



# 3 THE SCALING UP BioENERGY PROJECTS

In 2015, DJEP supported the construction of three pilot biogas generation units in Port Said governorate, in partnership with the Ministry of Agriculture, as a pilot model for alternative energy generation and safe cattle manure waste management. The efficiency of the pilot units encouraged more than 60 households at the same villages to construct similar biogas units through their own funding. Due to its success and future potential, the project was featured as a 'Development Success Story' by the Egyptian Cabinet's Information and Decision Support Center (IDSC) in 2016.

In 2017, Minya governorate requested the replication of Port Said's initiative to support the large number of cattle breeders throughout its rural communities, most of whom had low income levels.

## A Public Private Partnership (PPP)

In 2018, The ILO signed an agreement with the National Bank of Kuwait - Egypt (NBK) to co-fund the construction of 100 biogas generation units in Minya governorate, for a total sum of EGP 1 million, to support the economic and social development of its rural communities.

A site survey and needs assessment study identified the village of Bani-Hassan for the implementation of this project. DJEP in partnership with the governorate representatives reached out to the village community, through several awareness building sessions, to promote the units and their benefits. Several farmers signed up to have the units constructed at their households.

Due to the nature of the built environment at the village, the Minya university supported the initiative by adjusting the initial design to suit the safe construction and operation of the units inside these households, where the cattle are traditionally kept. A construction manual was developed based on the adjusted design as well as a new training manual which was used to train young engineering students to construct the units themselves.

In addition, to support future expansion in the installation of these units, a model biogas generation unit was established at Minya university's cattle breeding station, for research purposes and also to permit the continuous qualification of new young people to meet the rising demand in constructing these units.

**In late 2019, the agreement with NBK was further extended to fund the construction of 60 additional units in Minya governorate.**

## Creating Green - Gender Inclusive - Jobs

Through these projects, DJEP provided the necessary entrepreneurial and technical training to several young engineers and masons to support the principal objective of stimulating green start-ups and jobs.

In Minya, 7 young men and 3 young women were trained on the construction of these units and after graduation participated in ILO's Start and Improve Your Business (SIYB) entrepreneurial training programme. All of them have established their individual companies, participated in the construction of the original 100 units and are now successfully operating independently. These young entrepreneurs have also provided decent employment opportunities to 30 masons and builders.



Israa for instance, who had recently completed her degree in chemical engineering in 2018 was among the original ten young people who have started their careers by choosing a green entrepreneurial path. Through her company she has independently promoted and constructed several units in Minya and Beni-Suef governorates, is facilitating microcredit for households who prefer to pay for the units on installments and is under contract to maintain the originally installed units at Bani-Hassan.

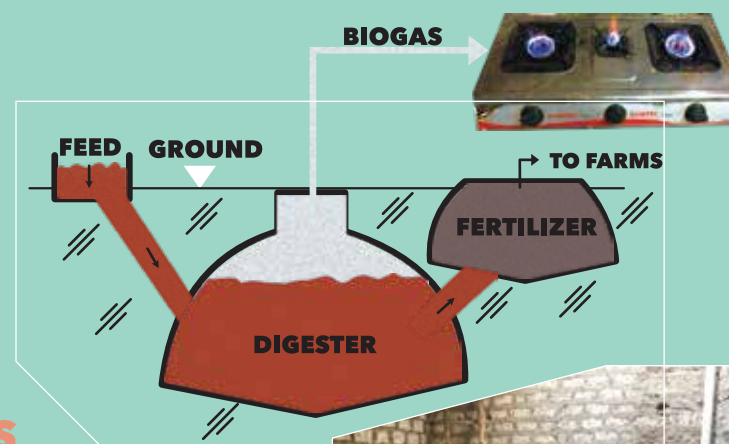
## WHILE CONSERVING THE ENVIRONMENT

A biogas generation unit is composed of three separate chambers. The cattle manure is manually fed into the first, which is then gravity fed into the second chamber (the digester) where methane gas is anaerobically produced and fed through a hose to a stove. The digested byproduct is force fed into the third chamber where it is manually extracted and used as a safe organic fertilizer. These units come in standard capacities of 2 - 6 m<sup>3</sup>, which is suitable for rural household installations.

Each 2 m<sup>3</sup> unit is constructed using concrete and brick masonry over the duration of 4-days by 2-3 qualified masons, for a total cost of EGP 9,000. They are suitable for safe external installation and with the newly adjusted design can also be installed inside households, safely buried underground. The unit provides sufficient gas to operate a 3 burner stove for 2.5 hours/day, by digesting a mixture of 50 kg cattle manure with 50 liters of water .

## & IMPROVING HOUSEHOLD SAVINGS

Each biogas unit produces the equivalent of two gas cylinders per month for kitchen use. This allows families to save up to EGP 140/month. Furthermore, the extracted byproduct is considered as a safe high-quality organic fertilizer, which the farmers use to fertilize their crops. Field trials at both Port Said and Minya governorates achieved savings of 6 X 25 kg sacs of urea and 12 X 25kg sacs of phosphate fertilizers, which further increases monthly savings achieved by these farmers (worth EGP 650/month).



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## Decent Jobs *for* Egypt's Young People 2011-2020

### Project Briefing Series No.5 Young People Greening Jobs



Decent Jobs for Egypt's Young People (DJEP) is a project funded by the Government of Canada and implemented by the International Labour Organization (ILO) between 2011 and 2020 with a total budget of CAN \$15 million in four governorates: Minya, Red Sea, Port Said and Luxor.

Canada

# WHAT'S THE NEXT BIG THING ?

EMERGING OCCUPATIONS

1  
PROMOTE

GRASS ROOT INITIATIVES

2  
PILOT

3  
SCALE

Economic activities, for traditional products and services, tend to have a natural cycle of growth, stagnation then decline. The rate of job creation and loss, associated with those activities, also tends to follow this exact same cycle. However, the market also creates new economic activities every once in a while, some of which provide high growth rates for business startups and job creation. Egypt has many untapped potential in terms of new economic activities that can be stimulated to expand the market. But what are those? and which ones are suitable for Egypt's young people?

Since its launch, the Decent Jobs for Egypt's Young People (DJEP) project, sought to identify those emerging economic opportunities with high growth potential. The purpose was to provide the tools that would assist young people in acquiring the entrepreneurial and vocational skills aligned with those emerging opportunities. At the time, a rapid assessment was conducted, which led to the identification of environmental conservation related activities to potentially offer high growth rates for new jobs and entrepreneurial startups.

The approach developed to pursue those green economy opportunities was to promote the potential for new green jobs and startups creation among the relevant stakeholders, to implement and support select pilot initiatives at the various focus governorates to verify their commercial and technical soundness and for the most promising among those to build national awareness on their results for further replication nationwide to achieve scale. This particular approach was experimental in nature due to the uncertainty of the outcome. However, the benefits in terms of supporting young people to align their skills with new emerging occupations, offering high demand and growth rates, outweighed the risks.

## 1 THE PROMOTION

### ENVIRONMENTAL COUNTRY STUDY

In 2011, the International Labour Organization (ILO) commissioned a team of national environmental experts to conduct a country study on emerging environmental challenges in urban and rural Egypt and the strategic skills' development needed to support future conservation efforts and initiatives, as a mechanism to create decent employment opportunities for young people in those areas.

The published 'Egypt Country Study' identified renewable and alternative energy systems, green production activities, energy efficiency, organic agriculture, coastal zone protection and waste management as emerging areas for environmental investments and creation of new occupations. It also confirmed the absence of a skills building system, at the time, to equip young people with the necessary qualifications supporting the introduction of new technologies and practices associated with these emerging green initiatives.

### THE GREEN JOBS ACADEMY

In 2017, DJEP hosted the ILO's international 'Academy on Green Jobs Promotion' in Alexandria governorate in partnership with the Arab Academy and the ILO's International Training Center in Turin with the patronage of the Ministry of Investment & International Cooperation.

Over the course of 5-days, 120 national and international policy makers, practitioners and young entrepreneurs exchanged knowledge and experiences on emerging environmental trends and commercially successful interventions in sustainable waste management, green construction and architecture and renewable energy. Many young people attended the academy and benefited from the thematic sessions on green entrepreneurship, skills for green jobs and sustainable tourism, including young people supported by DJEP.

**Mostafa Mahmoud**

Started a successful business recycling waste tires, glass bottles and wood pallets into personal and household items.

### SKILLS FOR GREEN JOBS STUDY

Building on the findings of the country study, DJEP published a report on 'Skills for Green Jobs in Egypt', presenting the new and emerging job creation opportunities offered by transitioning the market into a green economy and a response strategy to develop the required skills.

In 2012, DJEP organized a workshop, in co-operation with GIZ, to promote the findings among relevant stakeholders and to initiate the dialogue on emerging job requirements to address the environmental challenges and the institutional arrangements needed to develop and deliver the educational programs supporting young people to build their skills in those area. Several pilot projects were subsequently implemented building on the findings between 2013 and 2017.



### THE RURAL DEVELOPMENT ACADEMY

In 2016, DJEP organized the 'Rural Development Academy' in Luxor city under the auspices of the Ministry of Investment & International Cooperation and with the technical support of ILO's International Training Center.

The 5-days academy helped focus the attention of 200 national and international government officials, policy makers, integrated agricultural developers and practitioners on the rural economy's potential for economic growth through newly emerging entrepreneurial and employment creating agribusinesses targeting young men and women. Those included opportunities in harvest/post harvest technologies, export oriented value added processing and enhanced logistics.

The participants exchanged international knowledge and experiences on a variety of green successful projects, integrated approaches, tools and training packages that contribute towards achieving an inclusive and prosperous rural economy. The activities of the academy also included study visits to innovative rural development initiatives in Egypt, particularly situated at the newly developed desert reclamation areas.



## 2 THE PILOT PROJECTS BETWEEN 2013-2017

### WASTE MANAGEMENT & RECYCLING

Egypt generates an annual volume of 100 million tonnes of waste, only 55% of which is collected for sanitary disposal while the balance largely gets illegally disposed on road ways, in water channels or burned in agricultural fields (Egyptian Environmental Affairs Agency, 2017). Overall, only 2.5 % of the generated waste is recycled. In 2012, DJEP held a consultative meeting with Port Said governorate officials to develop a strategy and action plan to improve solid waste management in Port Fouad city. A later field visit to the waste disposal centers in Port Said and Port Fouad cities was organized to assess the waste management practices in the governorate and possible scenarios to improve the prevalent practices at the time.

Based on the findings, a workshop on 'Raising Awareness on Solid Waste Management in Port Fouad' was organized in 2013 at Port Said governorate. During the workshop, 204 participants debated the proposed alternative improvement scenarios including the promotion of waste management systems through private providers to be established by young people at the governorate. During that workshop, the Egyptian version of ILO's Start Your Waste Recycling Business (SYWRB) toolkit was also introduced to support future entrepreneurship and green job creation. The workshop resulted in the development of a general plan on the methodology of solid waste management in Port Fouad.

Building on the success achieved at Port Said, a cooperation protocol was signed in 2017 between the Ministry of Environment (represented by the Waste Management Regulatory Authority) and the ILO to train the new companies that are to work in the area of solid waste management nationwide. Between 2017 and 2019, more than 80 young entrepreneurs and NGOs completed the programme and setup waste management services at various communities in Minya and Luxor governorates. To support the future sustainability of the toolkit, 29 central and regional ministry representatives completed a Training of Trainers course covering the wider roll-out of the SYWRB toolkit nationwide.



### ORGANIC FARMING

Organic farming practices are empirically proven to reduce green house gas emissions by an average 11%. Expansion in organic farming practices in Egypt thereby has a dual benefit of both supporting efforts to regulate Global Warming, while also providing new green jobs for young people. In 2014, DJEP supported the establishment of a pilot organic barley growth and development project at Port Said governorate to provide livestock fodder for the fattening station in El-Queyoti area. The organic barley produced was proven as an effective botanic nutritional substitute for livestock fattening. Based on the pilot, the governorate officials further sponsored the establishment of larger production units for organic barley growth and development. The success story was documented by an advisor to the Minister of Agriculture for further dissemination.

In addition, DJEP supported the establishment of a pilot greenhouse protected cultivation project in partnership with Al-Bahyo Association for Agricultural Development in Minya governorate. The green house covered a cropping area of almost 5,000 m<sup>2</sup> and was focused on piloting organic production of horticultural products, using new practices, at desert reclamation areas to both reduce the consumption of water and eliminate the use of chemical fertilizers and pesticides. The pilot model was observed by the United Nations Industrial Development Organization (UNIDO) experts in Minya and have since been taken up as a model for future replication and development of greenhouse produce.



### ECO-LABELING FOR HOTELS

Egypt's Red Sea coastal area is considered among the most diverse ecosystems for coral reef growth that sustains a rich diversity of marine life. Tourism developments along the coast line created an immense pressure on the marine life that caused its gradual decline, mainly attributed to improper operational practices of the tourism resorts. In 2015, DJEP organized a national conference in cooperation with the Egyptian Ministry of Tourism aimed at creating green jobs in tourism in Egypt's Red Sea governorate. The conference entitled 'Create Green Jobs through Green Tourism - The Green Star Hotel Certification Programme for Hotels in the Red Sea' brought together several national stakeholders and high-level executives, managers and engineers from hotels and resorts across the Red Sea area. The outcomes of the conference included plans for further collaboration between the DJEP and the Ministry of Tourism to integrate the Green Star Hotel Certification Programme into the ILO's "Improving Competitiveness in the Tourism Sector through Decent Work" training toolkit and to create jobs by building the capacity of trainers and auditors.

To support the outcomes of the conference, 6 young graduates from Port Said University were supported to attend an internationally certified training programme on the audit of environment-friendly activities and eco-management of hotels, that was organized in Alexandria governorate. This programme supported the young graduates in building their skills to achieve sustainable development, reduce pollution loads at coastal areas and promote environment-friendly tourism through the effective eco-management of hotels. Training was conducted by international environmental audit and rating agencies from the EU, including SGS UK agency for environmental rating and auditing. Most of these young graduates have since been active, and more than 50 hotels attained the Green Star certification.



### SOLAR ENERGY DRYER FOR CROPS

Egypt grows a wide variety of herbs that are traditionally dried in unsanitary conditions. This has restricted the further expansion of the cropping area and denied farmers and exporters alike from accessing export markets with lucrative revenues. In 2015, DJEP supported a pilot research and development project, which was an original graduation project of eight students from the Faculty of Engineering at Minya University. The pilot focused on establishing a sanitary, solar energy based, drying system for herbs and some fruits that enables the production of high-value export grade crops. The final model built to present this new technology uses a mixture of heating techniques providing a maximum heating efficiency while consuming minimal amount of energy. Based on the pilot's success, it was featured on EURONEWS and Africanews. This system was replicated in Aswan governorate by another ILO sister project. This success further encouraged the original young graduates to start their own research and development company and to pursue more innovative solutions for the agricultural sector.