

Findings

“Green Job Skills Assessment”

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



Undertaken By:

 North South Consultants Exchange
Professionals in Sustainable Development



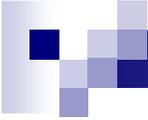
Outline

- What is Green Economy
- Purpose & Objectives
- Scope of the study
- Methodology
- Sample
- Findings



Green Economy

- There are several definitions of the term “Green Economy” that more or less amount to the same thing. The United Nations Environment Program (UNEP) has developed a working definition of a Green Economy as one that results in “improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.
- In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive” (UNEP, Green Economy Initiative GEI).



Purpose & Objectives

- The purpose of the assignment is to enable the Employment Promotion Program (EPP) conducted by the Egyptian MOE and the GIZ to effectively contribute to the development of reform measures for youth employment promotion in Egypt.
- The Overall Objective of the assignment is to identify current and future needed activities to cope with the changes in the labor market in Egypt in the sub-sectors of energy efficient building, energy efficient transportation, waste management , environment friendly construction and recycling as well as energy conservation.



Scope of the Study

- This study covers four sectors in Egypt, which are:
 - Green transportation
 - Green waste-management
 - Green energy
 - Green construction
- Data was collected from more than 30 companies in Cairo



Methodology

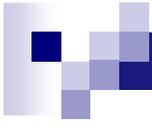
- ***A literature review*** including a review of secondary data related to labour skills profile assessments and enhancement related to green jobs in the selected sectors;
- ***A quantitative survey*** with employers within the identified companies in the considered sub-sectors, implemented through a structured questionnaire with closed ended questions;
- ***A qualitative survey*** with stakeholders such as experts and consultants involved in the four selected sectors, implemented through semi-structured in-depth interviews.



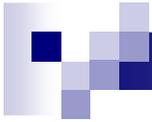
Sample

- The final distribution of the sample is as described in the table below:

Sector	Companies	Stakeholders
Green Building	6	5
Waste Management	16	2
Green Energy	14	3
Green Transportation	3	3



Findings

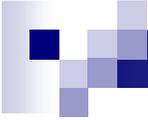


Green Construction



Greening Elements

- When addressing the activities of the Green Construction sector in Egypt we have to distinguish between two levels:
 - Constructing a *green building* in accordance with the GPRS.
 - Using *green components*, i.e. environmentally-friendly materials in one or more of the construction stages.



Sector Size and Growth Trends

- There is an absence of construction of green buildings at the commercial level. Green construction is currently restricted to experimental level. The most important examples of such initiatives are:
 - HSBC Bank Egypt Global Service Center: The building is located in Giza's Smart Village and is one of the first buildings in Africa to be LEED certified.
 - Credit Agricole Bank Egypt: The building located in the area of New Cairo and incorporates several green-building components such as shaded windows and stone surfaces.
 - The Eco-Villages National Project: Currently still in proposal form, the recently approved project will be designed and planned by the HBRC, and constructed in an area in southern Cairo.
 - PLEV: Egypt's first Productive, Low-Cost, Environmentally-Friendly Village (PLEV) is a pilot project currently being implemented by the HBRC in Fayoum.



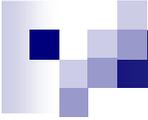
Sector Trends and Growth Trends

- This pattern is more widespread and is witnessing more growth – albeit at a limited rate. The most important green components are:
 - Implementing environmental management systems (particularly ISO 14001:2004) by some construction companies to reduce environmentally-harmful emissions
 - Using eco-friendly paints
 - Using reflective glass and/or double glassed components in building interfaces. This sector that has witnessed significant growth which can be inferred from the growth in employment, size, and scope of companies that produce reflective and double glass
 - Using sound-insulating glass
 - Isolating walls and ceilings
 - Using building materials which can be recycled
 - Applying air-conditions systems which rely on pumping cold air.



Key Sector Obstacles

- Low awareness and knowledge about green construction even from within the profession
- Lack of state policies that give companies incentives to work in the sector
- Lack of sufficient scientific studies about the green building in the Egyptian context
- High investment cost
- Lack of engineering cadres in the field of green architecture although some of them have capabilities in the field of green facilities design
- Lack of the trained labors in the green building field.



Technical Labour

- The need of the technical staff is restricted primarily to the engineers and consultants both in the planning and implementation stages. There are not really special skills required for the green construction technical labor that differs much from regular non-green construction, as the steps performed are more or less similar in both cases.
- Nevertheless, the sector faces many difficulties in finding skilled labor that have the necessary basics, especially in terms of consistency, safety and quality control.
- Companies that “produce” green construction – whether buildings or components – often have to train their own labor on such basics.
- Technical labor also represents an obstacle in the sector of production and installation of reflective glass, both in terms of finding workers able to work with such materials, and the level of skills that such workers have.



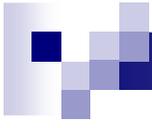
Skills Needed

- Technical labor don't have the basic soft skills necessary to perform the work, regardless of the sub-sector or material being used.
- Producing and installing glass interfaces and walls has a special importance as it can be considered the most common and widespread green component in Egypt.
- Overall, this field depends to a large degree on a number of occupations that have no specializations within the technical education curricula, and thus companies are forced to depend on any technical school graduate. Such occupations are include:
 - Glass cutting, Punching and dismantling glass windows, Washing and polishing, operating ovens, installing and working with double glass and triplex, and installing using non traditional green components such as bricks, paint etc.

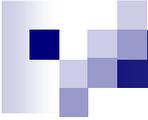


Preliminary Recommendations

- **Establishing new technical education specializations:**
- The Proposed specializations are "Glass Operation Technician", "Brick Laying", "Plumbing", and "Painting".
- **Adding the following courses within the existing specializations:**
 - Personal skills (e.g. Systematic thinking and planning, work ethics, safety, problem-solving, communication and team work)
 - Environmental awareness (e.g. the basic information about the environment, concept of Green Production and Green Building and their importance, energy conservation)



Green Transportation



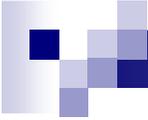
Sector Size & Growth Trends

- Currently, there are 3 companies working in the field of conversion to CNG and they are: Cargas, Mastergas, and Gastec.
- There are 65 conversion centers and 150 CNG fueling stations. Moreover there are more than 150 thousand vehicles converted to run with CNG.
- Almost all of CNG converted vehicles are gasoline-converted that are operating as bi-fuel vehicles, as diesel conversion has not been economically feasible.



Key Sector Obstacles

- Lack of manufacturers of CNG equipments.
- The cost of conversion kits and fuel-pricing policies in general.
- Lack of clear state policies and legislation that provide incentives for companies to enter the CNG conversion market, rather, current policies support conventional transportation.
- Lack of education in technical secondary school specifically for CNG activities, and thus there are no graduates from technical secondary schools that are trained hands-on on how to operate and succeed within the sector.
- Lack of availability of relevant instruments and equipments in technical secondary schools.



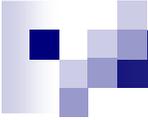
Technical Labour

- The operation and maintenance of a green vehicle requires particular skills in each implementation stage that differ from those of a normal gas-consuming vehicle.
- There is a great need for technical labor that is specifically skilled in operating green vehicles rather than regular modes of transportation.
- Companies prefer to hire technical education (TE) graduates, especially from the car mechanics and electricity areas as they usually have the essential information and skills required.
- Companies have to deal with a lack of essential personal skills among workers. Currently companies have to re-train their technical workers on how to perform the transformation to CNG, and training is usually done by the older more experienced workers within the company, and sometimes by the company's engineers.



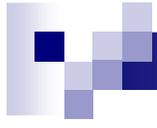
Skills Needed

- Workers can generally be classified as follows:
 - **Mechanical Technicians**. Skilled in Installation of mechanical components for the conversion kit, particularly gasoline engines, internal combustion theories, and troubleshooting.
 - **Electrical Technicians**. Skilled in Installation of electronic component for the conversion kit, particularly engine wiring harness, vehicle electricity and electronics theories, and troubleshooting.
 - **Welding Technicians**. Skilled in gas and cylinder installations, particularly welding and materials, and vehicles body structure.
 - **Gas Fueling Technician**. Skilled in gas cylinders filling.
 - **Maintenance technician**. Needs to know basic information about the previous disciplines.



Preliminary Recommendations

- *Establishing new technical education specializations.* The proposed specializations in the Green Transportation sector is “**Natural Gas Technician**”
- *Adding new courses within the current specializations.* It is proposed to add courses on communication skills and some administrative skills as workers deal with clients and participate in contract papers’ preparation.

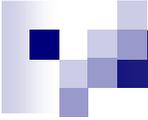


Green Waste-Management



First: Agricultural Waste Sector Trends

- The agricultural waste green management sector is increasing.
- This is reflected in the increased number of workers in many companies, as well as the increased number of companies entering the sector.
- This sector shows even more potential if the environmental law is applied and if the government implements the fines for burning agricultural waste.



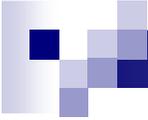
Second: Plastic Waste Sector Trends

- Companies working in the plastic waste are manufacturing plastic products from recycled plastics, or producing intermediate semi finished plastic products .
- The most important products made from recycled plastic are:
 - Plastic bags
 - Templates tiles of SilkPlast
 - Other plastic products used in viruses application (electrical hoses , hangers and etc.)
- The sector in Egypt has been experiencing a general increase over the past few years as evinced by the growth in number of workers among the interviewed companies.
- Companies expect to continue expanding due to the increased market needs as population – and thus waste-production – increases, and the importance of minimizing its impact on the environment gains more public acceptance.



Key Sector Obstacles

- The most important obstacles facing the growth of the sector can be summarized as follows:
 - A lack in technical labor that has the required technical skills to operate the equipments correctly;
 - A general lack in labor in terms of availability, commitment, capacity and skills.
 - A consistent need to train technical labor, compounded with the unavailability of training programs that can provide the needed skills at reasonable costs.
 - Low levels of environmental awareness in general, and awareness of the importance of waste recycling in particular;
 - Difficulty of access to raw materials due to inefficient collection mechanisms;



Technical Labour

- Companies prefer to use the graduates of the technical schools as they have the ability to operate the equipment even if that is at the minimum required standard.
- But companies almost always have to train their technical workers on the basics of environmental awareness and equipments-operation.
- The workers have a generally limited level of environmental awareness and a lack in personal skills.
- Previous experience is more important than the level of education when it comes to selecting and hiring workers as it decreases the amount of training that companies need to provide their new workers.



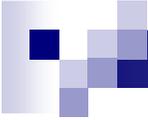
Skills Needed

- Pressing and Crushing operation technicians:
(mechanical technician)
 - Equipments operations skills;
 - Industrial and personal safety skills.
- Plastic-melting technician
- Agglomeration worker
- Purification and pellets-extrusion technician
- Plastic film recycling technician (determining the product thickness and width)



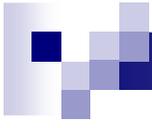
Skills Needed

- Compost Control Technicians:
 - Skills to operate moisture-control equipment;
 - Skills to perform bacteria-addition process;
 - Flipping skills;
 - Skills to monitor the fermentation process;
 - Skills for organizing the fermented materials and measuring temperatures and moisture of the compost.
 - Sieving technicians (Skills for maintaining and changing the belting of the equipment)

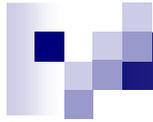


Preliminary Recommendations

- The proposed specialization in the Plastic Recycling sector is "**Plastic Recycling Technician**" as the sector is growing increasingly and there aren't technicians able to perform the required tasks without an efficient training, and labor represents a significant obstacle to the growth of this sub-sector.
- For the agricultural waste recycling discipline, it is not recommended to add any disciplines or specializations as the required knowledge and skills could be gained through improving the standards and skills-levels of graduates from the existing disciplines especially in terms of personal and technical skills.
 - Adding additional courses in:
 - Environmental issues in general
 - Producing compost from different raw materials
 - Adding intensive training programs for workers to perform the abovementioned tasks in a more accurate and efficient way.



Green Energy



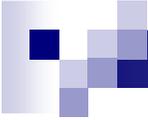
Greening Elements

- Energy Conservation
- Renewable Energy Sources



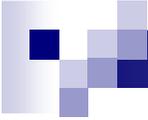
Sector Size & Growth Trends

- The current market in Egypt covers approximately 20% of the sector's potential needs. The rest of relevant products are imported from abroad and assembled in Egypt.
- Assembling in some cases requires no special skills for green products (such as energy-efficient light bulbs), while in other cases (such as cogeneration), assembling skills are specific and thus pose an obstacle for companies working in the sector.
- There is limited demand for photovoltaic (PV) in the Egyptian market to date and the market is characterized by a limited number of SME service providers.
- As for wind energy, most of Egypt's wind farms were implemented during the last decade supported by foreign donors and investments. A market for smaller wind turbines in Egypt does not currently exist, and there is no real market assessment for the potential demand
- Interviews show that the solar energy sub-sector is the most promising.



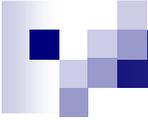
Key Sector Obstacles

- Most technical labor lack real practical experience.
- Workers face a lot of difficulty in comprehending innovative technologies and applying new techniques.
- State policies are geared toward supporting traditional energy through subsidies and other such measures.
- Lack of awareness on the importance of green energy and potential long-run economic benefits.
- The biggest problem facing the sector is maintenance. Even when production and assembly does not require special skills and can be done by any technical worker, the maintenance of green energy products almost always requires the worker to deal with unfamiliar equipment and situations.



Technical Labour

- Companies prefer to hire TE graduates and consider the degree an asset when selecting workers as it makes workers more open to receiving new information and learning new skills.
- However, overall the most important factor when hiring workers is previous experience since there is no educational programme that can serve that function of providing workers with practical market-oriented experience.
- Personal skills in general are very low among technical workers, and environmental awareness is not nearly strong enough and is highly dependent on each individual company's willingness to train its workers on such matters.



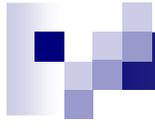
Skills Needed

- Rehabilitation of personal/soft skills and existing technical skills
- There are certain skills that are specific to the green energy sector and that are not adequately available within the current labor market. The most important of these skills are:
 - Solar cells installation, insulation materials injection, initial examinations of the area of installation, estimation of level of sunlight and shade, tilt-angles determination, power system automatic control adjustment, and dealing with 12 and 14 volt currents, and argon welding.



Preliminary Recommendations

- Establishing new technical education specializations which are:
 - Solar Energy Technician
 - Energy Management Technician
 - Energy-Saving Equipment Maintenance Technician
- Organize training programs for technical education graduates in fields related to solar energy, and sending TE students to attend some relevant lectures in the Faculty of Engineering.
- Utilizing existing curricula from other countries after adaptation to Egyptian context.



Thank You