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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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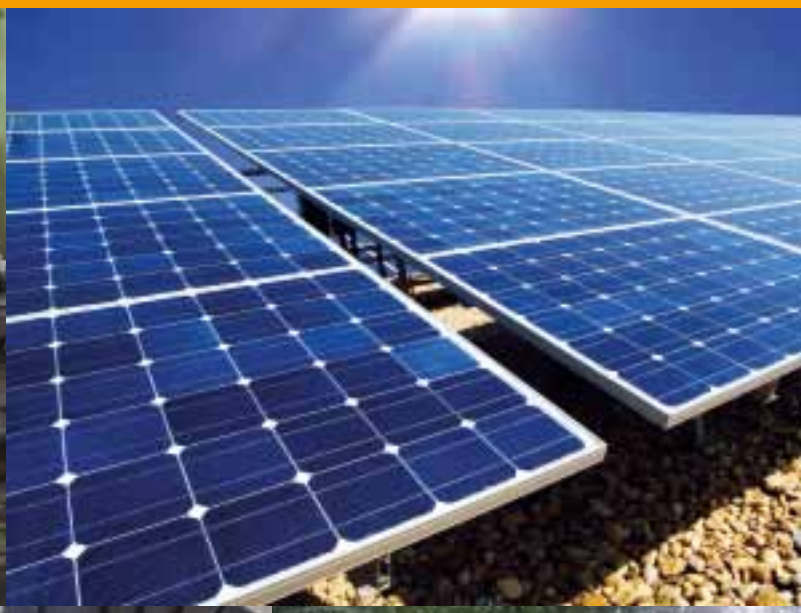



UNIDO activities in Egypt
2015 – 2016

INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT

Contents

Abbreviations

AIDMO	Arab Industrial Development and Mining Organization
CBI	Centre for the Promotion of Imports from Developing Countries
CFC	chlorofluorocarbon
CO_2e	carbon dioxide equivalent
COMFAR	Computer Model for Feasibility Analysis and Reporting
EEAA	Egyptian Environmental Affairs Agency
EnMS	energy management system
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
HCFC	hydrochlorofluorocarbon
IEE	Industrial Energy Efficiency (project)
ISO	International Organization for Standardization
MDI	metered-dose inhaler
MED TEST	Mediterranean – Transfer of Environmentally Sound Technologies
MSE	micro and small enterprise
MSME	micro, small and medium enterprise
NGO	nongovernmental organization
ODP	ozone depletion potential
PAFTA	Pan-Arab Free Trade Agreement
SDG	Sustainable Development Goal
Sida	Swedish International Development Cooperation Agency
SME	small and medium enterprise
TVET	technical and vocational education and training
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development

1.

Overview: Engaging and partnering with the private sector in Egypt

In recent years, the development community has repeatedly emphasized the crucial role of industry and the private sector for, inter alia, fostering innovation, creating jobs, improving public well-being and protecting the environment, both in developing and in developed countries.

Industry continues to be a proven and crucially important source of employment, accounting for almost 500 million jobs worldwide, representing almost a fifth of the world's workforce. Manufacturing industries and their related service sectors can absorb large numbers of workers, providing them with stable jobs and increasing the prosperity of their families and communities. Broader economic and social growth is supported within an environmentally sustainable framework. Environmentally sound production methods in industry can significantly reduce environmental degradation, and cleaner industry production and green industries can deliver environmental goods and services.

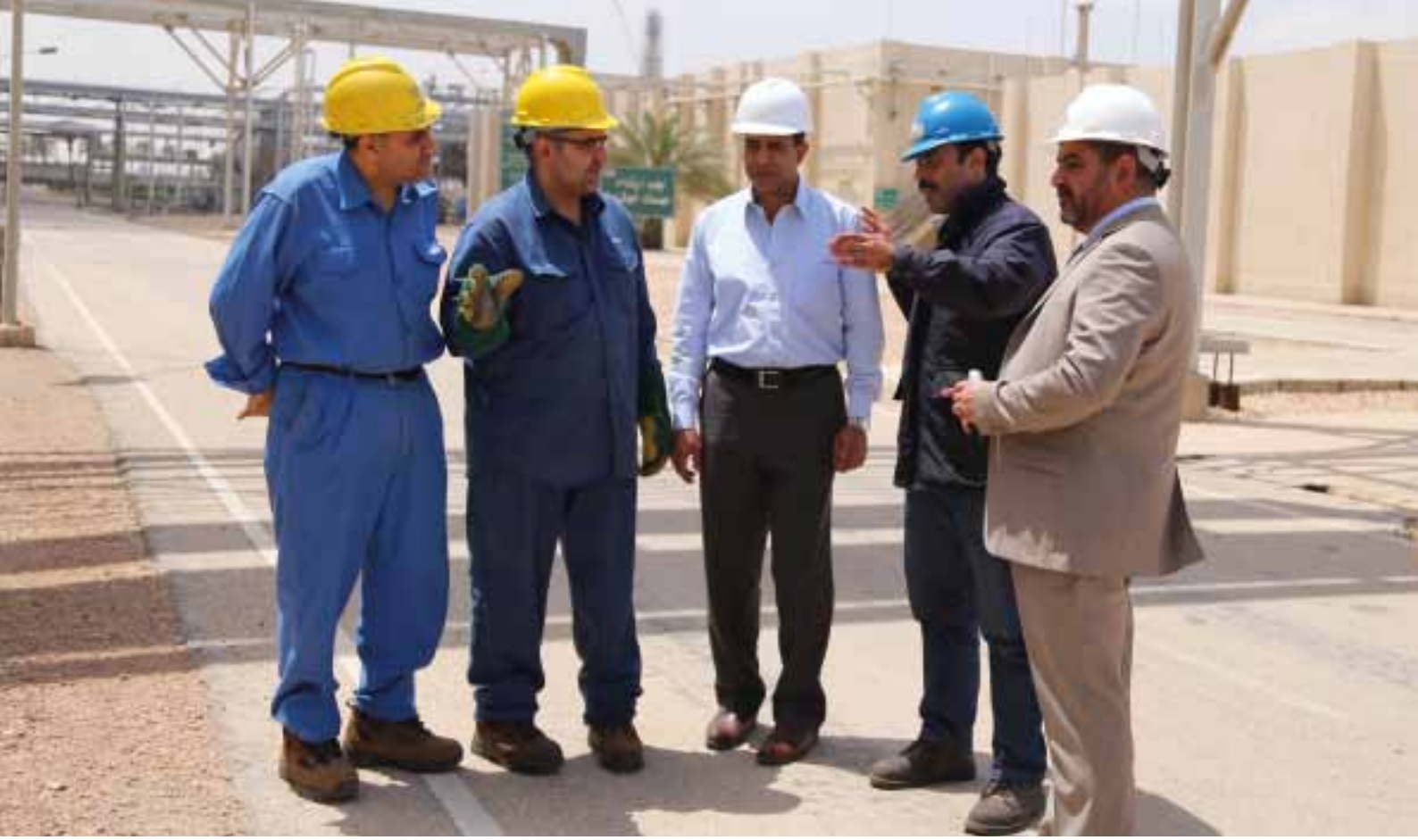
This year, the Millennium Development Goals – launched in 2000 to make global progress on poverty, education, health, hunger and the environment – expired, and were replaced by the Sustainable Development Goals (SDGs). Accelerating industrial development is key for achieving higher levels of prosperity for all and achieving the SDGs in a comprehensive way.

At all levels of development, industry can be a primary driver in fighting poverty, ensuring food security, safeguarding the environment and preventing social polarization and fragmentation. As the SDGs integrate social, environmental and economic dimensions of development, the issue of industrialization, in recognition of its significant contribution to the sustainability of economic activities and advancing social inclusion, is addressed at two levels – at the goal and at the target level. In particular, industrialization is reflected in goal 9: *Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation,* and more specifically in target 9.2: *Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries.*

In addition, industrialization will play a significant role in achieving goal 8: *Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all* (in particular target 8.2: *Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors*), and goal 12: *Ensure sustainable consumption and production patterns* (in particular target 12.2: *By 2030, achieve the sustainable management and efficient use of natural resources*).

Inclusive and sustainable patterns of industrialization are a priority for sustainable development, as they contribute to the creation of shared prosperity and environmental sustainability. Industrialization is, in fact, strictly linked to other SDGs. On one side, industry requires adequate access to certain input factors (such as educated workforce, water, energy and natural resources), and relies on an enabling business environment (including functioning cities and infrastructure, a stable legal framework and non-violent societies). On the other side, industry produces the necessary inputs (such as food and beverages, medical supplies, infrastructural supplies and machinery, and chemicals) to achieve long-term efficiency and productivity gains in all its production processes, hence contributing to safeguarding the environment, mitigating climate change, and advancing sustainable production and consumption. Industry is also a major driver of the creation of formal employment and women's empowerment.

This would unleash the potential of the private sector as a driver of inclusive and sustainable industrialization, which in turns is a driver of economic growth and sustainable development, both in developing and developed countries. Engaging and partnering with the private sector must be at the core of any meaningful development agenda and the foundation of any successful large-scale



development strategy to accelerate poverty reduction and sustainable development, as United Nations Industrial Development Organization (UNIDO) Director-General Li Yong points out *(1)*. At the same time, partnering with the private sector helps ensure that UNIDO interventions remain relevant to the needs of industry.

The private sector is not only a source of financing, but is also an actor in sustainable development, in its economic, social and environmental dimensions. Private industry and business is an important vehicle for technology development and innovation, representing a hub for technical progress and exchange, as well as being a major source for the long-term generation of resources for sustained development financing. However, this cannot mean that the private sector becomes a substitute for governments in the development context. On the contrary, governments must develop policies that drive inclusive and sustainable industrial development, especially for small and medium enterprises (SMEs), which are the backbone of every economy and society; and encourage the centrality of trust, accountability and transparency in public-private partnerships. The development and implementation of the post-2015 agenda will require an unprecedented level of partnership between industry, governments, civil society, academia and other key stakeholders. These players are pivotal in bringing to the table innovative methods and strengthened mechanisms for leveraging funding, creating decent employment, and encouraging technology, innovation and research. Governments, at all levels, should provide an enabling environment that facilitates multistakeholder involvement, including private industry and business.

In line with UNIDO's efforts worldwide, its mandate in Egypt is to advance inclusive and sustainable industrial development for employment generation and green industry, thus triggering a range of environmental, social and economic benefits. UNIDO supports Egyptian industry and business in promoting industrialization that is inclusive and sustainable. UNIDO's inclusive and sustainable industrial development approach in Egypt is based on two main pillars: creating shared prosperity for all, and safeguarding the environment.

Through its technical cooperation portfolio, UNIDO responds to development challenges in Egypt by providing technical expertise and assistance, as well as capacity-building measures, in-

tegrated, multi-actor responses and multistakeholder partnerships, to tackle problems such as rising youth unemployment, economic recovery, climate change and the energy crisis.

UNIDO is currently engaged with the Government of Egypt and civil society in initiatives that relate to agro-industry development; human security and local economic development in Upper Egypt; micro, small and medium enterprise (MSME) development and job creation; energy efficiency and renewable energies; implementation of Montreal Protocol activities; and promotion of green industries.

UNIDO situates its ongoing and planned projects within government priorities and the outcomes encapsulated in the most recent United Nations Development Assistance Framework (2013–2017).

1.1 AGRO-INDUSTRIAL VALUE CHAIN DEVELOPMENT

UNIDO recognizes agro-industry as one of the drivers of inclusive development in Egypt. An efficient agro-industry enhances economic stability for rural households, increases food security and helps achieve economic transformation.

The work on value chains in the Egyptian agro-industrial sector includes a pro-poor dimension, since it looks into the inclusion of small-scale farmers and producers into formal and durable business opportunities, with a special focus on Upper Egypt. The agricultural sector remains the backbone of economic activity, employment and livelihoods in most of Egypt (particularly in Upper Egypt): it contributes 14.5% of gross domestic product (GDP) and employs 22.6% of the total labour force, with females accounting for 40.8% of the labour force in agriculture. Strengthening the sector and adding value to agricultural commodities are instrumental to enhancing food security, stimulating economic growth and reducing poverty in a sustainable manner.

With its proven expertise and experience in designing and implementing programmes for the development of the agro-industrial sector, UNIDO is ideally placed to lead partnerships at the national level and engage with stakeholders and development partners. One particular area of focus is the development of value chains and investment in agribusiness to enhance produc-

tive capacities and reduce postharvest losses. As opposed to the traditional exclusive focus on production, the value chain concept stresses the importance of value addition at each stage of the agro-supply chain from production to logistics to market.

UNIDO designs and validates, in close collaboration with all stakeholders, robust interventions that promote valueaddition in agro-processing, postharvest handling, supply chain management,food security and product safety,access to technologies, business development services, financing and trade promotion.

Innovative practices identified and diffused in agro-industrial development to increase productivity, quality, exports, rural income and employment include:

- Introduction of good agricultural practices in farm production and of new solutions to increase productivity (for example greenhouses, vertical protected cultivation, production of specific high-value crops, grafting) coupled with training of lead farmers and knowledge agents, study tours in country and abroad, and international expertise sharing. The adoption of these practices has resulted in an increase of productivity per unit area on average by 300% and a decrease of production costs on average by 20% (depending on the crop), a twofold to fourfold increase in revenue per unit area, and an increase in employment (protected cultivation approaches are more job intensive than open field approaches).

- Good agricultural practices and solutions for packing, drying and preprocessing of crops (fruits, vegetables, medicinal and aromatic plants) have been provided to SMEs, including packing houses, drying facilities and preprocessing facilities, resulting in improved quality and food safety of final products, and reduced postharvest losses (from 40% to 15%).

- In the area of processing, technical assistance on product development, production practices, and quality and food safety management systems has been provided, resulting in the introduction of the cultivation of new products, improved production practices and technologies, and compliance with quality and food safety requirements, thereby ensuring their harmonization with international quality regulations and facilitating better access to high-end markets.

To ensure sustainability of its interventions, UNIDO has established strong and lasting networks and relations with the various institutions affiliated to the Ministry of Trade and Industry, including technology centres, export councils, training councils and credit institutions, as well as with key active civil society organizations.

1.2 MICRO, SMALL AND MEDIUM ENTERPRISE (MSME) DEVELOPMENT AND COMPETITIVENESS

Small entrepreneurs play an important role in the Egyptian economy. In line with the strategy pursued by the Government of Egypt, which is currently prioritizing support to SME development, UNIDO endeavours to improve the performance of Egyptian enterprises by targeting opportunities with proven market potential and promoting trade, while ensuring environmental sustainability and social equity.

According to the Social Fund for Development, there are around 2.5 million SMEs in Egypt, representing 99% of non-agricultural private sector establishments and 75% of the total employed workforce. Of SMEs, 51% are in manufacturing. However, the private sector, which employs about 70% of the labour force and whose share of GDP deteriorated to around 60% during the past three years *(2, 3)*, continues to underperform, and it is far from being robust and competitive, thus slowing down its potential to create jobs and engage excluded and vulnerable populations *(4)*.

Partly due to the country's economic policies, microfirms are faced with a myriad of challenges that prevent them from fully joining the formal sector and competing with old, large, privileged firms born as a result of the privatization of State-

owned enterprises. Within the industrial sector, for example, access to State energy subsidies favours a few old, large firms. The World Bank suggests that if the government stopped giving well-connected firms preferential treatment and applied the same regulations uniformly, younger, smaller firms would be able to compete with more established ones, ultimately resulting in a dynamic private sector. If the government also offered the private sector credible signs of transparency and accountability, it could restore the sector's confidence and encourage investment and job generation *(5)*.

MSMEs in Egypt face several obstacles, both internal to the firms, such as low productivity, inconsistent quality of products and low innovation rates; and external (related to the business environment), such as uncompetitive market structures, shortage of skilled workers and missing or excessive regulations inhibiting firms from entering and exiting the market, and stringent laws on bankruptcy, liquidation and restructuring procedures. Institutional obstacles that surround the start-up and operation of a business are translated into a relatively low level of productivity and relatively high level of informality within the MSME sector. Over 85% of Egyptian enterprises are informal. The degree of informality decreases with the increase in the size of enterprises. Operating on an informal basis inhibits the growth potential of enterprises, as it deprives them of the possibility of applying for formal loans and engaging in positive and wider interactions with institutions, and ultimately deprives employees of the possibility of having a consistent income, social security and protection.

A more competitive MSME sector is particularly crucial, given its potential to contribute to job creation, open up opportunities for youths, enhance entrepreneurship, generate and raise incomes, stimulate innovation and expand domestic markets, and finally contribute to the economic prosperity of the country.

UNIDO enhances the productivity and profitability of MSMEs in industrial sectors with competitive advantages and, where opportunities for economic empowerment and job creation exist or can be stimulated further, by paving the way for private sector growth and increased employment. Special regard is given to MSMEs led by or employing youths and women. Incentives provided to MSMEs, mainly in the form of technical assistance, are based on the market mechanism and are expected to stimulate local market development and local ownership.

UNIDO enables MSMEs to access knowledge and new market opportunities (including in export markets) through the creation of export consortia, quality certification, export logistics, value addition and modern technologies for better generation of sustainable jobs and income opportunities. UNIDO provides multiple training and business development services to MSMEs in, inter alia, the agro-industrial, waste management, textile, hospitality and furniture sectors. It also builds the capacity of local knowledge agents on innovative and best practices and guides them in on-the-job training, while disseminating the knowledge gained to other community members.

MSMEs, both at the early stages of enterprise development and in mature stages of growth, receive technical assistance and capacity-building, either individually or as members of consortia and clusters:

- **Consortia promotion.** SMEs in the date palm sector are provided with technical assistance in the form of preharvest and postharvest consultations, training, export promotion, and sharing of international expertise and knowledge with other countries, such as Morocco and the United Arab Emirates. Other support activities have targeted SMEs in the Egyptian hospitality sector.

- **Cluster development.** Productive clusters, from the village to the national level, are being upgraded in various sectors, including food, aquaculture, poultry, furniture, leather and creative industries, encouraging collective performance and competitiveness and strengthening cluster governance mechanisms, thereby improving the growth of value chains, promoting business linkages and fostering innovation.

- **Youth-led start-ups.** New and existing youth-led start-ups in waste management received technical, managerial, marketing and business development support, from the idea stage to the investor-ready stage. With its fast-growing population and strained local waste management systems, Egypt, and specifically Upper Egypt, displays a significant surplus of both agricultural and municipal waste that can be turned into a source of revenue and job creation in the region.

Projects targeting MSMEs highlight the importance of establishing and fostering linkages with local supporting institutions (non-profit, private sector corporate social responsibility, business associations) to provide young entrepreneurs with advice, guidance, and technical and financial assistance. Building the capacity of the local ecosystem allows for sustainability of project interventions beyond project life.

1.3 ENTREPRENEURSHIP PROMOTION AND EMPLOYABILITY OF YOUTHS AND WOMEN

In the first quarter of 2015, total unemployment in Egypt remains as high as 12.8%. Most critically, youths bear a disproportionate share of this burden. According to a report issued by the Central Agency for Public Mobilization and Statistics, youth unemployment reached 26.3% in 2014 *(6)*. Females represent 23.9% of the labour force, and the female unemployment rate reached 24.8% in 2014, three times that of men, according to the latest figures for 2015 *(7)*.

Youth unemployment is compounded by a mismatch between the skills equipped through secondary and tertiary education and those demanded by the local private sector. Almost half of unemployed young people have completed university-level education or above (44.5%). The second-largest group of unemployed are technical and vocational education and training (TVET) graduates (38.4%). TVET graduates constitute a large and growing group among new entrants into the labour market (63% of those leaving basic education pursue technical education), yet they are not absorbed in the Egyptian economy. Youths report being unemployed due to the mismatch between their qualification and experience and those demanded by the labour market *(8)*. On the other side of the labour market, industrial enterprises suffer from a chronic supply of underqualified personnel.

UNIDO activities in Egypt focus on promoting inclusive and sustainable industrialization, which results in the creation of quality jobs. Sustainable job creation is not a quick fix.It requires sustained rates of economic growth, structural changes in productive sectors and structural reforms of related sectors such as education. Engagement with Egyptian local industries has shown UNIDO that, despite the deterioration of the country's economic performance in the aftermath of the 2011 "Arab spring" uprisings, demand for qualified labour does exist in several sectors and can be stimulated further, together with the promotion of self-employment, entrepreneurship, innovation, and better access to financial and educational assistance. Egypt is endowed with a large youth population, which gives the country an entrepreneurial advantage if well supported and nurtured.

The UNIDO approach within this complex framework has been based on the following three axes:

- MSME development to stimulate private sector growth that can produce new jobs;

- facilitating a better match between demand and offer of jobs, aligning the skills of local jobseekers with the demand of the private sector;

- addressing the structural need to develop entrepreneurial attitudes among youths in order to increase their employability profile (both as self-employed and as employees in existing companies).

The first axis of UNIDO's action addresses the competitiveness and growth of the MSME sector, as discussed in the previous section.

Often enterprises in Egypt, however, do not find qualified workers, technicians or managers, despite the high numbers of unemployed. There is an evident mismatch of available skills and skills requested by the private sector, and this is the second aspect UNIDO is tackling in Egypt. UNIDO has trained hundreds of agronomists in the agro-industrial sector and, based on positive experience, plans to collaborate with the private sector and establish an agro-industrial academy backed up by private enterprises and teaching curricula emanating from the private sector itself. Similar plans are being developed with the engineering and construction sectors, by which UNIDO is seeking partnerships with local and international investors in order to upgrade the skills of the local workers to make them more employable. Technical and know-how aspects are among the biggest weaknesses for youths, both as employees and as self-employed, including in the waste management sector. In this sector UNIDO teamed up with universities, such as South Valley University in Qena and Aswan University, to reach out to youths and identify job opportunities in the field of waste management (both agricultural and municipal waste). Discussions are continuing with government counterparts (including the Ministry of Planning, Follow-Up and Administrative Reform, the Ministry of Local Development, the Ministry of Trade and Industry, and the Ministry of Environment) to reach a much larger number of beneficiaries in sectors of vital importance for Egyptian economic growth.

The third aspect of UNIDO's work refers to collaboration with the education sector. Building on its global experience, UNIDO introduced an Industrial Entrepreneurship Development Programme in technical secondary schools to foster an entrepreneurship culture among Egyptian youths through entrepreneurship education, with the aim of increasing their employability or preparing them for self-employment, ultimately providing a supportive and enabling environment for new business establishment and growth.

Consultations are continuing with the Ministry of Trade and Industry, the Ministry of State for Technical Education and Training, and the Ministry of Education for nationwide roll-out of the UNIDO Industrial Entrepreneurship Development Programme in the education system, specifically in the general secondary schools and technical and vocational schools.

In all projects and programmes developed and under development, UNIDO addresses the limited participation of women in the labour market, specifically self-employment and MSME ownership, and focuses on the development of entrepreneurial and technical skills of women to enable them to increase their employability, engage in productive activities and sustainably generate income, thereby improving their socioeconomic security, economic empowerment and resilience. This requires also supporting an enabling environment that creates favourable jobs for women, including those living in rural areas *(9)*.

Women's participation in the labour market in Egypt is among the lowest in the world.[1] Young women's labour force participation reached only 13.3% in 2014 *(8)*, despite substantial improvements in female literacy and enrolment rates.

Very few women in Egypt are engaged in early-stage entrepreneurial activities. According to a 2014 report by the Global Entrepreneurship Development Institute, with respect to ease of start-up and growth of own businesses for women, Egypt ranks 28th out of 30 countries. Women account for only 11% of entrepreneurs in Egypt *(10)*.

UNIDO is currently providing technical assistance for income-generating activities, business coaching and access to financial services for women, with a special focus on the most vulnerable, and increasing their employability through skills enhancement and matching with private sector needs. In addition, rural women are being em-

1 According to the World Economic Forum's Gender Gap Report for 2014, Egypt ranks 129th out of 142 countries on the gender gap index, and ranks 130th out of 135 in labour force participation.

ployed in postharvest activities such as grading, sorting and packaging of agricultural products, as well as in the waste management sector.

UNIDO activities aiming at enhancing youth employability are in line with Government of Egypt plans and objectives. In order to address these challenges, in the last year the Egyptian Government, as part of its Sustainable Development Strategy, has taken a number of important measures to boost employment, including developing infrastructure, establishing investment projects that raise economic growth, and creating thousands of jobs, especially for youths and females, with the ultimate objective to reduce the unemployment rate to 5% by 2030 *(11)*.

1.4 COMMUNITY DEVELOPMENT

Prolonged social and political transition coupled with economic downturn in the aftermath of the 2011 Arab spring uprisings has had severe consequences for the socioeconomic security of communities and individuals in the country, pushing the most vulnerable groups (youths, women and children) to slide deeper into poverty and exclusion. Decreasing incomes at the household level have repercussions on food and health security (hunger, unsafe food, malnutrition and decreased access to basic health care) as well as on personal and community security (crime, domestic violence and child labour).

Despite government efforts to relaunch the economy in 2014, growth rates are still low. Growth weakened to about 1.04% in the first quarter of 2013–2014 *(4)*.

Unless immediate measures are taken to strengthen human security and foster inclusive policies, the well-being of many communities in Egypt, and specifically in Upper Egypt, may be severely compromised, especially given the absence of a robust social security network. This may lead to new social unrest, which may lead to further destabilization.

To counterbalance this and promote more comprehensivble local economic development and stability in the poorest of villages, UNIDO aims at protecting people from critical and pervasive threats by implementing an integrated local community development approach.

UNIDO works through local government, civil society partners and community structures to serve vulnerable and at-risk local communities and individuals, with special emphasis on helping youths and women to become more economically active and self-sufficient, and to support target communities to become more inclusive and gender re-

sponsive as they play an active role in the creation of sustainable employment opportunities.

Capitalizing on accumulated experiences from previous UNIDO efforts to improve human security for vulnerable groups in Egypt's poorest governorates, UNIDO supports the Government of Egypt in the development and promotion of human security by fostering protection and empowerment measures aimed at mitigating the impact of current threats, adequately responding to the needs of vulnerable communities and individuals, and empowering local populations to help them overcome their challenges and improve their livelihoods.

Aiming at improving the economic situation of the local population and social cohesion, UNIDO assists small producers and growers and young entrepreneurs to improve their production practices and become more economically productive and sustainable, stimulating their development and generating new job and income opportunities for the benefit and empowerment of their families and communities. Local nongovernmental organizations (NGOs) have been upgraded to serve their communities with infrastructural improvements, and participatory planning forums have been established to allow the local population to interact with local government and development partners to plan and implement improvement projects.

As a result of its interventions, UNIDO has strongly positioned itself in the local community, gaining the trust of beneficiaries, community development organizations and local government institutions.

1.5 RESOURCE-EFFICIENT AND LOW-CARBON INDUSTRIAL DEVELOPMENT

In Egypt, patterns of industry often rely on inefficient and wasteful use of raw materials, fuel and energy, .Many industries use more materials and energy than their production processes would require. This is due to the use of old, outdatedand inefficient equipment and technology. and thewastefuluse of energy, water and other resources, which leads to highgreenhouse gas(GHG)emissions. The industry sector represents a major energy consumer in Egypt and is a major emitter of greenhouse gases (GHGs): it contributes to about 43% of end-use energy consumption and is responsible for 27.7 million tonnes of carbon dioxide equivalent (CO_2eq). According to the Annual Report on Solid Waste Management issued by the Ministry of Environment in 2013, Egypt, in 2012, generated 6 million tonnes of industrial waste, which accounted for 7% of the entire waste generated.

Energy intensity and resource inefficiency in general are reflected in high carbon emissions, one of the main causes of climate change. Egypt is one of the countries at highest risk from the impacts of climate change. It is estimated that climate change will cause displacement of approximately 50 000 individuals in 50 years due to sea level rise in the Nile Delta region of Egypt, a 30% reduction in food security in the southern zones, and substantial health impacts, including malnutrition.

UNIDO has long recognized that environmental issues must be addressed and cleaner, low-carbon, energy-efficient methodologies must be promoted at a systemic level in industrial development. The promotion of these methodologies requires a perspective and a decision-making process that simultaneously considers both economic value and environmental sustainability. This entails using less material, water and energy resources for the same economic output. Moreover, there is a strong need for capacity-building in technology development and transfer.

UNIDO's interventions in Egypt in this regard focus on the following key areas:

- **Energy efficiency and renewable energy in industry.** Egypt's installed capacity is no longer able to meet the increasing demand. According to the African Development Bank, Egypt's total primary energy demand has grown at an average annual rate of 4.6% during the last two decades. Since 2010 Egypt has been facing a severe energy crisis – it has become a net energy importer, and is no

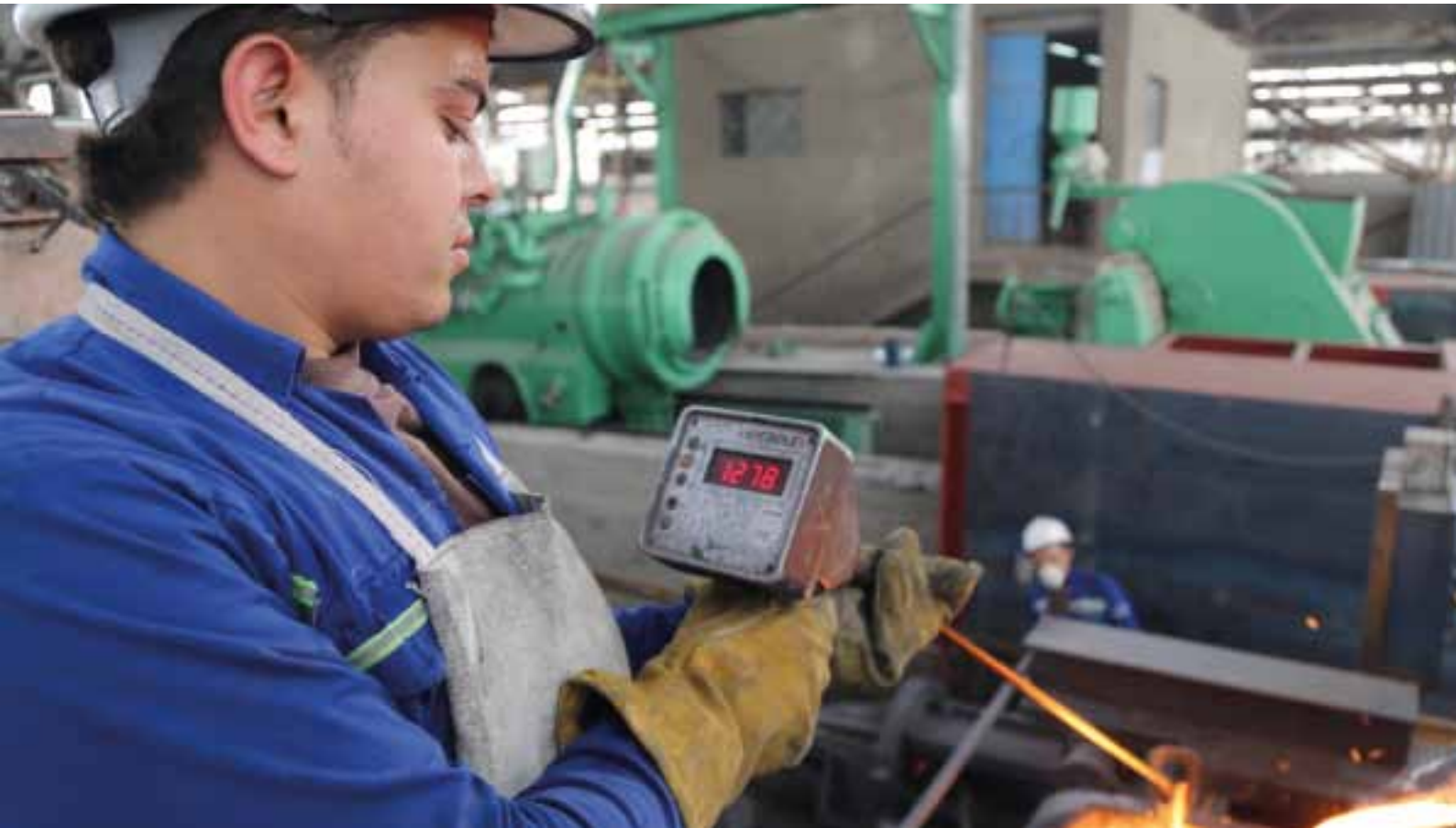
longer able to secure its energy needs due to economic and infrastructure challenges. As a consequence the industry has faced damaging interruptions in energy production, which in turn has had a negative impact on the economy as a whole and the livelihoods of workers. Residents have also faced frequent domestic blackouts, affecting their day-to-day activities.

In Egypt the industrial sector is expected to further grow due to high demand and rapid expansion of industrial production. Energy productivity in Egyptian industry is well below the international average, with energy consumption per unit of output 10–50% higher than the international average. Growth in other sectors, including the commercial sector (hotels, offices, shopping malls and other energy users) and residential buildings, is resulting in increasing consumption of energy, particularly for air-conditioning and water heating. Industrial processes, large buildings and tourism facilities are typical major users of electricity for air-conditioning and heating purposes.

Many processes have a very low level of energy efficiency and the average energy use is much higher than the best available technology would permit. Energy management standards provide a structured and comprehensive framework for industrial facilities to integrate energy efficiency and system optimization into their daily energy management. Such standards enable closer linkages between business practices for the management of energy and core industry values, such as cost reduction, increased productivity, environmental compliance and global competitiveness.

To face those issues, the Egyptian Government has set up policies and targets to increase the share of renewables in the energy mix and to promote the involvement of the private sector. According to the New and Renewable Energy Authority, a strategy was approved in February 2008 aiming at raising the share of renewables to 20% of total electricity generation by 2020. This represents about 7200 megawatts.

Egypt is potentially rich in renewable energy sources, especially solar. The Egyptian solar atlas, developed in 1991, estimates that two thirds of the country's area has a solar energy intensity of more than 6.4 kilowatt-hours per square metre per day, or between 2000 kilowatt-hours per square metre per year in



the north of the country and 3200 kilowatt-hours per square metre per year in the south, with an economic potential of 73 656 terawatt-hours per year. Duration of sunshine ranges between 9 and 11 hours per day from north to south, with very few cloudy days. Therefore Egypt has a great potential to use various types of solar technology to support its economic growth and increasing energy demand.

- **Resource-efficient and cleaner production.** UNIDO assists industries to improve their resource productivity and environmental performance through the adoption of resource-efficient and cleaner production practices, methods and techniques, as well as through enhanced recycling, resource recovery and treatment of all wastes. In so doing, pressure on natural resources – in the form of overconsumption or pollution – are alleviated, leading to a more environmentally sustainable form of industrial production. At the same time, resource-efficient and cleaner industrial production engenders economic competitiveness. This takes the form of realizing productivity gains, implementing better process controls and standards, enhancing environmental accounting methods and adopting innovative business models.

- **Phase-out of ozone-depleting substances.** In implementing the Montreal Protocol on Substances that Deplete the Ozone Layer, UNIDO assists the Government of Egypt in phasing out commonly used ozone-depleting substances from industrial processes and products by upgrading industry and introducing alternatives to ozone-depleting substances. These interventions add to the sustainability of global industry by preventing the use and emissions of these substances, which not only lead to the destruction of the ozone layer, but also contribute substantially to climate change. Phase-out projects for ozone-depleting substances advance industrial development through targeted activities such as technology development, transfer and adoption, provision of equipment, market access support, technical assistance and training activities.

In partnership with the Global Environment Facility (GEF) and key stakeholders in industry, the public sector and academia, UNIDO promotes a holistic approach, addressing policy, economic, technical, environmental and social aspects, to disseminate and support the best available practices and technologies for industrial energy and environmental management and the adoption of clean, efficient and low-carbon technologies in the industrial sector in Egypt.

INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT CURRENT AREAS OF INTERVENTION

POVERTY REDUCTION THROUGH PRODUCTIVE ACTIVITIES AND TRADE CAPACITY-BUILDING

- Egyptian Medicinal and Aromatic Plants Project: upgrading the medicinal and aromatic plants value chain
- Green Trade Initiative
- Human security through inclusive socioeconomic development in Upper Egypt (Hayat)
- Enhancing youth employability and local economic development in Upper Egypt
- Interregional project to promote SME origin and export consortia
- Support to the development of cultural and creative industries and clusters in the southern Mediterranean
- Promoting women's empowerment for inclusive and sustainable industrial development in the Middle East and North Africa region
- Enhance regional trade capacities in food through a harmonized regional conformity assessment and food safety systems

ENERGY AND ENVIRONMENT

- Industrial energy efficiency
- Montreal Protocol projects
- Utilizing solar energy for industrial process heat in Egyptian industry
- Low-carbon and climate-resilient industrial development in Egypt, Kenya, Senegal and South Africa
- SWITCH-Med: demonstration and networking initiative

2.

Poverty reduction through productive activities and trade capacity-building

Pro-poor growth refers to a model of economic development that can also benefit the poorer segments of the population, including youths, women and micro-entrepreneurs. UNIDO supports technical cooperation projects aimed at enabling Egypt's private sector to become an effective driver of pro-poor growth through productive activities and trade capacity-building.

2.1 EGYPTIAN MEDICINAL AND AROMATIC PLANTS PROJECT: UPGRADING THE MEDICINAL AND AROMATIC PLANTS VALUE CHAIN

Scan for the project's videos

Project background and rationale

UN implementing agency:	UNIDO
National implementing partners:	Ministry of Trade and Industry, Food and Agro Industries Technology Centre
Donor:	Government of Switzerland: State Secretariat for Economic Affairs (SECO)
Budget:	US$ 2 870 000
Duration:	2011–2015
Governorate:	Beni Suef, Minya, Asyut, Fayoum
Website:	http://www.emap-eg.org/

Past projects implemented by UNIDO in the agro-industrial sector provided detailed insights into the challenges and bottlenecks hindering its development potential, namely the disconnect between primary production and further processing, low degree of value addition, high post-harvest losses, and lack of technical knowledge and market information.

UNIDO is addressing these bottlenecks and will continue to do so, jointly with the Government of Egypt, using a number of innovative tools aiming to improve the capacities of producers, especially small-scale producers, to increase productivity, quality, compliance and value addition; strengthen the linkages of the value chain; support clusters and producer groups; and facilitate access to domestic and international markets *(12, 13)*. As opposed to the traditional exclusive focus on production, the value chain concept stresses the importance of value addition at each stage.

Egypt has been growing medicinal and aromatic plants since ancient times and its products are considered today as high-value export crops. However, the sector development potential is hindered by low quality and safety standards, lack of professional advisory services, and a highly fragmented and underdeveloped supply chain. These factors negatively affect the position of Egyptian medicinal and aromatic plant products in the local and export markets, undermining the sector's ability to enhance the productivity, quality and competitiveness of high-value products and contribute to the generation of employment opportunities.

Project objectives

In order to ultimately upgradethe value chain of theEgyptian medicinal and aromatic plant-sectorand consequently facilitateaccess to international markets formedicinal and aromatic plants,technicalTechnical assistance and trade capacity-building activities are being implemented in the framework of the Egyptian Medicinal and Aromatic Plants Project. These activities are intended to raise the efficiency of the value chain, harmonize national standards and ensure their compliance with international quality and food safety requirements, increase the added value of final products, and support the access of Egyptian medicinal and aromatic plant products to the international market. In particular, the programme focuses on two interrelated components: quality enforcement and market access.

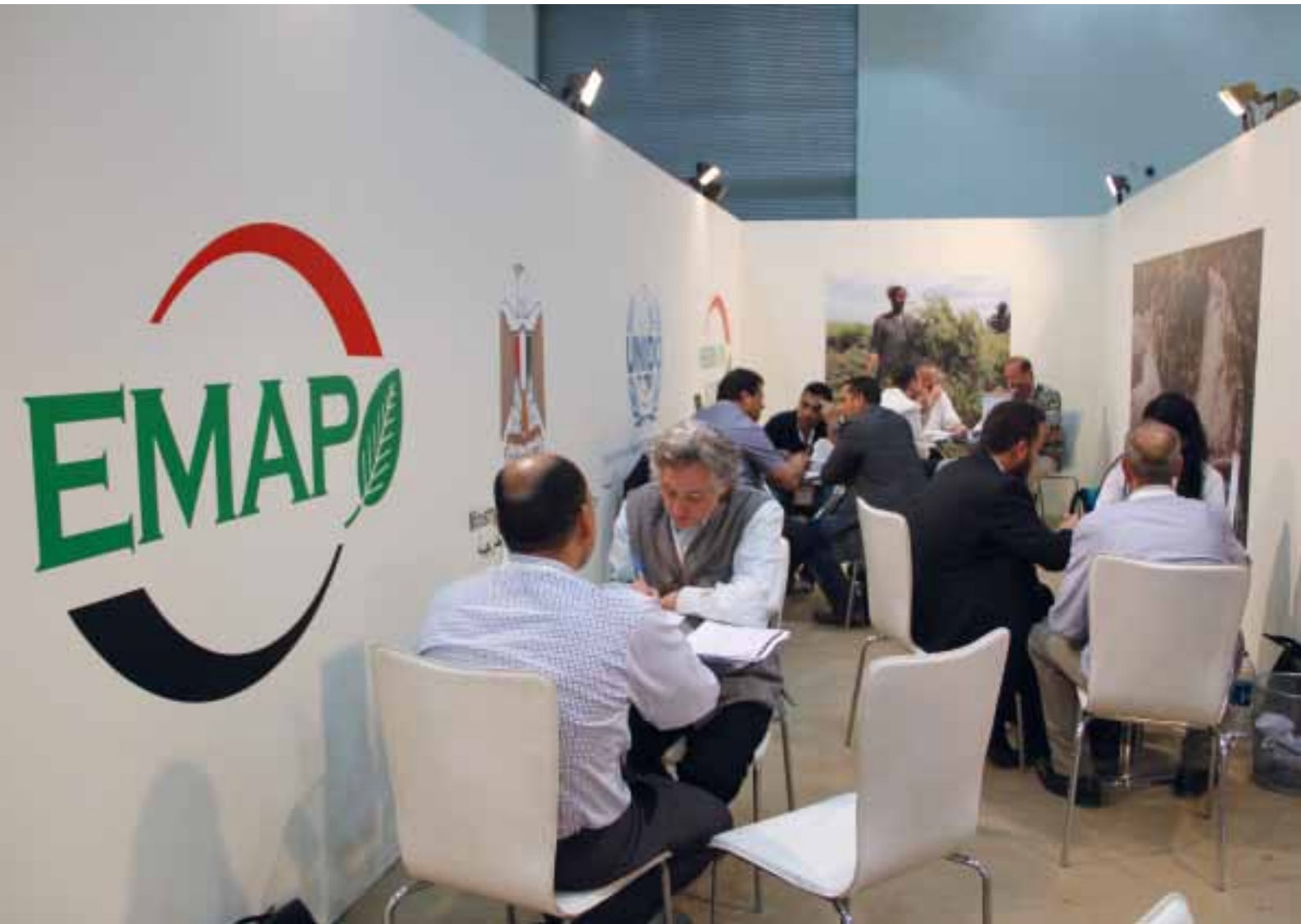
In this context, the Egyptian Medicinal and Aromatic Plants Project provides an integrated approach directly targeting all levels of the supply

chain – growers, preprocessors and local traders, and final processors and exporters – and indirectly supporting governmental entities, non-governmental organizations, and research and scientific institutions. Development and technical support programmes are carried out through a network of specialized technical centres affiliated to the Ministry of Trade and Industry.

Project activities and achievements

As a core pillar to assure quality and promote Egyptian medicinal and aromatic plant products in export markets, the project succeeded in designing principles for and establishing a National Quality Scheme for Egyptian medicinal and aromatic plants through consultation with national stakeholders. The project supported development of the first standard covering the entire supply chain for Egyptian medicinal and aromatic plants, and created an enabling environment for a ministerial decree setting up an independent steering committee for establishing and operating the National Quality Scheme (Ministerial Decree 205/2014). The Egyptian Medicinal and Aromatic Plants Project has also helped establish sustainable funding for the activities of the steering committee, which is now functioning with inputs from the Egyptian export councils. In addition to designing and approving the implementation roadmap of the National Quality Scheme with the participation of different stakeholders, the project is providing regular technical assistance and continuing support to finally establish and implement the scheme, which will foster the presence of Egyptian exports in international markets.

Enhancing integration along the supply chain will help achieve the project objective to support small producers, improve product quality and foster market access. The project has succeeded in attaining this integration through introducing



and expanding the cultivation of 18 new varieties of medicinal and aromatic plants that are in demand worldwide. For this purpose, 28 extension fields were established within the four targeted governorates (Fayoum, Beni-Suef, Minya and Asyut) to technically support and empirically demonstrate cultivation of the newly introduced varieties. Following the technical assistance provided at the production stage, the Egyptian Medicinal and Aromatic Plants Project linked small producers to exporters through demonstration activities carried out through harvest days, whereby exporters were invited to witness the harvest of the new products and attend expert workshops on technical specifications and international market trends. Consequently, the project supported farm contracting between small farmers and exporters to sustain integration of farmers into the supply chain and support their access to export markets.

Value addition and product development is another critical developmental pillar that the Egyptian Medicinal and Aromatic Plants Project invests in, especially with regard to the essential oils industry and medicinal and aromatic plant drying practices. National and international expertise was integrated to conduct a needs assessment and diagnostic study on the Egyptian essential oils industry. Accordingly, comprehensive national training was conducted to convey good practices over the entire supply chain of the essential oils industry, attended by 14 small and medium producers. The sessions included detailed training on "Production, extraction and distilling techniques for essential oils:the experience of India". The training programmes were conducted in collaboration with national and international specialized entities and with the Egyptian Food Export Council, which will take the lead in regularly updating the programmes and providing them to different groups of companies in the future. In addition, international expertise has been utilized to design, establish and demonstrate a new distillation unit with technology levels appropriate for small and medium Egyptian producers. The new distiller was conveyed to two local manufacturers, who are now establishing it in direct contact with the international expert. On-site training and demonstration activities will take place for wider application across the sector.

On the market access front, the Egyptian Medicinal and Aromatic Plants Project has created three export consortia for medicinal and aromatic plants in Upper Egypt, which are now active and jointly implementing trade-based activities, such as participating in trade shows and developing business plans. In addition, the project has built sustainable linkages with international trade promotion bodies, namely the Swiss Import Promotion Programme and the Centre for the Promotion of Imports from Developing Countries (CBI). Eight Egyptian companies are already supported by the Swiss Import Promotion Programme. The companies were identified through three sourcing missions from the Swiss Import Promotion Programme to Egypt facilitated by the Egyptian Medicinal and Aromatic Plants Project. New markets penetrated include Germany, India, the Netherlands, Poland, Saudi Arabia and Sweden. The Swiss Import Promotion Programme is now linked with the Egyptian export councils for sustainable future cooperation beyond the project lifetime. Similarly, the Egyptian Medicinal and Aromatic Plants Project organized and facilitated two CBI sourcing missions to Egypt for the essential oils industry, and the programme is now also connected to the Egyptian export councils.

During 2015, the Egyptian Medicinal and Aromatic Plants Project succeeded in creating an active business and technical platform – "Herbs of Egypt" – alongside the Food Africa trade show. Herbs of Egypt is the first specialized medicinal and aromatic plants conference in Egypt. Over the four days, Herbs of Egypt provided inspiring technical sessions delivered by international industry experts from Germany, India, Morocco and the United States of America, and was attended by over 60 participants. The Herbs of Egypt event created an active business platform through 122 business-to-business matchmaking sessions hosting six major international buyers and around 29 Egyptian companies of medium and small scale, many resulting in business deals.

2.2 GREEN TRADE INITIATIVE

Project background and rationale

Scan for the project's videos

UN implementing agency:	UNIDO
National implementing partners:	Ministry of Trade and Industry, Ministry of Agriculture and Land Reclamation, Ministry of Transport
Donor:	Italian-Egyptian Debt for Development Swap Programme
Budget:	54 962 854 Egyptian pounds
Duration:	2013–2016
Governorate:	All over Egypt

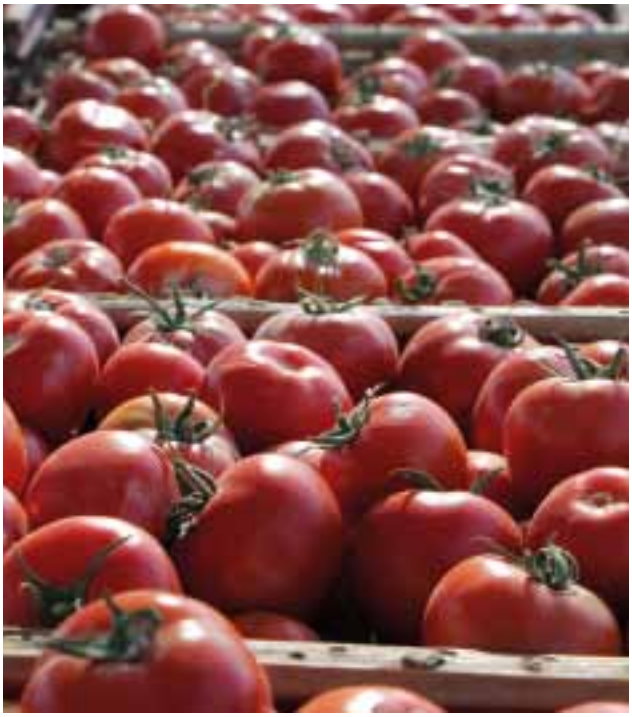
UNIDO's past projects in the agro-industrial sector provided detailed insights into the challenges, bottlenecks and hidden opportunities of the sector in Egypt. Bottlenecks identified include the disconnect between primary production and further processing, low degree of value addition, high postharvest losses, and lack of technical knowledge and market information.

UNIDO is addressing these bottlenecks using a number of innovative tools aiming to improve the capacities of producers to increase productivity, quality, compliance and value addition; strengthening the linkages of the value chain; supporting clusters and producer groups; and enhancing access to international and domestic markets.

Project objectives

The main objective of the Green Trade Initiative is to enhance the competitiveness and export value of selected Egyptian horticultural products – green beans, artichokes, strawberries, grapes, lettuce, tomatoes, peppers and pomegranates – through the adoption of the value chain approach.

The Green Trade Initiative focuses on four main pillars:



- quality and production improvement to enhance the quality of horticultural produce and the export controls of the concerned authorities to ensure alignment of Egyptian products with European Union requirements;
- integration and strengthening of logistics linkages and practices inside and outside Egypt;
- increased private sector investment in the agribusiness sector by mobilizing existing financial resources, analysing business opportunities and fostering transfer of technology and know-how;
- better access to national and international markets for small producers, cooperatives and farmers' groups through the dissemination of horticulture market information (on prices and products), participation in specialized fairs, and last but not least fostering the establishment of joint ventures with Italian and other European companies.

Having thoroughly assessed the value chains of the eight selected products, the Green Trade

Initiative identified the main problems affecting production and related technical assistance, either specific to the crop or cross-cutting, such as awareness raising and training on good agricultural practices and integrated pest management.

In 2015, the Green Trade Initiative started by focusing on tomatoes as one of the most prominent horticultural products in Egypt, which is the fifth-largest producer worldwide. However, tomato production also presents the biggest problems, from varieties to cultivation methods, with a large potential for improvement. An innovative collaboration to test 15 new varieties through partnering with a seeds company has been initiated, together with awareness and implementation of vertical cultivation methods in 1000 feddans to improve quality and productivity.

In collaboration with the Horticultural Research Institute, the Green Trade Initiative will also produce eight technical guidelines for producers, including on cultivation practices and food safety and market standards. The Green Trade Initiative has also strengthened partnerships with academic institutions in Italy (University of Milan) and in Egypt (Universities of Asyut and Alexandria) to support a research programme on artichokes and pomegranates to test new varieties and enhance cultivation practices derived from the Italian model.

The Green Trade Initiative is investing significant efforts in promoting value addition to horticultural products, as an opportunity for small-scale producers to stabilize sources of income and decrease risks, and for the private sector to develop the agro-industrial sector, where Egypt is still lagging behind, as shown by the large quantities of processed fruits and vegetables that are imported. In this regard, the Green Trade Initiative has promoted, among more than 200 beneficiaries, the production of sun-dried tomatoes, which is a niche segment of the market but one that holds great interest for the Italian market. Sun-drying is

a simple procedure that takes place in the open air on net tables, requiring only limited investment in infrastructure, while it is doubling job opportunities and can increase profits for small producers by up to 30%.

Moreover, in order to better integrate small and medium producers into the export value chain, appropriate logistics services should be provided to reduce losses and optimize delivery times. To raise awareness on logistics and logistics operations, the Green Trade Initiative has designed and implemented a first round of combined awareness and training on logistics, involving 500 stakeholders along the supply chain from farmers to intermediaries and finally to exporters.

To ensure improved access to markets and fair conditions, the Green Trade Initiative is promoting contract farming practices among small and medium producers to enable them to stabilize and plan their production and safeguard their income. The project is also supporting access to high-end markets by promoting participation of small exporters, associations and cooperatives in international specialized fairs, for example Fruit Logistica 2016, and by selecting international buyers for sample trials and for trade missions to Egypt.

At the institutional level, in order to have an enabling environment for small and medium exporters and align Egypt with European Union requirements, the Green Trade Initiative has mapped the national quality infrastructure, including both relevant institutions involved in and legislation related to the export of horticultural products and its control. The results of the assessment indicate that Egypt has fully fledged legislation regarding quality control, standards, accreditation and controlling bodies, yet it is lacking effective enforcement, due to inefficient and insufficient operational capacities (human and financial resources). In this respect, the Green Trade Initiative will raise awareness on quality infrastructure for fresh produce from the top management level to the officers and inspectors of different institutions to enhance the control of exported products. The Green Trade Initiative is also contributing to the network of plant quarantine offices, which will lead to the issuance of e-phytosanitary certificates and which will also be connected to a trade information platform gathering information from the field to the shelf.

2.3 HUMAN SECURITY THROUGH INCLUSIVE SOCIOECONOMIC DEVELOPMENT IN UPPER EGYPT (HAYAT)

Scan for the project's videos

Project background and rationale

UN implementing partners:	UNIDO (lead agency), UN Women, UN-Habitat, International Labour Organization, International Organization for Migration
National implementing partner:	Ministry of Local Development
Donors:	United Nations Trust Fund for Human Security, Swiss Agency for Development and Cooperation
Budget:	US$ 5 372 791
Duration:	2013–2016
Governorate:	Minya

The Hayat project is working to strengthen the economic security of vulnerable communities in the districts of El-Edwa and Maghagha, both in the Minya governorate. Project interventions have been extended to south of Minya, with support from the Government of Japan.

Project objectives

The project has adopted a concept of human security that focuses both on the protection of well-being from threats (such as chronic poverty, precarious livelihoods, unemployment, disease, financial and economic downturns and

environmental degradation) and on community empowerment measures, which allow communities to acquire the means to become self-reliant in addressing vulnerabilities and building their own future.

The plan is to promote the sustainable employability of the local labour force, while contributing to mitigation of threats to environmental, personal, community and food security. The project capitalizes on the combined resources of UNIDO, the International Labour Organization, the International Organization for Migration, UN-Habitat and UN Women, working through local government, civil society partners and community structures to serve at least 18 000 beneficiaries. The joint project supports target communities throughto become more resilient, self-reliant andinclusive. In this respect, the activities envisaged by this joint programmeaim at (a) strengthening human security through creation of more and better employment opportunities and increased employability of the local labour force; and (b) enhancing community and personal security through activities to develop communities' social capital and enhance cohesion and inclusiveness.

Project activities and achievements

In a participatory manner, all stakeholders have been involved in assessment and implementation at different levels. Human security forums have been established in a participatory manner in each of the five mother villages. The forums constitute 25 members each, reflecting different socioeconomic aspects of community development: inclusiveness (including women, youths and other vulnerable groups), economic key actors (such as farmers and producers) and environmental themes. The forums also include strong representation of local government and community leaders. In the project's extension in Maghagha, two further forums were formed relying on already existing electoral processes of the community, appointing forum members based on their posts in different occupations and building their capacities. The forums agreed to work on productive cluster projects, specifically aquaculture, poultry, furniture and dairy, in response to the unemployment issue. Other prioritized interventions are related to health (hepatitis C), solid and agricultural waste management, and simple infrastructural projects such as building bridges and upgrading market places.

Based on the labour market assessment, an information counselling and referral system has been established, supported by an online, freely accessible database, and has been institutionalized at the Ministry of Manpower and Migration employment offices at the Minya governorate. The capacity of staff at the offices has been built to provide job-matching services in line with the needs of the local private sector, through several information sessions and employment fairs, attended by 580 participants and reaching 320 others during counselling sessions and employing 170 people. Linkages to other employment projects, such as the International Labour Organization's Career Guidance Project and the German Development Cooperation (GIZ) Employment Promotion Programme are being established.

The project has assisted over 1800 local farmers in their production practices and built the capacity of local youths as knowledge agents to extend its outreach. With the technical assis-

tance of the project building on the success of past interventions for the setting up and operation of pilot community-level greenhouses for the vertical expansion of production in farmers' associations in Upper Egypt, 20 entrepreneur groups have constructed their own greenhouses, based on four demonstration models piloted in collaboration with a local NGO and the agricultural extension unit. These greenhouses increase productivity by up to 300% and offer permanent employment for two workers per feddan, in addition to seasonal employment opportunities during harvest seasons. The greenhouses extend the production window, capturing higher market prices for the produce, and increase income per unit area by up to 200%.

Through Hayat's assistance, date producers have grouped to form a cluster, aiming to improve their production practices and access economies of scale. They have implemented drying practices and sorted and packed their products for sale in their first marketing intervention, increasing their product value up to 200%. The group has been linked to national and international markets through trade fairs in Cairo, Alexandria and Abu Dhabi. This intervention is complemented by technical assistance in integrated pest management of the red palm weevil, whereby a new job profile has been developed, namely the pesticide applicator, who charges 10–15 Egyptian pounds per palm tree for combating the lethal pest.

Interventions in animal production tackle the value chain as a whole, improving inputs by promoting production of silage and field beet for feed, and developing capacities of farmers and veterinarians. Six local veterinarians trained on artificial insemination have widened their business by improving local cattle breeds. The project also supports improved value addition practices and dairy production as well as productive use of agricultural residues, which are turned into compost. Over 80 farmers are able to reduce their feeding costs by 60% applying these methods. The project also foresees a 30% increase in milk productivity in the coming season.

The project has also cooperated with the furniture technology centre in Damietta for a one-week hands-on training of lead carpenters, complemented by a visit to Furnex in order to demonstrate the potential of the craft, building the capacity of the carpentry cluster.

With the aim to improve the socioeconomic livelihoods of underprivileged rural women in the governorate of Minya, over 4500 women have joined over 300 village savings and loan associations, and over 1300 women have received training on hygiene and nutrition through the associations. In the villages of Eshinin and Dahrout, 50 women

are now integrated in the palm crates production business. Several community events, mobilizing over 150 youth volunteers, have been held, such as a blood donation campaign, an orphans' day and sports tournaments for the month of Ramadan, aiding community cohesion and integration. In cooperation with Kidzania, the youth groups organized a visit to the facility for 60 marginalized children promoting the merits of working and spreading awareness on different jobs.

Hayat pipeline interventions include entrepreneurship promotion through technical assistance to entrepreneurs in agribusiness and collaboration with the Ministry of Local Development initiative to finance start-ups.

Best practices in human security, updated and upgraded based on lessons learned from Hayat as well as from other UNIDO projects supporting MSMEs and entrepreneurship (see next section), will be scaled up in other Upper Egypt governorates. Consultations with interested donors are continuing.

2.4 ENHANCING YOUTH EMPLOYABILITY AND LOCAL ECONOMIC DEVELOPMENT I N UPPER EGYPT

Scan for the project's videos

Project background and rationale

UN implementing agency:	UNIDO
National implementing partner:	Ministry of Trade and Industry
Donor:	Government of Japan
Budget:	US$ 750 000
Duration:	2014–2015
Governorates:	Aswan, Luxor, Qena, Sohag

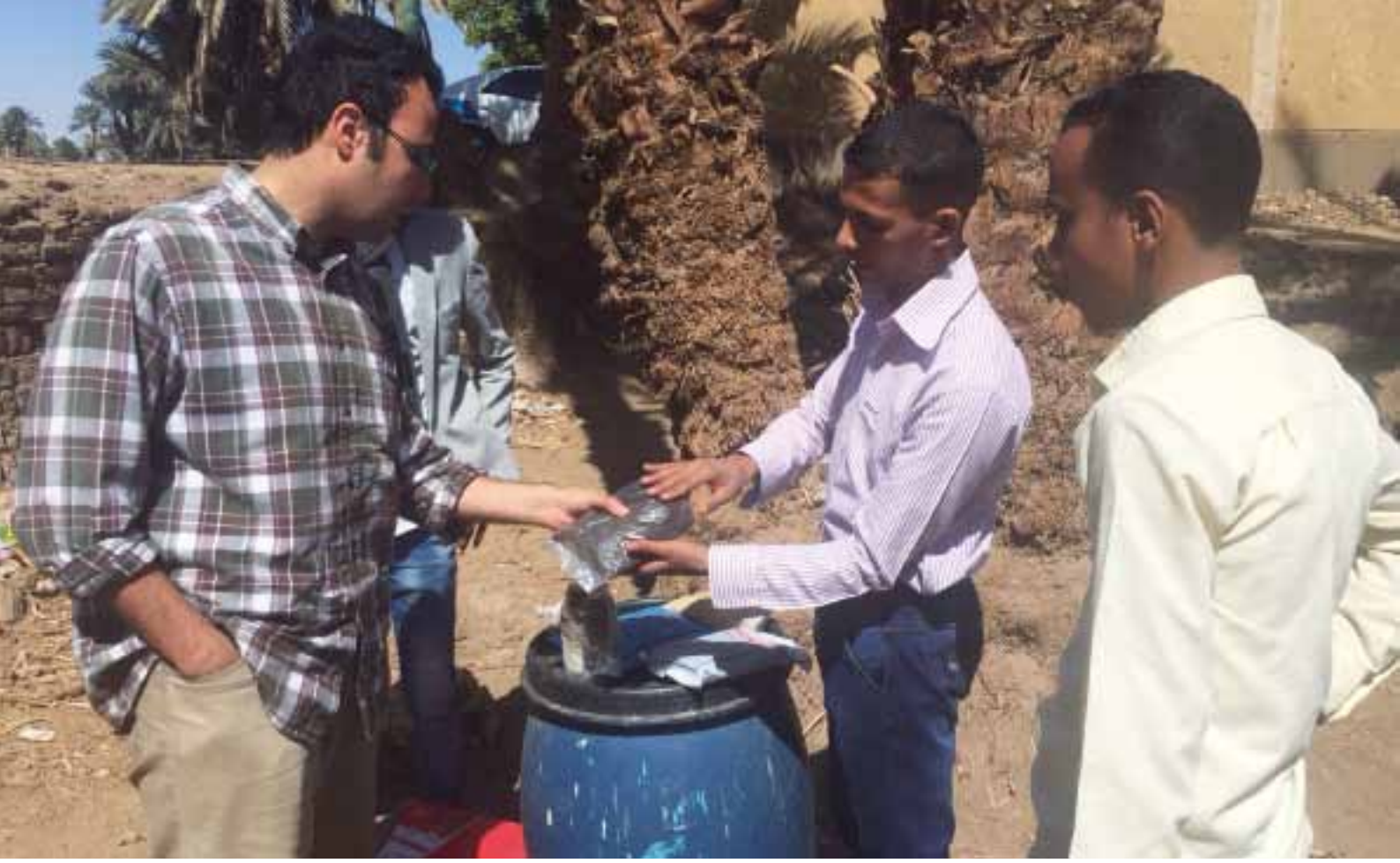
The creation of jobs in a given territory or in a given industrial sector depends on many elements, such as. It depends on sustained economic growth,as well as on inclusiveness in the pattern of growth, competitiveness of the local private sector, the set of skills available, the match between skills and job market demand.

Despite high youth unemployment, demand for qualified workers does exist countrywide and can be stimulated further, but the capabilities of the jobseekers need to match the characteristics of this demand. Analysis of the local economic texture highlighted that opportunities for job creation are available in the agro-industrial sector as well as in the waste value chains. However, a mismatch is evident between the outputs of the education system and the needs of the private sector: the former does not fully equip youths with the skills and attributes required by the industry, while the latter has to make up for this at its own cost. Moreover, technical and know-how, managerial and business, and marketing aspects represent young entrepreneurs' biggest weakness when it comes to business start-up and operation. Finally, for entrepreneurial activities to flourish a conducive environment needs to be fostered.

Project objectives

UNIDO aims at fostering simultaneously the productivity and profitability of micro and small enterprises (MSEs); technical skills of local jobseekers as demanded by the local private sector; and entrepreneurial attitudes (willingness and ability to take initiatives, innovation and creativity, readiness to take calculated risks, self-confidence and ability to collaborate).

The project promotes sustainable and inclusive business opportunities for the rural poor through agribusiness, waste management and entrepreneurship development, ultimately aiming at increased employability of the local population, with special regard to youths.



Active engagement of local supporting institutions, the private sector and potential employers has been constantly promoted during project implementation so as to facilitate linkages and networking within the entrepreneurship system.

The main target group is constituted by unemployed and underemployed youths aged 18–30 in the Upper Egypt governorates of Aswan, Luxor, Qena and Sohag, as well as local MSEs (both formal and informal).

Project activities and achievements

Agriculture and food processing are a source of employment for approximately 60% of the workforce in the target governorates, yet processing of locally available horticultural crops does not fully unleash its striking potential for growth and job creation. In order to upgrade both the productivity and profitability of MSEs in the agro-food sector, hence enhancing their potential to provide new employment opportunities for youths and women, the project envisaged the provision of (a) integrated programmes helping entrepreneurs to adopt technologies that are both innovative and labour intensive; (b) technical and entrepreneurial training for jobseekers; and (c) advisory services and business counselling.

After intensive consultation with local stakeholders, and based on the results of previous projects implemented by UNIDO in Upper Egypt, the project focused its efforts related to the agro-based sector in two main directions:

- improving horticulture productivity by introducing protected vertical cultivation techniques under greenhouses;
- improving quality and marketability of palm date products by enhancing preharvest, postharvest and processing techniques.

Training of trainers on protected vertical cultivation under greenhouses has been conducted to upgrade the capacities of agronomists and extension officers, lead farmers, technicians and demonstrators from universities (259 in total) to serve as local knowledge agents. The local agents are then requested to disseminate the knowledge acquired on the best farming practices for

horticultural crop production under greenhouses and postharvest techniques to other community members based on their existing networks.

To showcase the positive contribution of greenhouses to employment generation and increased agricultural productivity, the project launched an initiative to establish four greenhouses in partnership with interested trainees from the training of trainers programme. The criteria for selection were based on their preparedness to manage a vertical cultivation project as demonstrated during the training and coaching sessions, as well as their readiness to invest in such a business venture. Each unit of 1 feddan generates three permanent employment opportunities and 379 temporary worker-days. Based on the support to greenhouse establishment and on the abovementioned training of trainers programme, 10 knowledge agents established on their own initiative 22 units of greenhouses over 1 feddan each.

The intervention in the date palm sector introduced simple and affordable preharvest, harvest and postharvest techniques to increase productivity and profitability while creating more job opportunities for the local community and enhancing their position in both domestic and export markets. The technical assistance approach uses on-the-job training, demonstration and extension, which are more effective in introducing new techniques and methodologies to farmers. Four Luxor-based farmer traders from the Upper Egypt Palm Dates Association have agreed to work with the project.

The positive results of the demonstration carried out with the four farmer traders on new techniques in fertilizer application, bagging, drying, storage and packing have been disseminated among the association members, agronomists, farmers and traders. Fourteen farmers with an aggregate of 172 palm trees are now using the new techniques. In addition, 24 agronomists and farmers have been involved in capacity-building activities to help curtail the negative effects of the red palm weevil, while two of them have also received integrated pest management training sessions.

As a part of the pilot demonstration, the project also provided marketing assistance to the four farmer traders to tap higher-value markets, by identifying local and export markets for the dates (dried and semi-dried) and possibilities for value addition.

In response to the request of the Luxor governorate, the project supported youths to establish their own business ventures in agribusiness (animal production and fisheries production). From the proposals received, the project provided technical assistance (upgrading of technical and entrepreneurial skills) to 23 young entrepreneurs to establish their own ventures in animal production. Simultaneously, awareness-raising sessions on the economic benefits of converting sugar cane residues to animal feeds were conducted in the four governorates among the sugar cane farmers (reaching 1046 farmers). Local sugar cane producers used to burn their production residues in the field, with negative impacts on the environment and health. The residues, however, if converted into animal feed, would have a market value of 1000 Egyptian pounds per tonne, providing a significant economic uplift to both small sugar cane farmers and local animal growers.

Youth-led business ventures have also been promoted in waste management: technical, managerial, marketing and business development support has been provided to support youth-led start-ups for productive uses of waste and enable them to reach the investor-ready stage. According to the Annual Report on Solid Waste Management issued by the Ministry of State for Environmental Affairs in 2013 *(14)*, Egypt, in 2012, generated 21 million tonnes of municipal solid waste (accounting for 24% of the entire waste generated), 30 million tonnes of agricultural waste (34%), 4 million tonnes of construction and demolition waste (4%), 6 million tonnes of industrial waste (7%), 0.28 million tonnes of hazardous and medical waste (0.3%) and 3 million tonnes of sludge (3.4%). Agricultural waste constitutes the largest source of waste generated in Egypt. Agricultural waste management has untapped potential to create jobs in rural and marginalized communities.

Following the dissemination of the results of the mapping of business opportunities in waste management in the target governorates, the project received 60 proposals for youth-led waste management start-ups. Based on socioeconomic parameters, including social and economic impact, community involvement, potential for job creation, innovation, business feasibility and skills required, 15 proposals were selected to receive technical training (covering supply chain, marketing, business plan and modelling, feasibility and technology) to address young entrepreneurs' biggest weaknesses, namely technical and know-how, managerial and business, and marketing aspects. After the training, the new and existing start-ups (conversion of agricultural waste into animal feed and compost; recycling of crushed glass; biogas; and wood panels from date palm midribs) received further technical assistance focusing on validating information, finalizing technology issues, in-depth financial analysis and planning, consolidating the business plans and mobilizing investors, through both streamed generic support and one-on-one assistance tuned to the needs of each start-up. Moreover, since the project's early stages, the project has facilitated active engagement with local supporting institutions (non-profit, private sector corporate social responsibility, business associations) to provide young entrepreneurs with advice, guidance, and technical and financial assistance, and strengthen the entrepreneurship ecosystem. Leveraging and building the capacity of local supporting institutions, whether public or private, profit or non-profit, allows for sustainability of project interventions beyond the project life.

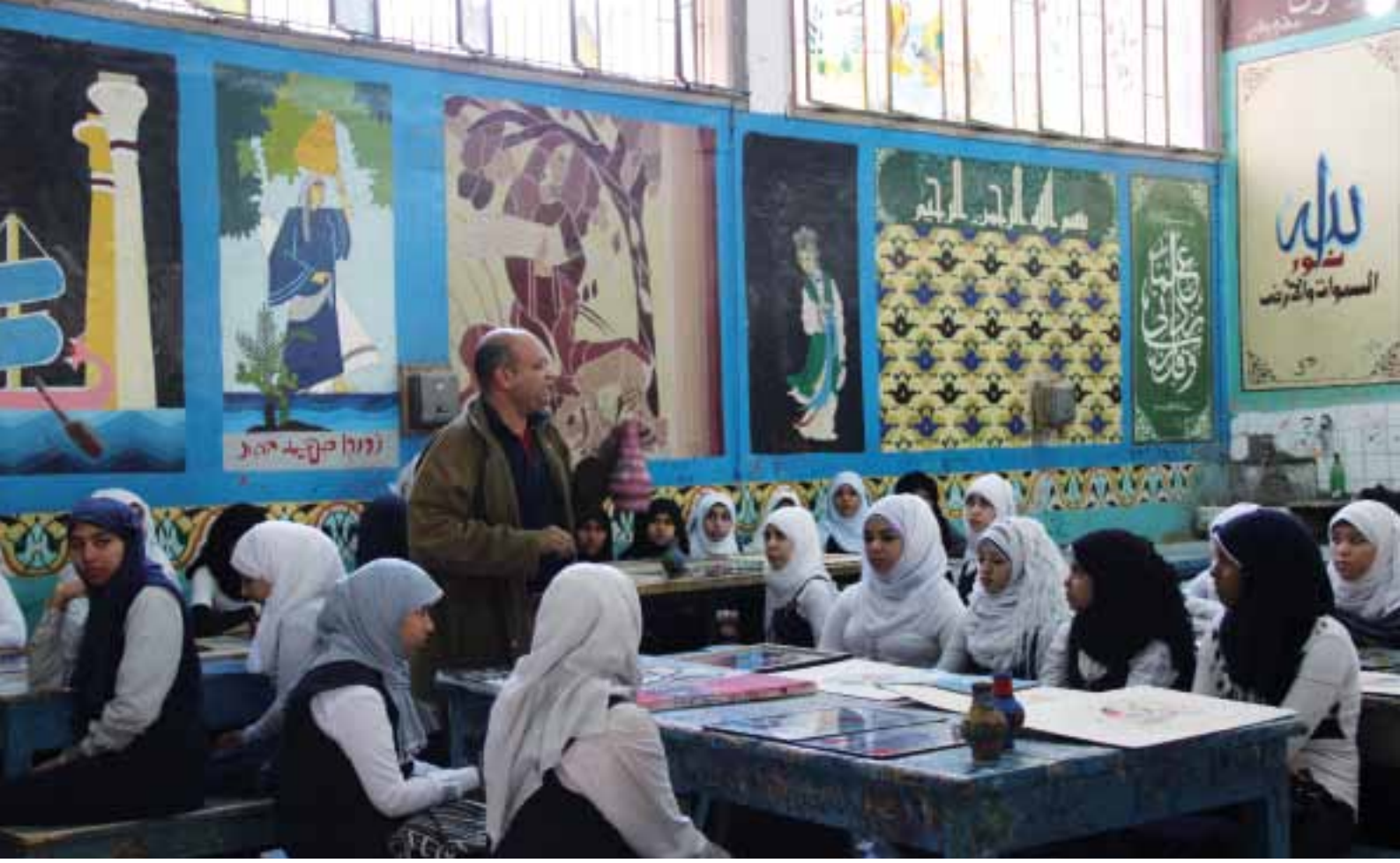
Linkages with financing opportunities have been established and partnerships with the private sector initiated to provide start-up funding to youth-led businesses. Private investment companies have positively reacted and invested together with youths in ventures such as conversion of agricultural waste into compost (organic fertilizer) and animal feed, animal waste into biogas for fertilizers and heat energy, and waste glass into powder for glass and ceramic industries.

Building on this experience, an implementation guide for support programmes to youths in waste management and policy recommendations to promote youth entrepreneurship in waste management (with regard to market development, finance, human capability development, consultancy, outreach and awareness, legal and regulatory aspects, networking and exposure) are being developed and will be disseminated to relevant stakeholders in the entrepreneurship ecosystem.

As part of UNIDO's efforts worldwide to foster an entrepreneurship culture among youths to increase their employability or prepare them for self-employment, the project, in partnership and coordination with the Qena Governor's Office, the Directorate of Education and the then Ministry of Education – TVET (Technical and Vocational Education and Training) Department, introduced industrial entrepreneurship development training in 11 TVET secondary schools (industrial, agricultural and commercial) in the governorate of Qena. More than 100 teachers from the technical schools in Qena now have the capacity to teach entrepreneurship skills, and more than 2000 senior students have been trained on the concept of entrepreneurship, work and life skills, environmental scanning and business opportunity identification.

Both teachers and students reported to be satisfied with the introduction of the new training. Teachers reported that the training even brought back to school a number of students interested in the innovative, participatory and concrete approach proposed in the new curriculum: they learned about concrete options and ideas for future employment and self-employment, and how to enhance their self-confidence, manage their time, solve conflicts in the workplace, develop a positive attitude towards business and work, and transform their thinking from jobseekers to job creators.

Building on the positive experience of the above-mentioned pilot, UNIDO is engaged in consultation with the newly appointed Minister of State for Technical Education and Training to



gradually introduce the entrepreneurship training to a wider number of educational institutions with a view to a potential nationwide roll-out of the entrepreneurship curriculum in the education system.

2.5 INTERREGIONAL PROJECT TO PROMOTE SME ORIGIN AND EXPORT CONSORTIA

Project background and rationale

For many SMEs exporting is often a complex business involving high risks and costs. One effective way of entering export markets is through the development of export consortia or voluntary alliances of firms with the objective of promoting the export of goods and services through joint actions. Export consortia help individual SMEs to pool together their financial and human resources and other factors of production to achieve economies of scale and better reach competitive and shifting global markets through clear common export targets (for example selected market or distribution channels and trade fairs).

Project objectives

UN implementing agency:	UNIDO
National implementing partner:	Ministry of Trade and Industry
Donor:	Government of Italy
Budget:	1 000 000 euros
Duration:	2012–2015
Governorate:	All over Egypt

UNIDO has developed an interregional project to support the creation of SME consortia in the North African and Latin American regions, choosing four target countries – Egypt, Morocco, Peru and Ecuador. The project component implemented in Egypt aims to improve the economic and social performance of origin and export consortia member companies. To this end, UNIDO intends to (a) build the capacity of national public and private support institutions in the country to promote, on a regular basis, the creation and development of origin and export consortia; and (b)

foster information exchanges and dissemination of best practices on export consortia among local and regional institutions.

TIn this context, technical assistance and support programmes are carried out in Egypt in collaboration with export councils (Food Export Council, Engineering Export Council, Furniture Export Council, Home Textiles Export Council), technology centres and other specialized national institutions, such as the Industrial Modernization Centre and the Egyptian Commercial Service, supporting SMEs and export promotion.

Project activities and achievements in Egypt

SMEs in the following sectors have been assisted to establish consortia with key activities such as trade fair participation, technical assistance and legal consultations: automotive, date palm, medicinal and aromatic plants, dairy, furniture, hospitality and textiles.

SMEs in the date palm sector were provided with technical assistance in the form of preharvest and postharvest consultations, training, and international expertise and knowledge sharing with other countries such as Morocco and the United Arab Emirates. SMEs in isolated regions such as the Siwa Oasis have been assisted to develop a new and improved brand and legally establish their first consortium. Today, SMEs in Siwa, which had at first been small unrecognized firms, have developed a new uniform brand supported by promotional material (brochure, website, stickers, business cards), participated in unison in the International Emirates Date Palm Festival in November 2014 and business-to-consumer exhibitions in Egypt, and built new clientele in Indonesia, Malaysia and Oman, and they are now drafting a common package design for export business as part of coordinated efforts involving UNIDO and Industrial Modernization Centre. Coaching activities targeting both date palm consortium members and other key date-supporting institutions are continuing. As a result of a study tour to the United Arab Emirates, exporters have now commenced establishing a national NGO for date palm services and development with the main target to improve the exports and quality of Egyptian dates.

Currently, UNIDO is working on expanding its interventions in the date palm sector in close coordination with the private sector to help build a national vision and strategy for developing and promoting the sector in Egypt and abroad. This initiative also involves other key stakeholders such as NGOs, public institutions, ministerial counterparts and other trade promotion projects.

As part of its efforts to promote the date palm sector as a vital contributor to Egypt's economic growth and attract investment – both public and private, foreign and domestic – UNIDO is cooperating with the Ministry of Trade and Industry and the Khalifa International Date Palm Award in the United Arab Emirates to organize a nationwide event, the First Egyptian Date Palm Festival. The festival will constitute a unique opportunity for Egyptian producers and exporters of palm dates and their by-products to showcase their production (including through promotional tools), open up new market opportunities (including through business-to-business sessions) and engage potential investors.

Activities for the creation of export consortia are also targeting SMEs in the hospitality sector. The Hospitality Consortium has finalized its legal formalization. Business-to-business meetings with Kurdish companies and major hotel chains led to gathering in-depth market information and exploring new business opportunities. The consortium is planning other joint activities in the Middle East area. Hospitality Suppliers Group Egypt, a consortium formed in collaboration with the United States Agency for International Development (USAID) Trade Facilitation Project, participated in the Hotel Dubai show as a first joint activity, with a common booth and a consortium catalogue. Hospitality Suppliers Group Egypt is now expanding and targeting the Saudi market, and the members of the consortium have drafted a business plan for the establishment of a common showroom facility in Saudi Arabia. The consortium has started to include new partners and expand its operations.

2.6 SUPPORT TO THE DEVELOPMENT OF CULTURAL AND CREATIVE INDUSTRIES AND CLUSTERS IN THE SOUTHERN MEDITERRANEAN

Project background and rationale

UN implementing agency:	UNIDO
National implementing partner:	Ministry of Trade and Industry, Agriculture and Agro-Industries Technology Centre
Donor:	European Union, Italian Development Cooperation
Budget:	5 600 000 euros
Duration:	2014–2016
Governorate:	All over Egypt

Creative industries, as a sector largely dominated by MSMEs, have a strong potential for employment, notably for youths and women, and as well as for innovation and competitiveness, through creativity and entrepreneurship.

Every year, 5 million new jobs are needed in the southern Mediterranean region; these could be created by the region's MSMEs if they become more competitive in terms of business, environmental and social performance. Cultural and creative industries are increasingly contributing to the southern Mediterranean's socioeconomic development, and . Cultural and creativeenterprises would strongly benefit from entrepreneurial cooperation to help them realize the potential of their cultural heritage, improve products to attract consumers, access local and foreign markets, and create mutually beneficial international partnerships.

However, the development of these enterprises faces several obstacles: (a) inadequate and obsolete market access strategies; (b) insufficient focus on product diversification, quality and design (islands of excellence exist but the vast majority of products remain of the low-range type); (c) weak entrepreneurial capacities and fragmentation (many producers of very small size and limited capabilities); and (d) limited access to finance for innovation.

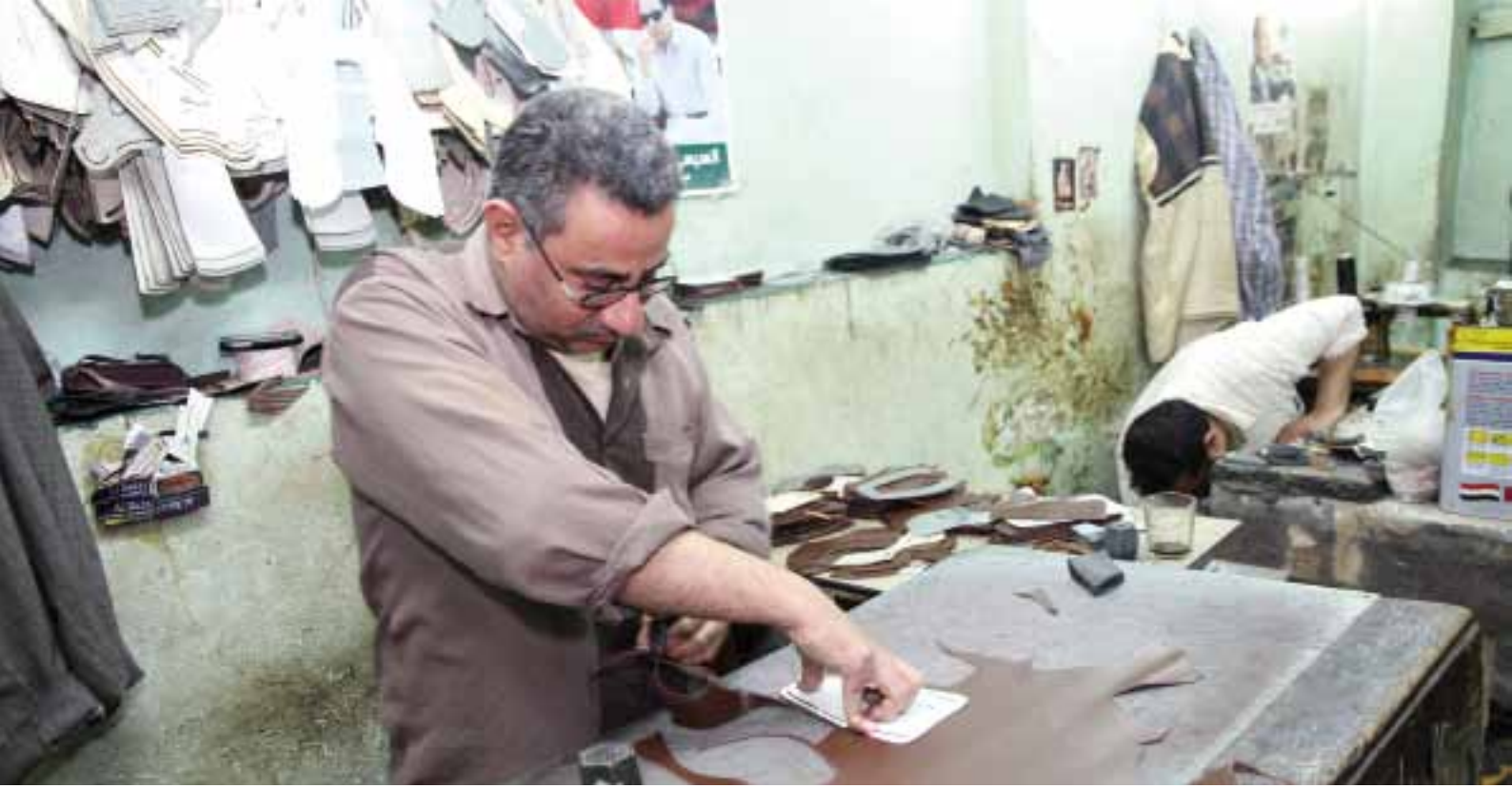
Project objectives

The new regional programme aims to consolidate business linkages and improve production techniques, in order to improve the livelihoods of local entrepreneurs and to make them more resilient to changes in consumers' tastes and to the increasing competition coming from East Asia. Doing so would create more jobs in the sector, particularly for marginalized groups, while also contributing to safeguarding an important element of Egypt's rich cultural heritage.

The cluster development approach will help the assisted enterprises move beyond their individual capacities, organize themselves in dynamic production networks, and develop strategic relationships with other firms and institutions to improve their competitive advantages based on economies of scale, innovation and learning.

Based on an initial cultural and creative industry cluster and value chain mapping within a transparent selection process, the project seeks to provide technical assistance to at least one cluster in each of the target countries.[2] The project will also foster information dissemination and knowledge sharing through dedicated cultural and creative industry centres as well as workshops and regional meetings that foster the exchange of best practices and success stories. Moreover, the project supports the implementation of an enhanced cultural and creative industry policy framework that is conducive to the formation of clusters, thus promoting the scaling up and replication of its technical cooperation activities for increasing employment opportunities and inclusive growth throughout the region. In addition,

2 Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine, Syria and Tunisia.



special attention will be given to the establishment of business linkages between southern Mediterranean and European Union cluster support institutions and between international buyers (retailers and manufacturers) and local suppliers towards increasing sustainable sourcing. Regional activities will also be undertaken under the auspices of the Union for the Mediterranean, which will further partner with the project as a forum and platform for information exchange and knowledge sharing.

Project activities and achievements in Egypt

Mapping of creative and cultural clusters in Egypt has been conducted. Based on the results of the mapping, two pilot clusters, of leather and habitat designers, have been selected.

A detailed diagnostic study was conducted in each of the clusters to identify business challenges and opportunities, after an analysis of each of the clusters' industries at national and global levels, through engagement of key actors and support institutions. A strategic vision specific to the clusters' challenges and potential for development was then defined, based on the analysis of key markets and purchasing criteria as well an international benchmark to enable identification of key trends and requirements. Finally, the project enabled the clusters to define a plan of action and a governance model to move forward in the implementation of their development strategy. This includes setting up working groups and will be followed by the creation of partnerships with financial and support institutions.

In addition, an analysis of the creative strengths and weaknesses of each cluster and different strategies to develop creativity and design capacity to produce marketable products was conducted by the project's designers.

2.7 PROMOTING WOMEN'S EMPOWERMENT FOR INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT IN THE MIDDLE EAST AND NORTH AFRICA REGION

Project background and rationale

The Middle East and North Africa region registers the world's highest unemployment rates. Moreover, at about 25%, the youth unemployment rate exceeds that of any other region in the world. For women, the figures are even more striking: women register an unemployment rate that is approximately double that of men, rising to almost 40% in the female youth labour force *(15)*.

UN implementing agency:	UNIDO
National implementing partner:	Ministries of Industry, and national women's business associations in the six targeted countries (see next subsection)
Donor:	Government of Italy
Budget:	950 000 euros
Duration:	2015–2016
Governorate:	All over Egypt

At the same time, women's labour force participation rates are among the lowest in the world. In fact, even though almost all Middle East and North Africa countries have closed 90% or more of the gender gap in education over the last decade, and while women in the region are now more likely than men to attend university *(16)*, only 25.2% of working-age women are part of the labour force, well below the worldwide average rate of 50% *(17)*. Not only do women in the region participate weakly in the labour force on average, but when they do, they are generally active in the public sector, partly because of the reduced wage gap compared to the private sector, and also because of the higher-level education jobs that it offers. As a result, female participation in the private sector labour force is relatively weak in a majority of Middle East and North Africa countries.

According to the World Bank Enterprise Surveys *(16)*, 12–15% or formal SMEs in the Middle East and North Africa are women owned, compared to 31–38% in emerging markets *(18)*. The weak entrepreneurial activity among women is worsened by the fact that, in absolute terms, the region suffers from a low level of enterprise creation. Data show that high-income countries register, on average, four new firms per 1000 working-age people (15–65 years), while Middle East and North Africa countries register only 0.63 new firms (ahead only of sub-Saharan Africa) *(19)*.

As part of its long-term presence in and commitment to the industrial development of several Middle East and North Africa countries, and assistance it has given in helping countries diversify their economies and consolidate the development of their private sectors, UNIDO has a deep understanding of the private sector development issue in the Middle East and North Africa region.

Project objectives

The project is seeking to enhance women's economic inclusion and thus to create the conditions for sustainable and inclusive growth by harnessing the great potential of women entrepreneurs in the Middle East and North Africa. To this end, UNIDO will offer technical assistance to women entrepreneurs in Egypt, Jordan, Lebanon, Morocco, Palestine and Tunisia through the following national women's business associations:

- Egypt: Association for Women's Total Advancement and Development
- Jordan: Business and Professional Women – Amman
- Lebanon: Lebanese Association for Development, Al Majmoua
- Morocco: Association des Femmes Chefs d'Entreprises du Maroc
- Palestine: Business Women Forum
- Tunisia: Femmes et Leadership.

The project approach is holistic, linking policy dialogue, capacity-building, investment promotion and networking, and builds on a three-level strategy: (a) it will nurture, facilitate and accompany the policy dialogue between the key stakeholders with the objective to produce a set of recommendations and action points endorsed by all parties to promote women's entrepreneurship in the region; (b) it will strengthen the capacities of national women's business associations in providing better-quality and demand-driven services to women entrepreneurs to create and grow their businesses; and (c) it will directly promote

about 200 promising women-led investments in the target countries through training, coaching, identification and facilitation of business partnership opportunities and access to finance.

As a result, it is expected that (a) public key actors will initiate a reform process, based on an inclusive dialogue with national women's business associations, to promote a more conducive environment for women's entrepreneurship; (b) the national women's business associations of the Middle East and North Africa will offer more efficient demand-driven services to support women entrepreneurs in the region on a sustainable basis; and (c) more sustainable women-led businesses are established or developed in the region.

The project will ensure, at every level, favourable conditions for networks of businesswomen. Networks in effect can provide leads on contracts, market information, logistical support and distribution channels, as well as linkages to suppliers, investors, financing and technology.

The project will then work at identifying synergies in activities, fostering the exchange of international good practices and enhancing the dialogue between European networks and women's organizations in the Middle East and North Africa region.

Project activities and achievements in Egypt

The project has been launched in Cairo with women's business associations and representatives of the banking sector and civil society to discuss and exchange experiences on the issue of women's access to finance in the region.

Three different training and workshop sessions have been provided so far: COMFAR (Computer Model for Feasibility Analysis and Reporting) trainings benefiting Egyptian women entrepreneurs and other relevant stakeholders; an investment promotion methodology workshop benefiting 10 participants among the representatives of the women's business associations and task forces; and a strategic planning workshop benefiting seven high-level selected participants from women's business associations in the Middle East and North Africa.

2.8 ENHANCE REGIONAL TRADE CAPACITIES IN FOOD THROUGH A HARMONIZED REGIONAL CONFORMITY ASSESSMENT AND FOOD SAFETY SYSTEMS

Project background and rationale

UN implementing agency:	UNIDO
National implementing partner:	Arab Industrial Development and Mining Organization (AIDMO)
Donor:	Swedish International Development Cooperation Agency (Sida)
Budget:	US$ 7 910 000
Duration:	2015–2019
Governorate:	All over Egypt

As a follow-up to a first phase successfully implemented with the Arab Industrial Development and Mining Organization (AIDMO), under which the Arab Accreditation Cooperation was established, UNIDO continues to provide technical support to accreditation and trade facilitation in the Arab region. In this second phase, the focus is on regional food safety through enhancing regional trade capacities in the food industry and food safety systems.

Project objectives

The cooperation programme involving UNIDO, AIDMO, the Swedish International Development Cooperation Agency (Sida) and the Arab League drew its mandate from a decision of the third Arab Economic and Social Development Summit, Riyadh, January 2013, stressing the need to finalize the development of standards for Arab commodities and improve the conformity as-

sessment framework and practices in the region to enhance and facilitate intraregional trade.

The project aims at contributing to the efforts of the Arab League, AIDMO and the Arab Organization for Agricultural Development to support the conclusion and implementation of the Pan-Arab Free Trade Agreement (PAFTA).

Project activities and achievements in Egypt

The UNIDO-AIDMO-Sida-Arab League cooperation programme was launched in February 2015 in the margins of the ninety-fifth Ministerial Economic and Social Council at the Arab League headquarters in Cairo, in the presence of ministers of economy, trade and industry of Arab League member States and representatives of international organizations and quality infrastructure institutions in Egypt.

In June 2015, a PAFTA regional workshop was held in Cairo with participants from the PAFTA Secretariat, representatives from the 17 PAFTA countries, the AIDMO technical team, the Arab Organization for Agricultural Development technical team and representatives from regional private sector institutions.

The objective of the workshop was to provide a broad overview of the processes, status and plan of PAFTA, the regional quality infrastructure, and trade facilitation and non-tariff measures, and to enhance the role and contribution of other organizations, such as AIDMO, the Arab Organization for Agricultural Development and the Arab League in the conclusion and implementation of PAFTA, with a focus on technical barriers to trade and sanitary and phytosanitary measures. The intended outcomes were the establishment of effective working teams at country level to act as the PAFTA task force in order to support and coordinate Arab League efforts, and the establishment of a networking platform for PAFTA members to exchange and identify issues to be addressed and to exchange experience and good practices.

3.

Energy and environment

Sustainable energy solutions are central to the achievement of broad-based growth in Egypt.

For Egypt, the priority today is to respond to the challenges posed to the industrial sector by soaring demand for energy, shortages of fuel and scarcity and unpredictable availability of resources.

UNIDO recognizes these challenges and, accordingly, provides assistance to (a) enterprises to improve their energy consumption patterns; (b) the energy production sector to move towards a low-carbon path; and (c) the Government of Egypt to strengthen national energy and environmental standards, in compliance with international standards.

3.1 INDUSTRIAL ENERGY EFFICIENCY

Project background and rationale

Scan for the project's website

UN implementing agency:	UNIDO
National implementing partner:	Egyptian Environmental Affairs Agency (EEAA)
Donor:	GEF
Budget:	US$ 3 950 000
Duration:	2013–2018
Governorate:	All over Egypt

Improving energy efficiency in industry is one of the most cost-effective measures to help supply-constrained countries meet their increasing energy demand and loosen the link between economic growth and environmental degradation.

Industrial energy efficiency represents a significant opportunity for energy savings as a way to bridge the gap between expected energy demand and supply in the country.

Industry is the most significant energy-consuming sector in Egypt: it contributes to about 43% of end-use energy consumption. Energy-intensive sectors are responsible for a major part of that consumption.

Aware of the importance of developing an energy efficiency strategy to face the country's development challenges, UNIDO is working on the Industrial Energy Efficiency (IEE) project together with the Ministry of Environment, represented by the Egyptian Environmental Affairs Agency (EEAA) as the main counterpart and in full partnership with the Industrial Modernization Centre, the Industrial Development Authority, the Egyptian Organization for Standardization and the Federation of Egyptian Industries.

Project objectives

The project is aiming at annual energy savings of 1277 gigawatt-hours and corresponding GHG emission reduction of 2.9 million tonnes CO_2e annually.

The emissions from Egyptian industries primarily entail CO_2, with the largest contributors being the cement and iron and steel production sectors. The cement industry is responsible for 17 million tonnes of CO_2 emissions per year, amounting to about 62% of the total GHG emissions from the industrial sector. In addition, the fertilizer industry has grown rapidly, with a significant impact on GHG emissions in Egypt. The fertilizer industry is responsible for 5 million tonnes of CO_2 emissions per year, equivalent to about 20% of the total emissions of the sector.

The project seeks to address some of the key barriers to industrial energy efficiency, to deliver measurable results and to make an impact on how Egyptian industries manage energy. Main identified barriers include (a) lack of energy intensity benchmarking for policy formulation; (b) perception by corporate decision-makers and managers of high risks associated with energy efficiency projects because of their alleged high capital requirements; (c) lack of awareness of the potential of energy efficiency in long-term cost reduction; and (d) lack of familiarity with the range of energy-efficient technologies and processes to design, evaluate and implement energy efficiency management and optimization.

Primary target groups of the project are industrial decision-makers (managers), engineers, vendors and other professionals, and IEE policy-making or implementing institutions.

Project activities and achievements

The IEE project works on both the supply (energy management and energy efficiency experts) and demand (industrial facilities) sides of the market by developing and helping to establish market-oriented policy instruments, and by stimulating the creation of a market for industrial energy-efficient products and services, in order to ensure sustainability of energy efficiency improvement efforts after project closure. UNIDO's assistance is directed towards the development of a national programme to implement the International Organization for Standardization (ISO) energy management standard (ISO 50001), which supports organizations to use energy more efficiently through the development of an energy management system (EnMS), providing companies with a management structure and process for continuously improving operational energy efficiency. This management structure is meant to organize and efficiently manage the purchase and use of energy, energy-consuming equipment and systems in order to reduce operating and energy costs and energy-related GHG emissions, and foster environmental performance.

In this respect, training on EnMS is being undertaken, targeting local experts so as to stimulate the creation of a market for energy-efficient products and services. The training, involving industry representatives from facilities belonging to the cement, metallurgy, ceramics, paper, chemicals and fertilizer sectors, as well as governmental agency personnel, aims to create a cadre of specialized energy management experts and enable them to implement EnMS in their factories. The IEE project has exceeded the targeted number of local trained personnel, reaching up to 400 beneficiaries. The project has started the training for industrial representatives on motor system optimization and will undertake practical training in one of the industrial facilities before the end of 2015.

In all, 37 companies are currently receiving technical support for EnMS implementation compliant with ISO 50001 from national experts with the support of international experts, both remotely and on site. The companies are achieving considerable energy savings through no-cost or low-cost measures. Two companies, namely SIDPEC and EZDK, have received ISO 50001 certificates. SIDPEC has experienced multiple benefits beyond pure energy cost savings, including increased productivity and competitiveness, reduced exposure to volatile energy prices and greater reliability of operations. SIDPEC was honoured by UNIDO at the Vienna Energy Forum 2015 as one of the best practitioners of EnMS.

Building on the experience and knowledge gained by SIDPEC and EZDK in EnMS implementation, the IEE project created two peer-to-peer networks led by the above-mentioned companies aimed at spreading the knowledge gained to local staff members. SIDPEC is currently training six petrochemical companies and implementing EnMS in those companies under the guidance of the Egyptian Petrochemicals Holding Company (ECHEM). EZDK will soon start the creation of the peer network in order to disseminate knowledge on EnMS among iron and steel companies.

The project is currently supporting the Government of Egypt's efforts to close the gap between expected energy demand and supply in the country by adopting sound energy polices. These efforts are

led by the Ministry of Trade and Industry and the Ministry of Environment. Supportive policy instruments for delivering energy efficiency in industry and contributing to international competitiveness currently being applied or developed include the International Performance Measurement and Verification Protocol, an industrial energy database, energy consumption benchmarks, EnMS and an industrial energy efficiency policy. Benchmarking analysis for three sectors – cement, fertilizers and iron and steel – has been put in place so as to enable decision-makers to develop sector plans. Benchmarking analysis for a fourth sector – ceramics – is currently being undertaken by national organizations, namely the Industrial Development Authority and the Egypt National Cleaner Production Centre. The benchmarking studies are expected to guide decision-makers when adopting new policies on industrial energy efficiency, playing a critical role in the development of sectoral roadmaps for improved energy efficiency in related sectors. The baseline assessment and strategic framework have been formulated and presented to the Cabinet of Ministers. UNIDO will provide further support on the development of a set of policy documents to be presented to the Cabinet of Ministers by the end of 2015.

The project closely coordinates IEE policy development with the Energy Efficiency Unit in the Information and Decision Support Centre and the Ministry of Trade and Industry.

A national campaign to build awareness on the benefits of EnMS and system optimization in industries was launched by the Minister of

Environment and the Industrial Development Authority in May 2015. A series of awareness sessions is being held in close cooperation with governmental partners, such as the Industrial Modernization Centre, reaching out to the maximum number of industrial companies through provision of the sessions in the industrial cities (Sadat City, Borg El-Arab and Obour City). An information unit was established and is currently answering inquiries about energy efficiency concepts for the industrial sector. A coaching session for governmental partners was provided in order to improve the communication channels between the government, media and public. Promotional material and documentaries are currently being developed and will be disseminated to the industrial sector to raise awareness on energy efficiency concepts and the importance of EnMS application.

The IEE project has worked on reviewing and mapping available financing schemes from different financing sources and organizations, listing all possible financing sources for IEE projects, along with the criteria for applications and the fund ceiling. The IEE project is currently working on linking industrial enterprises to funding agencies, such as the European Bank for Reconstruction and Development, through Egypt SEEF (soft loan programme) in order to use the existing fund to finance the companies that have identified investment opportunities and are willing to receive loans.

3.2 MONTREAL PROTOCOL PROJECTS

Project background and rationale

Since 1993, UNIDO has been assisting the Government of Egypt, through EEAA, to comply with its commitments as a signatory party to the Montreal Protocol, carrying out projects that aim to phase out ozone-depleting substances in industry, agriculture, the refrigeration sector and the air-conditioning sector.

The main objective of the Montreal Protocol is to protect the ozone layer by phasing out the global production and consumption of ozone-depleting substances. During that process, efforts should be made to facilitate a smooth and sustainable transition from ozone-depleting to non-ozone-depleting substances and technologies without creating local market distortions or increasing social costs resulting from phase-out costs being passed to the consumer.

Ozone-depleting substances, gases that damage the ozone layer, have been employed in a wide range of industrial and consumer applications, for example refrigerators, air-conditioners, fire extinguishers and crop fumigation, and as aerosol propellants, solvents and blowing agents for insulation foams.

All ozone-depleting substances are halogenated organic compounds, including chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and other groups such as bromides.

UNIDO designs the projects and programmes closely with the Government of Egypt and the target beneficiaries to find the best alternatives to ozone-depleting substances.

Project objectives

To achieve the objective of phasing out ozone-depleting substances by replacing chemical substances and equipment in uses that contribute to ozone layer depletion, a planned and coordinated approach must be undertaken. UNIDO has been promoting Montreal Protocol projects by providing assistance to build the capacity of the National Ozone Layer Protection Unit in EEAA to implement and comply with the requirements of the Montreal Protocol. Additionally, UNIDO provides technical support and technology transfer to the industries through investment projects and national phase-out management plans.

Project activities and achievements

In recent years, with UNIDO's assistance, Egypt has managed to phase out halons, carbon tet-

rachloride, methyl chloroform, almost all methyl bromide, and almost all CFCs:

- phase-out of remaining CFCs, air-conditioning and refrigeration servicing subsector (834 ODP-tonnes),[3] and almost all of meter-dosed inhalers (169 ODP-tonnes), and chillers;

- phase-out of most of the 184.2 ODP-tonnes of methyl bromide in the horticulture and commodities sector in Egypt.

A strategy for the HCFC phase-out management plan has been developed by UNIDO in collaboration with the Government of Egypt to achieve the total phase-out of HCFC production and consumption. The first control measure of the Montreal Protocol, which is to freeze HCFC consumption at baseline level, was met by Egypt in 2013. The next target for HCFC phase-out management plans is a 10% consumption reduction, to be met by 2015.

A number of investment projects are currently being implemented by UNIDO and the United Nations Development Programme (UNDP) for the foam sector and the related phase-out of HCFC consumption, where UNIDO, as the lead agency, will target the appliance foam applications, while UNDP, as supporting agency, will implement the HCFC phase-out in the non-appliance foam applications. In this regard, Egypt has managed to phase out 10 ODP-tonnes of HCFC-141b with UNIDO's assistance. UNIDO is also conducting a number of enabling activities in the refrigeration and air-conditioning sector.

These projects have also resulted in increased competitiveness of Egyptian enterprises in domestic and international markets, not only by replacing their chemical substances and equipment in use but by also adjusting their production processes to changing market requirements. This has also had a positive effect on safeguarding existing jobs that would otherwise be endangered if companies had to stop production lines no longer admitted by international protocols.

UNIDO will continue to lead the implementation of Montreal Protocol programmes and will prepare the second-stage Country Strategy for Egypt (2015–2020), in collaboration with the Government of Egypt.

Next activities include the implementation of the pilot project EGYPRA in cooperation with the United Nations Environment Programme (UNEP), and preparation for the second stage of HCFC phase-out management plans, aiming at promoting low global warming potential refrigerants for the air-conditioning sector in Egypt.

Montreal Protocol projects implemented in Egypt by UNIDO include the following.

Strategic demonstration project for accelerated conversion of CFC chillers in six African countries (Cameroon, Egypt, Namibia, Nigeria, Senegal and Sudan)

UN implementing agency:	UNIDO
National implementing partner:	EEAA, National Ozone Layer Protection Unit
Donors:	Multilateral Fund for the Implementation of the Montreal Protocol, GEF
Budget:	US$ 1 000 000
Duration:	2008–2014
Governorate:	All over Egypt

The project involves replacement of 20 CFC-based chillers with HFC chillers in hospitals and private buildings. The demonstration project is developing public-private partnerships to (a) coordinate inputs from engineering facilities and energy contracting providers, investors, financial institutions, government and private sector stakeholders; and (b) enable stakeholders to identify additional financial, technical and regu-

3 ODP = ozone depletion potential.

latory incentives in order to remove local barriers to investment in chillers.

Phase-out of CFC consumption in the manufacture of aerosol metered-dose inhalers (MDIs)

UN implementing agency:	UNIDO
National implementing partner:	EEAA, National Ozone Layer Protection Unit
Donor:	Multilateral Fund for the Implementation of the Montreal Protocol
Budget:	US$ 5 899 000
Duration:	2011–2015
Governorate:	All over Egypt

Metered-dose inhalers (MDIs) are one of the main treatments for asthma and chronic obstructive pulmonary disease. MDIs use a chemical propellant to push medication out of the inhalers. For decades CFCs were the most suitable propellant for use in MDIs.

By adjusting their production processes to changing market requirements, UNIDO has allowed the Arab Drug Company and Egyptian International Pharmaceutical Industries Company, the only two manufacturers of aerosol MDIs in Egypt, to phase out 163.1 ODP-tonnes supporting the manufacture of MDIs, while being able to actively compete in the local market.

The project intervention supported the necessary technology transfer process to allow the target companies to shift their production lines to CFC-free MDIs, and created awareness among physicians and pharmacists on the benefits of the new products, thereby contributing to the transition to ozone-safe MDIs.

According to the manufacturers, the new product has been efficiently absorbed by the market. Moreover, the UNIDO intervention is reported to have contributed to safeguarding existing jobs in the targeted company.

National CFC phase-out plan for Egypt

UN implementing agency:	UNIDO
National implementing partner:	EEAA, National Ozone Layer Protection Unit
Donor:	Multilateral Fund for the Implementation of the Montreal Protocol
Budget:	US$ 900 000
Duration:	2010–2014
Governorate:	All over Egypt

Investment projects have been developed to retrofit the Egyptian National Railway air-conditioning units (125 carriages) with ozone-friendly refrigerants.

Phase-out of HCFC-141b from the manufacture of polyurethane foam

UN implementing agency:	UNIDO
National implementing partner:	EEAA, National Ozone Layer Protection Unit
Donor:	Multilateral Fund for the Implementation of the Montreal Protocol
Budget:	US$ 1 440 498
Duration:	2011–2015
Governorate:	All over Egypt

The projects aim to phase out the consumption of HCFC-141b used in the manufacture of polyurethane rigid foams in the production of domestic freezers at El Araby Co. for Engineering Industries, Mondial Freezers Company and Kiriazi Refrigerators Factory Company, and to manage the transition from HCFC-based foams to HCFC-

and HFC-free products by applying cyclopentane technology.

HCFC phase-out management plan: enabling activities in the refrigeration and air-conditioning sector

UN implementing agency:	UNIDO
National implementing partner:	EEAA, National Ozone Layer Protection Unit
Donor:	Multilateral Fund for the Implementation of the Montreal Protocol
Budget:	US$ 250 000
Duration:	2013–2018
Governorate:	All over Egypt

The project contributes to phase out of HCFC-22 by establishing and upgrading good practices in recovery and recycling, and includes a retrofit demo project for use of R290 in the air-conditioning sector.

National phase-out of methyl bromide in horticulture and commodity fumigation

UN implementing agency:	UNIDO
National implementing partner:	EEAA, National Ozone Layer Protection Unit
Donor:	Multilateral Fund for the Implementation of the Montreal Protocol
Budget:	US$ 1 934 994
Duration:	2011–2015
Governorate:	All over Egypt

In agriculture methyl bromide is primarily used for soil fumigation, as well as for commodity and quarantine treatment (postharvest protection treatment) in the control of pests and diseases.

The project has succeeded in phasing out methyl bromide by replacing it with chemical and non-chemical alternative technologies (such as grafting, metham-sodium, soil solarization and biofumigation) in the targeted eight large exporting companies and hundreds of small farmers, by providing them with capacity-building with regard to new technologies as well as financial assistance.

These measures contribute to better and safer development of the food processing industry through the use of healthier raw materials and give the industry the opportunity to become more competitive by employing green sustainable methods and yielding higher-quality products.

Grafting of horticultural crops, one of the alternatives promoted, has brought economic benefits to the companies. The companies with the largest consumption of methyl bromide were given the chance to co-finance grafting units, while in addi-

tion receiving extensive training and technology transfer to allow them to graft horticultural crops. The introduction of grafting has also resulted in an increased number of women employed by the targeted companies.

Technical assistance on commodity fumigation has been provided to the Principal Bank for Development and Agricultural Credit, which is responsible for the Egyptian Holding Company for Silos and Storage.

Technical assistance on alternatives to methyl bromide in the palm date sector

UN implementing agency:	UNIDO
National implementing partner:	EEAA, National Ozone Layer Protection Unit
Donor:	Multilateral Fund for the Implementation of the Montreal Protocol
Budget:	US$ 302 254
Duration:	2015–2016
Governorate:	All over Egypt

Egypt was supposed to phase out methyl bromide in fumigation of low- and high-moisture dates by the end of 2014. However, as finding alternatives to methyl bromide in high-moisture dates fumigation has proved to be a long process, Egyptian date processors are using such alternatives with insufficient knowledge of the new technologies and with evident risks of creating insect resistance as well as for the safety of workers.

The objective of this technical assistance project is to train date fumigators and processors on good fumigation practices using phosphine tablets and mixtures of phosphine gas and CO_2. The training process will also put special emphasis on the safety of workers with the installation of phosphine meters in the fumigation chambers and in the surrounding environment.

3.3 UTILIZING SOLAR ENERGY FOR INDUSTRIAL PROCESS HEAT IN EGYPTIAN INDUSTRY

Project background and rationale

UN implementing agency:	UNIDO
National implementing partner:	Ministry of Trade and Industry, New and Renewable Energy Authority
Donor:	GEF
Budget:	US$ 6 500 000
Duration:	60 months
Governorate:	All over Egypt

EIndustry is the most significant energy-consuming sector in Egypt: it contributes to about 43% of end-use energy consumption. The sector is expected to further grow due to high demand and rapid expansion of industrial production. Other users, including the commercial sector (for example hotels, offices and shopping malls) and residential buildings are also growing rapidly and consuming more and more energy, particularly for air-conditioning and water heating. Industrial processes, large buildings and tourism facilities are typical major users of electricity for air-conditioning and heating purposes.

The project is in line with most of the goals of the Ministry of Electricity and Energy, specifically, to optimize the use of available energy sources and minimize environmental pollution, expand the utilization of new and renewable energy resources (up to 20% of Egyptian electricity supply in 2020), and restructure the electricity sector to optimize investments and improve electrical services. Moreover, in early July 2014, the Government of Egypt announced an increase in electricity prices under a plan to eliminate power subsidies within five years. Electricity prices are set to double over five years. The plan foresees a larger increase for the industrial sector, which will trigger industries to be more and more interested in energy efficiency and renewable energy projects.

After examining the global potential and comparing it to the potential in the various sectors in Egypt, the following sectors were selected to be the focus sectors for the project: textile, food and chemicals.

Project objectives

The project focuses on improvement of the energy efficiency of industrial process heat systems and introduction of solar thermal technologies, mainly in industrial companies with a high fraction of low- and medium-temperature heat demand in the food, chemicals and textile sectors. Further, the project will support the local manufacture of quality components for solar systems, thus facilitating a comprehensive market transformation towards increased diffusion of solar energy technologies manufactured in Egypt.

The project will promote heat system optimization measures in selected sectors complemented with the installation of solar thermal technologies through a combination of technical assistance and investment activities, including (a) supporting the policy and institutional framework for the dissemination of solar thermal technologies while promoting the local manufacture of system components; (b) implementing demonstration projects in pilot sites coupled with establishing a financial mechanism that supports the financing of future projects; (c) supporting the local manufacture of quality systems and components; and (d) building national capacity for system design, installation, servicing and maintenance.

The interventions will result in considerable global environmental benefits in terms of the GHG emission reductions that will be achieved through a substantial reduction in fuel and electricity consumption by implementing energy efficiency measures in 100 enterprises and switching from fossil fuels to solar thermal energy. Moreover, the development of a local manufacturing sector for solar thermal technologies will create new employment opportunities and increase the competitiveness of solar thermal applications in the Egyptian market.

The project document was signed in April 2015 and the project management unit is currently being set up. A number of preparatory activities are currently under way, namely the assessment of the potential of solar thermal systems in the target industrial sectors and the financial set-up for provision of funding to implement demonstration projects using solar thermal systems.

3.4 LOW-CARBON AND CLIMATE-RESILIENT INDUSTRIAL DEVELOPMENT IN EGYPT, KENYA, SENEGAL AND SOUTH AFRICA

Project background and rationale

UN implementing agency:	UNIDO
National implementing partner:	Ministry of Trade and Industry, Egypt National Cleaner Production Centre
Donor:	Government of Japan
Budget:	1 500 000 euros
Duration:	2014–2016
Governorate:	All over Egypt

There is growing recognition that a new and sustainable model of economic growth is urgently required, responding to increasing scarcity of water, fuels and other materials. At the centre of this new growth model is the need to decouple economic growth and revenues from excessive pollution and increasing resource consumption.

UNIDO recognizes these challenges and responds with initiatives, such as the Green Industry Initiative, aiming to overcome obstacles that hinder the country path towards climate-resilient and low-carbon industrial development, hence contributing to the reduction of GHG emissions.

This can be achieved by implementing cleaner, more efficient energy technologies and the sustainable management of natural resources in the manufacturing process.

Green industry is simply defined as industrial production that does not come at the expense of the health of natural systems or lead to adverse human health outcomes. It aims to mainstream environmental, climate and social considerations into the operations of enterprises. The Green Industry Initiative aims at scaling up and mainstreaming proven methods and practices for reducing pollution and resource consumption in all sectors – greening of existing industries – and expanding the supply of innovative, affordable and reliable environmental goods and services – creating new green industries.

Egypt's vulnerability to the impacts of climate change puts its manufacturing and associated sectors at risk. Current and future changes in climatic conditions may jeopardize Egypt's development gains and efforts for poverty reduction and sustainable and inclusive growth.

Egypt's industrial sector has a crucial role as driver of socioeconomic development, but it is still a major energy consumer and a major cause of pollution. Greening the industrial sector is, therefore, key to Egypt's green transformation and sustainable industrial development.

Project objectives

The regional project "Low-carbon and climate-resilient industrial development", funded by the Government of Japan and implemented by the Egypt National Cleaner Production Centre, assures UNIDO's continued contribution to cleaner and more competitive industrial development in Egypt, as well as in Kenya, Senegal and South Africa.

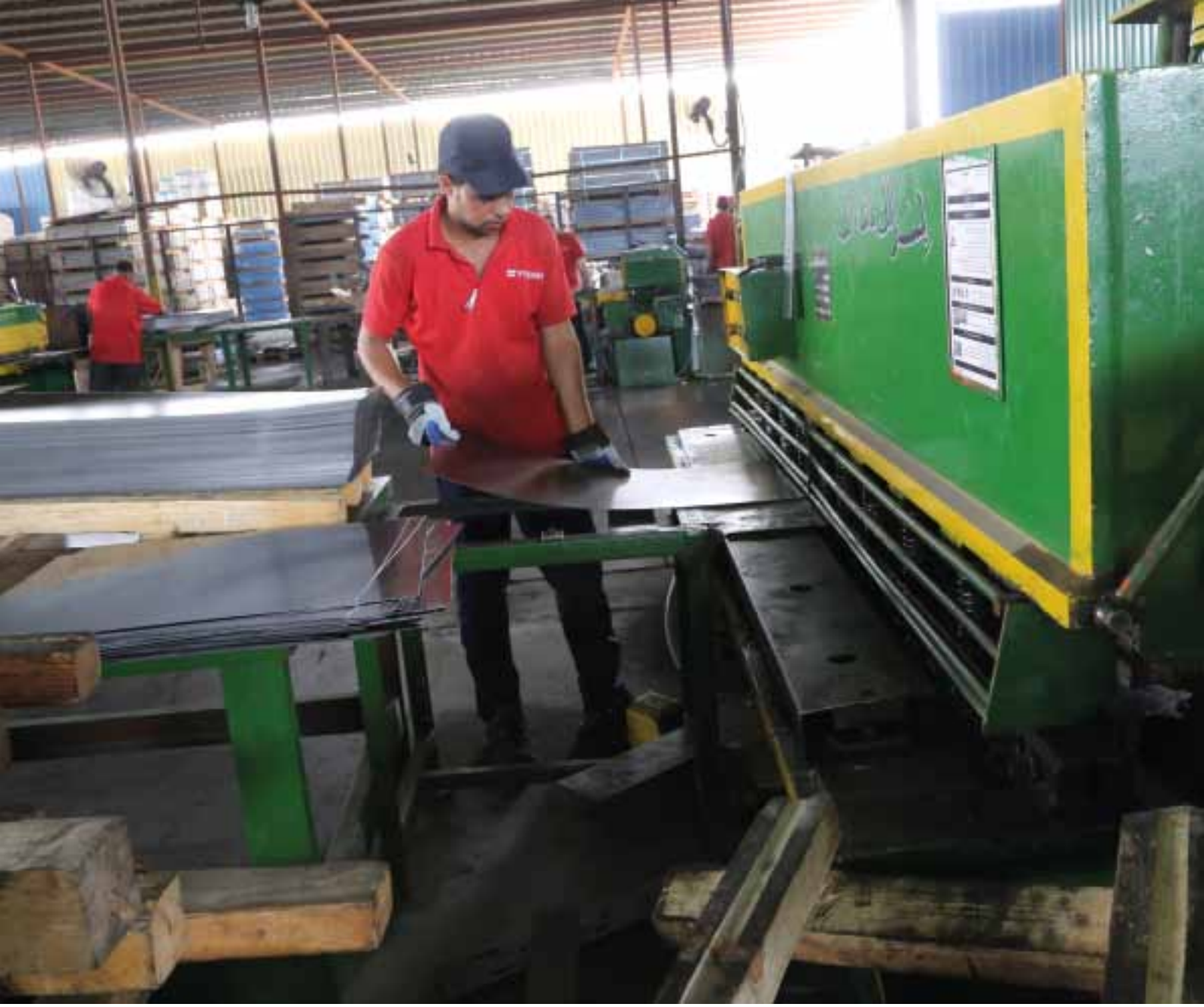
The project intends to apply green industry policy instruments, practices and techniques by encouraging the more efficient use of energy and raw materials in manufacturing processes, with a focus on the following subsectors: (a) fruit and vegetable processing; (b) meat and poultry processing; and (c) wastewater and sludge treatment. The target subsectors were identified in close consultation with the Ministry of Trade and Industry, so as to ensure maximum relevance to the country in terms of development contribution, emission reductions, climate resilience and environmental protection.

Both the public and private sector are expected to be actively involved to advance implementation of green industry interventions, create awareness and exchange best practices in low-carbon and climate-resilient development in Egyptian industry. Moreover, the project intends to advance South-South and triangular cooperation as complementary solutions to more traditional forms of North-South and multistakeholder industrial cooperation.

Activities envisaged by the new programme include three main steps:

- government actions, which include national assessment, consultation workshops and green industry action plans, with the aim of implementing green industry methods, instruments and techniques for realization of the government's mitigation and adaptation goals;
- policy pilots, which include value chain assessment, needs and opportunity assessment, and pilot projects to assess technology needs and opportunities for reduced carbon intensity and climate vulnerability in the target sectors;
- new public-private partnership between targeted countries and Japan for awareness raising, technology identification and exchange of best practices in low-carbon and climate-resilient development in industry.

As a basis for the implementation of green industry policy instruments, practices and techniques, three vulnerability assessments mapping the identified target sectors and identifying the obstacles and challenges at value chain level in adopting low-carbon technologies, as well as policy gaps, have been developed.



3.5 SWITCH-MED: DEMONSTRATION AND NETWORKING INITIATIVE

Project background and rationale

Governments and the private sector need to consider that environmentally sound industrialization, through transfer of technology and know-how, is one of the successful factors for inclusive and sustainable industrial development. Industrial operations often rely on inefficient technologies and wasteful use of energy, water and other resources, thus increasing production costs and depleting scarce resources. Many industries use more materials and energy than their production processes would require, due to the continued use of obsolete and inefficient technologies and methodologies. Current consumption and production patterns are unsustainable, because they do no allow today's resources needs to be met without compromising the ability of future generations to meet theirs.

UN implementing agency:	UNIDO, UNEP
National implementing partner:	EEAA, Egypt National Cleaner Production Centre
Donor:	European Union
Regional budget:	7 000 000 euros
Duration:	2014–2017
Governorate:	All over Egypt

Launched in 2009 and supported by GEF and the Government of Italy to address priority hot spots of industrial pollution in the Alexandria region, the MED TEST (Transfer of Environmentally Sound Technologies) project supported the participating companies in applying sustainable consumption and production practices and identifying opportunities for water and energy savings and biological oxygen demand (BOD) and chemical oxygen demand (COD) reductions.

The project promoted the transfer of environmentally sound technologies through an integrated approach combining resource efficiency and cleaner production, environmental management systems, and environmental management accounting as part of corporate social responsibility. By implementing or upgrading environmental management systems, companies were supported in fully integrating resource efficiency into company policy, action plans and internal procedures, thereby improving their compliance with environmental regulations.

Due to the high interest in replicating and scaling up this programme at the national and regional level, the European Union agreed to finance a new initiative in 10 countries in the Mediterranean region: Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria and Tunisia. The new project aims at providing assistance to additional companies and training of national institutions, service providers and local professionals to become TEST providers, thereby promoting green entrepreneurship and empowering them as key drivers of sustainable consumption and production practices.

Project objective

The geographical coverage of the project's activities has been extended beyond the Mediterranean Sea coastal area; this is particularly relevant for Egypt, since the largest share of its industrial base is not directly affecting the Mediterranean Sea. The number of industry demonstrations will be increased and manufacturing sector coverage extended so as to broaden skills, disseminate best practices on resource efficiency and mainstream sustainable products and services in the market.

The actual demand for resource-efficient services by Egyptian industries is very low, due to lack of awareness within the industrial sector of the potential economic benefits that can be achieved by introducing resource-efficient and cleaner production. Nevertheless the industry demand is expected to grow, driven for example by the rise in prices for energy and water. The price for water increased from US$ 0.3 per cubic metre in 2012 to approximately US$ 0.6 per cubic metre in 2015, while electricity rose in price from US$ 0.08 per kilowatt-hour to US$ 0.09, and gas from US$ 0.007 per therm to US$ 0.07 over the same period. Energy prices will continue to rise in the coming years; for instance, electricity costs will go up to US$ 0.18 per kilowatt-hour by 2017.

Project activities and achievements in Egypt

The second phase of MED TEST commenced in Cairo in June 2015 with the participation of the national focal points from the Ministry of Trade and Industry, the Ministry of Environment, the Egypt National Cleaner Production Centre, and relevant stakeholders, such as the Federation of Egyptian Industries Environmental Compliance Office, the Industrial Modernization Centre, the Food Chamber of Industry, the Social Fund for Development and service providers.

In the implementation of demonstration projects priority will be given to private companies that have not already participated in similar projects and that are not yet committed to improving their sustainability performance.

The selection of new service providers to be trained on the job in MED TEST II will build on the experience of the ongoing UNIDO IEE project. In order to ensure the development of the local

market for the transfer of environmentally sound technologies and resource-efficient and cleaner production services, the selected service providers will include a mix of both large consulting companies with varied areas of expertise and a good portfolio of industrial clients, and smaller consulting companies already providing services for which there is a current market demand, such as energy efficiency, productivity, lean manufacturing and environmental management systems, and waste management.

A pool of 11 national experts was trained on each step of TEST methodology, through feedbacks on the new structure of the TEST guidelines and lessons learned from MED TEST I.

In the development of resource-efficient and cleaner production policy instruments, ownership of the Ministry of Trade and Industry will be ensured from the early stages of project implementation as well as engagement of key stakeholders through one-to-one consultation meetings.

4.

Future areas of support

In its effort to promote broader economic and social growth within an environmentally sustainable framework, UNIDO will continue to support Egypt's development plans and efforts for poverty eradication, inclusive local economic development, decent and durable employment opportunities, encouraging productive activities and sustainable solutions for green industries, and ultimately supporting Egypt in moving forward on the industrial development path.

4.1 INDUSTRIAL POLICY AND STRATEGY

Aware of the urgency to have a comprehensive and integrated framework to support the industrial sector, the Government of Egypt requested UNIDO support in the development of an industrial policy and strategy.

UNIDO is supporting, and will continue to do so, the formulation of Egypt's industrial policies by sharing international industry-related knowledge and providing technical expertise. Upon the request of the Government of Egypt, UNIDO provides methodological tools to build data and analytical capabilities to assess industrial performance, identify industrial sectors with competitive potential, benchmark industrial competitiveness at the macro and sector levels, and formulate an effective industrial development strategy and vision.

UNIDO's recently developed "Roadmap for the development of an industrial strategy for Egypt: unlocking the industrial potential of Egypt" recommends that, in order to unlock the manufacturing capability potential of Egypt and to reduce the gap with competitors, the following strategies should be put in place: (a) a move from trade to manufacturing; (b) unlock the knowledge potential of a number of commodities; (c) focus on horizontal policies, especially industrial standards; and (d) link free and special economic zones with global, regional and national value chains.

Egypt needs to move up the value chain and produce more complex products, through targeted industrial policy instruments such as sector competitiveness strategies. Egypt falls behind some of its competitors in terms of the complexity level of its products, though it displays high potential to step up the complexity ladder.

Cairo, Alexandria, Damietta, Giza, Gharbia, Qalyubia and Sharqia are the governorates that have been able to leverage existing capabilities and increase the diversity of their production far beyond the average for Egypt, though they have failed to move up the value chain. They produce more similar products but they have been unable to produce knowledge-based, higher-technology content products.

At the same time, roles and responsibilities related to industrial policy governance need to be clarified to reduce existing overlaps and an industrial strategy unit, with secondees from different ministries and the private sector and with a time limit to deliver the strategy, needs to be developed. Evidence shows that the generation of successful evidence-based strategies can only be achieved if public and private institutions are engaged throughout the policy process, from assessment and design to implementation and monitoring and evaluation.

4.2 INDUSTRIAL ZONES AND CLUSTERS DEVELOPMENT: ENHANCING SME PERFORMANCE

UNIDO's technical assistance for industrial zone development, as a priority initiative for the Government of Egypt, has been requested by the Ministry of Trade and Industry.

For Egypt's industrial sectors to move up the value chain and increase product complexity, adequate support is needed for boosting innovation and technological capabilities, fostering forward and backward linkages among producers, promoting business partnerships both nationally and internationally, and encouraging synergies among businesses, government, universities and research centres.

In accordance with this framework, UNIDO is supporting the Government of Egypt in the development of the agro-industrial park in Qalyubia and the furniture cluster in Damietta. Assistance will

be provided with regard to techno-economic viability, master and business plans, governance and management structure, investment promotion, and development of a roadmap for upgrading SMEs through the implementation of a cluster approach by upgrading technologies, skills, business linkages and market access.

UNIDO intends to further advance the development of SMEs in Egypt through the adoption and application of a cluster development approach. The cluster approach will help the assisted enterprises move beyond their individual capacities, organizing themselves in dynamic production networks and developing strategic relationships with other firms and institutions to improve their competitive advantages based on economies of scale, innovation and learning.

While the growth of individual small-scale firms is constrained by limited access to resources and inability to achieve scale and scope economies, firms within clusters benefit from collective efficiency gains and are able to achieve higher and sustained growth rates, as synergies and collaborative linkages allow them to pool resources and efforts for the achievement of shared economic goals *(20)*.

Depending on further assessments and consultations with stakeholders, cluster development projects could be planned in the sectors described in the following subsections.

Furniture sector

As outlined by the Egyptian Furniture Export Council and Industrial Modernization Centre in the Egyptian Furniture Sector Development Strategy (2010), Egypt's furniture industry enjoys the following competitive strengths:

- strong and recognized woodworking know-how;
- geographical and cultural proximity to primary export markets (Middle East and North Africa, Western Europe);
- flexibility of producing tailored customer designs;
- attractive cost structure, based on low labour and shipping costs.

Damietta, the furniture industry's centre of production,[4] has a long tradition of craftsmanship producing mainly handmade classic furniture. Located on the Mediterranean coast, it is home to an abundance of highly skilled and relatively low-cost labour. Yet, a number of challenges hinder sector expansion, competitiveness and enhanced access to markets, including industry fragmentation with a very limited number of large players, prevalence of family ownership and operation, limited external capital and financing options, low labour productivity and

4 Damietta contributes 66% of total Egyptian production, 70% of total Egyptian exports, 36% of Egyptian establishments, and 38% of jobs in the furniture industry *(21)*.

limited quality control, weak enforcement of copyright protection legislation and heavy bureaucracy.

Several furniture clusters exist around the world. The review of international experiences reveals the factors that affect the success and growth of these clusters. Most of the reviewed experiences point to the crucial role played by supporting institutions and their services. This is the case in clusters such as the Lucena furniture cluster in Spain, the São Bento furniture cluster in Brazil, and the Brianza furniture cluster in Italy. Support services available to these clusters:

- provide training and encourage innovation, with particular attention given to quality control in manufacturing and new design techniques;
- facilitate access to credit;
- set quality standards and audit the implementation;
- establish technology centres to provide designs, foreign markets information and business consultancy services;
- provide advocacy services;
- facilitate and organize exhibitions for the cluster, and organize business-to-business sessions.

Important features of successful clusters are partnerships and subcontracting. Partnerships usually take place between SMEs in the cluster when they agree to respond to large international orders together to share costs, to participate in international exhibitions under the name of the cluster, and to use common brands. Subcontracting refers to business relations between larger and smaller firms where the larger company outsources part of the production to the smaller one. Both partnerships and subcontracting lead to specialization and collective efficiency, essential characteristics of successful clusters.

Damietta presents the characteristics of an interesting regional cluster with high potential for development. The development path should be shaped towards increasing the technological complexity of the local production system to lead Damietta up the national and international value chain. In line with recent government strategies and international best practices and consistent with the industrial policy recommendations recently formulated by UNIDO, the following actions are recommended:

- launch a cluster development programme to boost the competitiveness of the Damietta cluster by upgrading technologies, skills, business linkages and market access;
- undertake capacity-building of a cluster governance system and cluster-to-cluster activities;
- evaluate the feasibility of constructing a fully fledged industrial park.

Automotive sector

According to the Federation of Egyptian Industries, the Egyptian automotive sector is one of the largest in the Middle East and North Africa region, and constitutes about 20% of exports of engineering products. However, its potential for growth in the local and regional markets remains largely untapped.

UNIDO can count on a number of tools and successful experiences in this sector in India, South Africa and other countries that can be harnessed to offer the following services to the Egyptian automotive industry: (a) supplier development for production upgrading and application of lean manufacturing techniques and total quality management; (b) business and investment linkages promoting transfer of technology; (c) low-carbon automotive supply chains, including energy efficiency and awareness building of the public and private sector on cleaner production, energy efficiency, and occupational health and safety; and (d) capacity-building of national consultants, service providers and institutions, such as the Engineering Export Council and the Egyptian Auto Feeders Association.

In collaboration with the Engineering Export Council, UNIDO is currently conducting an assessment for automotive companies and small workshops, using specific tools to help identify the sector's bottlenecks and needs, such as gaps in production and technologies, market challenges, and unsustainable production practices and energy use. Meetings and factory field visits are being finalized and a report will be issued by UNIDO in 2014 that will serve as a key background document for developing strategic interventions that aim to provide effective support to the sector, such as increasing its productive capacity and efficiency, facilitating trade and upgrading its technologies.

Olives and olive oil sector

Another agro sector that UNIDO is planning to target if funds are mobilized is the olive oil sector. This is an interesting sector with important implications for rural development, employment generation and ecosystem preservation. The majority of olive oil production in Egypt is managed by small- to medium-scale farmers, with limited average farm size. Such producers face significant challenges with regard to access to technology, innovation and extension services, which ultimately results in higher cost structures, in turn compromising their competitiveness. Although progress has been made, yields still lag behind international competitors and lie below their actual potential. The olive oil international market is highly competitive; differentiation and sustained costs are essential elements for sustainability. As such, Egypt faces hard competition with more established producers of the Mediterranean region.

The proposed initiative aims to enhance the performance of SME clusters in the olives and olive oil industry by improving the efficiency, quality, and environmental and export performance of SMEs in targeted clusters, building the capacity of local support institutions and improving cluster governance. The project intends to introduce novel organizational forms such as the cluster and origin consortia approach in areas with limited experience of inter-firm and inter-institutional collaboration and synergies, and aims to (a) facilitate cross-border transfer of new technologies and best practices in the agro-food industry to upgrade the targeted value chains; (b) foster the competitiveness of rural producers on the basis of the joint promotion of traditional products, thus delinking producers from the competition on commodity markets and instead supporting them in entering niche markets; and (c) favour approximation to export market policies and legislation, with special regard to food safety and traceability, providing technical assistance to both relevant national authorities and the private sector.

Dairy sector

The demand for dairy products in Egypt is growing rapidly. The processing industry, however, is suffering from insufficient supply of fresh milk and is operating at roughly 40% of installed capacity, even though large imports of powdered milk are used as a substitute for fresh milk.

The performance of Egypt's dairy sector should be improved, increasing quality and output of dairy manufactured products, thereby allowing the replacement of imported powdered milk with locally produced quality milk.

The value of milk and cream imports in 2012 reached US$ 330 million, for butter the total value of imports reached US$ 200 million and for whey it reached US$ 77 million.

Egypt's milk production stems mainly from cow milk (3 million tonnes in 2011) and buffalo milk (2.6 million tonnes in 2011). According to FAOSTAT, cow milk production has increased by 50% in 10 years and buffalo milk production by 27%. Goat and sheep milk production is rather low in comparison, and stood at 18 000 tonnes and 113 000 tonnes in 2011 respectively.

Constraints relating to milk production include low-yielding breeds, lack of artificial insemination and lack of proper feed throughout the year. Other constraints that negatively affect the supply of fresh milk include quality and food safety issues relating to milk collection, including unhy-

gienic practices, lack of cold storage and multiple handling (too many intermediaries). Poor quality of milk leads to short shelf life, even if pasteurization takes place. The involvement of intermediaries may result in price fixing and low prices for farmers, as they are often the only link to the market for many farmers. Very low milk prices paid to farmers naturally provides a disincentive for the farmers to invest and increase their production.

UNIDO interventions would thus focus on activities aiming to improve milk collection, production and quality, and improve the profitability of the small daily farmers, specifically through the establishment of "dairy hubs". A dairy hub is a milk collection centre combining collection of smallholder milk with services and training for farmers.

Recycled plastic and marble waste

There is a huge untapped potential for utilizing the large volumes of plastic waste generated annually in the country as well as waste generated from marble and granite quarries as a valuable source for producing new innovative and high-value-added products, establishing or upgrading clusters of SMEs active in the field of waste recycling, thereby generating employment and income opportunities and opening new markets while reducing the adverse impact of waste on health and the environment.

4.3 UPGRADING THE DATE PALM VALUE CHAIN

Based on lessons learned and innovative and best practices identified and implemented in current interventions in the date palm products sector, UNIDO is planning to extend its interventions to upgrade the date palm value chain via an integrated demand-based approach.

The project strategy is in line with national policies for SME promotion in Egypt, focusing on building the capacity of SMEs and integrating them in global value chains as well as improving entrepreneurship policies with the inclusion of women.

Several soft, semi-dry and dry date varieties are produced in different regions in Egypt and display particular market opportunities. Egypt actually enjoys important comparative advantages due to the high production capacity at relative low cost and a latent potential for improvement in quality, product development and value addition.

Although Egypt is one of the world's main date producers, its international presence is relatively scarce, especially in terms of value (ninth in the export value rank in 2009). Egypt has a negative trade balance in this sector since best-quality and processed date products are still imported. Notwithstanding the comparative advantage of date palms in many Egyptian governorates, there is still limited awareness on how to improve their added value.

The sector faces many difficulties, such as lack of production know-how and postharvest technologies, lack of economies of scale and lack of linkage with research and development. Furthermore, local price volatility, weak market information systems, underdeveloped infrastructure and a high percentage of postharvest losses pose significant challenges to the sector. On the trade side, despite the growth in international demand, a modest volume of exports is observed, often caused by difficulties in meeting international quality and food safety requirements, leading to a lack of premium products and value addition.

The proposed intervention intends to help all value chain members – input suppliers, growers and producers, collectors and traders, processors, retails outlets and exporters – to upgrade their production, increase the level of value addition and comply with technical regulations, codes of good practices and conformity standards required by destination markets, thereby facilitating their access to those markets. Enterprises in the palm sector will thus generate higher aggregate value and offer more equitable and inclusive job opportunities, especially for women.

The project will also address the different clusters of handcrafted non-food products of the palm tree (woods and leaves), which require a high degree of innovation and design.

Preparatory activities are being conducted in collaboration with other UNIDO ongoing projects (interregional project to promote SME origin and export consortia, and Montreal Protocol projects).

4.4 UNIDO'S CONTRIBUTION TO THE IMPLEMENTATION OF EGYPT'S 2030 VISION: FASTER, SUSTAINABLE AND MORE INCLUSIVE GROWTH IN UPPER EGYPT

To further support the country and directly contribute to the implementation of Egypt's 2030 Vision (manufacturing sector grows at an annual rate of 9%, increases its share of GDP to 25%, creates at least 3 million jobs), UNIDO has designed an integrated programme aiming at supporting a market-driven and energy-efficient SME environment for Egypt.

The programme will:

- build the capacity for an industrial policy and business environment;
- enhance vocational training centres and youth employability;
- enable enterprise creation and development;
- promote SME development (clusters, special economic zones and hubs, supply chains, sustainable suppliers development programme);
- secure the energy supply to farmers and industries in selected value chains.

Target sectors and value chains will include:

- agribusiness and food;
- creative industries;
- leather and furniture;
- renewable energy (cross-cutting and as a value chain, including in vocational training);
- engineering services, especially the automotive industry;
- construction.

The proposed programme will be implemented through the engagement of relevant line ministries: Ministry of Trade and Industry; Ministry of Local Development; Ministry of Environment; and Ministry of State for Technical Education and Training. The programme is under discussion with relevant government counterparts.

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