbine towers and blades to supply the local market. Employment's generation from these projects is expected to total 400 new jobs.¹³ Given the Government's commitment to increase the capacity of wind farms in the coming years, it is projected that wind energy will impact employment in this field leading to the creation of 75,000 jobs by 2020.¹⁴

Second, the manufacturing sector, contributing to 20 per cent of Egyptian GDP, employs approximately 15 per cent of the workforce, and is the source of a number of serious environmental impacts, such as industrial emissions affecting air and water quality and old technologies and production processes, resulting in an inefficient use of natural resources. Adopting cleaner production measures has greatly impacted employment on a number of fronts. The Egyptian Environmental Affairs Agency has created a number of Regional Branch Offices and Environmental Management Units. In total, 2,000 employees are employed by the Governorates to oversee environmental management related issues. The need to adopt cleaner production related techniques has also created significant employments in terms of increasing the number of consultancy firms which provide their services to different industries.

Third, the agriculture sector in Egypt is facing some key environmental challenges, such as water contamination due to extensive use of fertilizers; impact of climate change on production practices and quantity; more extreme fluctuations in weather conditions witnessed over the past three to four years adversely affecting crop yield; inefficient use of resources; and widespread reliance on unsustainable practices. Organic agriculture is one of the main initiatives encouraged by the Government of Egypt, to mitigate climate change, due to the fact that it reduces greenhouse gases, especially nitrous oxide.



Poor waste management is directly related to GHG emissions, and the burning of agricultural waste in Egypt is believed to contribute up to 42 per cent of its air pollution problems.¹⁵ Other fields of waste management include appropriate hazardous waste collection, disposal and recycling to eliminate major health hazards associated with exposure to hazardous contaminants in air, soil or water. Employment in the waste management sector has greatly expanded in the past years as a result of new regulations

13 Ministry of Investment. <http://www.gafinet.org/English/SectorsValuePreposition/Renewable%20Energy%20value%20proposition-2010.pdf>

14 Elsewedy for Wind Energy Generation – Sweg Local Manufacturing: Experiences from the Mena Region, presentation given in 2009. http://www.rcreee.org/Library_New/PDF/IRENA_Jun_2009_SideEvent/Session%204%20Local%20manufacturing%20Experiences%20from%20the%20MENA%20Region_AhmedElSewedy.pdf

15 M. I. Moussa and A. M. Abdelkhalek, 2007.

to combat environmental impacts. One growing employment trend is in the development of independent waste management systems based on segregation of hospital and hazardous waste from the municipal waste stream and the privatization of waste services to international waste management companies.

The introduction of these services has increased employment in this sector over the last years. It has been estimated that in Alexandria and Cairo Governorates over 15,000 jobs related to these initiatives were created in the private sector and 1,000 monitoring-related jobs were created in the public sector.¹⁶ Finally, recycling of agricultural waste is currently promoted by EEAA and is also expected to lead to job creation in this sector.

Skills response

The study identified the skills response in the field of manufacturing. The Egyptian Pollution Abatement Programme was implemented by the Ministry of State for Environmental Affairs to help industry improve performance and comply with environmental regulations. The programme has trained 1,500 candidates including Regional Branch Office representatives, factory workers and auditors on several issues related to clean production. Other programmes such as Support for Environmental Assessment and Management (SEAM) and Environmental Sector Programme also have significant capacity-building activities.

In addition to this, a number of institutional arrangements are in place in Egypt to adopt clean production activities. These include the Industrial Modernization Centre and the National Cleaner Production Centre (both operating under the Ministry of Industry), the Environmental Compliance Office and the industrial unit as well as the Egyptian Council for Clean Development Mechanisms within EEAA.¹⁷ All these organisations run a number of training programmes in different issues related to clean production applications.

¹⁶ USAID, http://www.usaid.gov/stories/egypt/cs_egypt_waste.html

¹⁷ EEAA National Policy for Cleaner Production, 2004.

Changing and emerging occupations and related skill needs

New and emerging occupations

In the energy sector, there is a need to prepare new workers for designing, installing, operating and maintaining wind farms. Second, in the manufacturing sector there is a need to train engineers, technicians and supervisors in the manufacturing of different components of wind farms, such as wind blades. Third, within the construction sector, there is a need to prepare engineers in the design and construction of wind farms.

A major expansion plan for wind power is being adopted, which extends beyond 2012. The Government of Egypt plans to embark on major investments involving donors and the private sector in wind power to capitalize on the country's competitive advantage.¹⁸ These initiatives are expected to create a considerable demand for these new green skills requirements.

Greening established occupations

As industries respond to the demands of a greener economy and policy environment, jobs will require new skills, and workers in these industries will need to engage in training and upgrading their skills, so that they can adapt to new technology and new ways of working.

Energy efficiency initiatives have been introduced, such as the Industrial Modernization Centre, the energy efficiency component of the MED TEST Programme, and SEAM. Some of the skill requirements identified through these programmes have been for the purpose of conducting energy audits, calculating energy consumption, determining the proper options for energy efficiency, and assessing the implementation of energy efficiency practices.

Skills requirements identified by clean production initiatives are mainly focused on auditing the industrial process; determining the proper options for clean production and assessing the implementation of clean production practices according to a standard code; implementing an in-plant assessment methodology to increase the overall efficiency of the industrial process; and reducing impacts on the environment as well as reducing operating costs.

Through the implementation of initiatives affecting organic farming, such as the reduction in the use of pesticides, it has become clear that organic farming calls for a workforce capable of undertaking organic farm management, with skills required to serve as organic farm workers, natural land management operators, pesticide operators, plant and machine operators, including bio-fuels generators, farm supervisors, land care coordinators and land management specialists. In addition, the certification of organic farms will require auditors and certifiers. The increasing demand for organic products in both the local and export markets could also eventually encourage further investments in the sector, and thus create higher demand for these skills.

¹⁸ According to the International Institute for Sustainable Development in its report of March 2009, wind power development in Egypt has many points in its favour: Egypt's wind resource is one of the best in the world; there is ample land available with low alternative economic value; demand for electricity and other sources of energy is increasing strongly; air quality considerations in the major cities are one of the key environmental concerns; and donor support has been extremely strong. It has included studies, capacity building and grants.

In relation to organic agriculture, at the level of higher education some initiatives have been undertaken to respond to the needs of the sector. For instance, the Faculty of Agriculture at Al-Azhar University established the Department of Environment and Organic Agriculture in 1997. Furthermore, the Faculty of Agriculture at Ain Shams University has approved the establishment of a Department of Organic Agriculture. In addition, there are international programmes that promote organic agriculture in Egypt and work on skills development, as well as a number of NGOs which are active in this field.

Skills response

Skills responses related to waste management include the training sessions provided by the Ministry of Local Development related to solid waste, while the Ministry of Health is involved in training related to health-care waste management. EEAA, in collaboration with donor-funded programmes such as USAID, is conducting training programmes on waste management. One of the largest was the training programme in relation to private sector participation in solid waste management. Finally, a number of NGOs are also heavily involved in training regarding community-based solid waste management.

In the field of wind energy, green skills training is undertaken in the form of on-the-job training generally related to operations and maintenance and is either provided by the foreign suppliers of machinery or by the New and Renewable Energy Authority (NREA). Training is also undertaken by a number of donor agencies funding the wind farms. In addition to this, the Regional Centre for Renewable Energy and Energy Efficiency¹⁹ has been recently established in Cairo to increase capacity building in relation to wind energy. In December 2009, the Centre developed a comprehensive regional training workshop regarding wind parks, in collaboration with NREA. The workshop topics focused on the principles and basics for selecting locations, designing farms, operations and financial feasibility.²⁰

In addition, a number of universities are undertaking scattered initiatives to integrate environmental aspects within their programmes. For example, the Engineering Faculty of Cairo University is partnering with the Holding Company for Water and Wastewater to provide ten scholarships to study Water and Environment Engineering for the students who have successfully finished their junior year. The programme aims to create engineers, who are capable of monitoring water projects at all levels, and are familiar with appropriate technologies in this area.²¹

A lack of awareness also contributes to the lack of a formal education and training system in responding to the skill needs emerging as a result of greening. There has not been any attempt to formally disseminate the skill needs to the formal education and training system. In-company or on-the-job training, provided by enterprises and donor initiatives, has so far been the main response to skill needs identified as a result of greening certain processes. However, these responses are being undertaken at a relatively small scale.

19 RCREEE is an independent regional think-tank based in Cairo, which is dedicated to the promotion of renewable energies (RE) and energy efficiency (EE). RCREEE formulates and disseminates policies in support of RE and EE, and provides a platform for the regional exchange on policy issues and technological questions. In addition, RCREEE encourages the participation of the private sector in order to promote the growth of a regional industry of RE and EE. RCREEE has ten founding members, including Algeria, Egypt, Jordan, Lebanon, Libyan Raba Jamahiriya, Morocco, the Occupied Territories, Syrian Arab Republic, Tunisia and Yemen. During the start-up phase, RCREEE is sponsored by Egypt, also serving as host country for the centre, as well as Denmark, Germany and the EU (the development partners).

20 <http://www.rcreee.org/ViewLibraryArticle.aspx?article=26212501150131210533>

21 Holding Company for Water and Wastewater – <http://www.hcww.com.eg/En/News.aspx>

Anticipation and monitoring of skill needs

The identified set of skills requirements has neither been translated into occupational profiles, nor has a listing of potential occupations been produced. There is no holistic skills response at a national level; instead the skills response is in the form of training and retraining and is undertaken by several institutions on an individual basis. Problems of coordination and duplication, as reflected above, still overshadow these efforts. The existing labour market information systems for skills identification and forecasting has not yet taken green jobs into account. Moreover, no entity collects systematic data on the skills and knowledge base of the workforce necessary to sustain the shift to a greener economy.

However, there is a good understanding of green skills requirements among organisations concerned with the environment and the various agencies implementing and piloting different environmental mitigation measures. For instance, the technical problems associated with wind turbines in the wind farms, including the problems encountered in maintaining them, has indicated the urgent need for technicians with the appropriate skills to maintain wind turbines.²² Another example is companies' inability to implement the energy efficiency recommendations as identified by the Industrial Modernization Centre, primarily due to lack of expertise in this field, which has indicated the need for engineers and technicians with appropriate skills to implement and assess energy efficiency measures.²³ Skills needs are otherwise identified on an ad- hoc basis within the relevant agencies as the need arises.

All in all, a considerable amount of practical knowledge and experiences currently exists within the programmes and agencies implementing various mitigation measures, including the identification of a wide range of greening skills needs that has not yet been properly documented.

22 Interview with Mr Andreas Holtkott. KFW, October 2009.

23 Interview with Eng. Mohammed El Sobky. IMC, October 2009.

Summaries of case studies

Case study 1. Environmental Impact Assessment consultants

The Environmental Impact Assessment (EIA) is a systematic process aiming at assessing the positive and negative environmental impacts of a given project. Within this context, Law 4/1994 for the protection of the environment and its executive regulations 338/1995 stipulate “all new establishments and/or upgrades or expansions of existing establishments should undertake an EIA”, as a prerequisite for issuing permits. Guidelines for different sectors are developed by EEAA to identify the main issues that should be addressed with respect to each sector.

In light of the above outlined requirements, a pool of EIA consultants has emerged to meet this demand since the mid-1990s. To-date, there is no system in EEAA to rate EIA consultants according to preset qualification and skills scheme ratings and no numbers exist for EIA consultants currently operating in the market. Training for EIA consultants is normally acquired in the form of on-the-job training, although occasionally conducted as an activity within donor-funded projects, such as the Environmental Pollution Abatement Programme in Egypt.

Case study 2. Skills related to wind farm operations

Egypt has great potential in the renewable energy sector with abundance in wind and solar energy resources. The NREA was established in Egypt in 1986 as an affiliate of the Egyptian Ministry of Electricity and Energy. The NREA is the national focal point for renewable energy in Egypt, including commercialisation of technologies, as well as implementation of related energy conservation programmes.

The first commercial wind farm was established in 1993 in Hurghada, with a capacity of 9 GWh/year. The first mega wind park in Egypt was established in the Zafarana site, which has been recognized as one of the best wind farm sites in the world, with outstanding wind characteristics.

To-date, the skills development related to wind farm design and construction solely relies on foreign expertise, while skills related to the maintenance and operation of wind farms are left to Egyptian labour. The NREA is the institution responsible for training workers on the maintenance and operation of wind farms, and on- the-job training has been conducted for workers to undertake the required work. In an interview with an NREA consultant, training was emphasised as a critical requirement in this industry; however, financial constraints are identified as one of the main obstacles facing the adoption of proper training programmes for workers within the field.²⁴

Similarly, an interview conducted with a donor agency involved in wind energy financing in Egypt reveals the lack of skill identification and development, reflected in the workers' poor performance and the need for technical and vocational training to perform maintenance and operation in this field.²⁵ Initial discussions are underway to explore the means of strengthening workers' capacity.

²⁴ Interview with Eng. Ashraf Abdel Megid. NREA Consultant, March 2010.

²⁵ Interview with Mr Andreas Holtkott. KFW, October 2009.

Case study 3. Organic farmers

The Food and Agriculture Organisation confirms that organic sustainable agricultural practices have direct benefits on mitigating climate change effects, enabling ecosystems to recover from over-use, reducing agricultural GHG emissions and reducing desertification.

Almost one-third of Egyptian labour is engaged in farming activities, in addition to other workers who are employed in related jobs, such as food processing or trading of agricultural products. There are now some 500 organic farms in Egypt, cultivating approximately 24,500 hectares of land in Egypt and accounting for 0.72 per cent of the country's total agricultural area.

Currently, organic agriculture is a rapidly growing sector in Egypt. The driving factor for this trend is mainly the high export potential of the organic crops, which makes it an economically attractive business. A growing health-conscious and environmentally aware segment of the Egyptian society also contributes to increasing the demand on this line of business. To-date, there is no official legislation to regulate the organic agriculture sector; however, a draft regulation on producing, processing and handling organic products is currently under development.²⁶

The development of skills needed in organic farms is met through NGOs, which play a significant role in supporting the organic movement in Egypt. The Egyptian Biodynamic Association is the leading NGO and provides skill development directly through training, or indirectly, through agricultural extension related activities.

²⁶ Lina Al Bitar, 2008 and SMAP, 2000.

Case study 4. Agricultural waste management: Reuse of rice straw

Air pollution is one of the most pressing environmental issues in Egypt. According to a recent State of the Environment Report, the contribution of rice straw burning to air pollutants was estimated at 42 per cent, compared to 23 per cent of vehicle and industrial emissions and 12 per cent of open burning of solid waste.²⁷

Egypt has become one of the major rice producers worldwide. In 2008, the Government of Egypt estimates show that the level of rice production results in the generation of 3 million tons of rice straw annually. Farmers in Egypt are currently still disposing of the majority of the rice straw produced through burning in open fields, due to the difficulty and cost of collecting rice straw.

Environmental Law 4/1994 was subsequently introduced, and amendments in Law 9/2009 stipulate that farmers who practice rice straw burning can be fined up to L.E. 20,000. EEAA is also promoting the recycling of rice straw as an alternative to open burning. Their plan includes a goal of generating around 100,000 new jobs, related to rice straw recycling and other cleaner production initiatives. The new jobs will primarily be associated with projects related to the baling of rice straw and cultivation of mushrooms in 600 different locations in the Delta region.²⁸

Retraining is occurring for existing employees, who are shown how to recycle rice straw or to use it for biofuel and composting. An expert in the field of Agriculture Waste Management has confirmed that most of the training for labour in the rice straw composting and recycling factories is in the form of on-the-job training. However, the qualifications needed for each process and its corresponding training needs vary.

²⁷ EcoConServ, 2009.

²⁸ Interview with Eng. Ashraf Abdel Megid NREA Consultant, March 2010.

Case study 5. Training Egyptian subcontractors on remediation of heavy metals contaminated sites

Hazardous substances pose adverse impacts on health and the environment. Shoubra El Kheima is a densely polluted area in Greater Cairo, hosting a large number of industries. The operation of these industries has taken a heavy toll on air and soil quality. However, lead, as a hazardous substance, was tagged as one of the most serious pollutants associated with a number of health hazards.

In the last decade, the Government of Egypt, with the aid of a number of donor-funded projects, has minimized airborne lead emissions by closing down the smelting operations and undertaking remediation at 11 contaminated sites. The remediation of the lead contaminated sites required specialized training for engineering contractual companies. In an effort to build the national capacities, the Lead Pollution Programme in Qalyoubia, a USAID-funded project, in collaboration with EEAA, which started in 2004 and ended in 2008, conducted comprehensive training for local contractual engineering companies to undertake the remediation activities. It targeted 60 engineers from 12 Egyptian sub-contracting construction companies. The prequalification criteria for the selected companies for the training included official registration of the company and years of experience in construction.

The new skills acquired by these companies were unique in the Egyptian market and further business opportunities materialised. One of the participating companies capitalised on their skills gained and were subsequently awarded a two-year contract with a petroleum company in Egypt, Petrobel, to dismantle and transfer asbestos buildings.

Conclusions

An important finding has been the lack of an official structured skills response strategy to greening in Egypt. The current inefficient enforcement of environmental regulations deters establishments from investigating alternatives to improve their environmental performance. In addition, initiatives for mitigating and adapting to climate change in response to environmental degradation in Egypt are mostly implemented on a relatively small scale, and are largely in the form of donor-supported programmes.

The current approaches to the anticipation and identification of green skills are almost negligible; there is no systematic collection of data on the skills and knowledge base of the workforce necessary to sustain the shift to a low-carbon economy. Possessing the right skills for green jobs is a prerequisite for making the transition. Presently, skills gaps have already been recognized as a major bottleneck in a number of sectors and activities such as renewable energy, energy efficiency and environmental services.

Documentation for the adaptation and mitigation measures related to climate change do not relate to skills. In addition, green skills needs have not been integrated into the formal education and training systems. The linkages between environmental policy-making and education and training policy-making are nonexistent. There also seems to be a lack of awareness of the need to respond to the anticipated demand for green jobs, now and in the future.

Recommendations

Policy recommendations

There is a need for the full environmental harmonization of laws, and it is essential to ensure a representation of environmental issues in the existing coordination platforms at different levels (ministerial and operational). The efficiency and effectiveness of enforcement activities are critical, and urgent action is needed to include the need for green jobs within the formal education and training system.

Recommendations for education and training

Different environmental agencies need to develop coordination mechanisms with higher education institutes, and a coordination channel, for example a committee focusing on “Skills for Greening”, would be useful. Proper documentation of lessons learned and experiences gained through initiatives is also important. Furthermore, technical skills are clearly needed at different levels. There is a need to develop new accredited courses and curricula to meet the needs of various sectors and industries.

Recommendations for further research and data collection

Immediate action is required to compile the findings of different activities, as well as disseminating them to education and training stakeholders. Utilizing existing infrastructures and capabilities, such as the Egyptian Education, Training and Employment Observatory, to ensure a systematic approach to collecting data on green jobs and skills implications, is important. Scoping studies need to be conducted to determine the skills gaps and shortages. In this respect, the Ministry of State for Environmental Affairs or NREA could work closely with the various training councils in conducting these studies and incorporating findings in the formal education and training system.

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