



United Nations Industrial Development Organization

**INTEGRATED RURAL DEVELOPMENT:
THE CONTRIBUTION OF UNIDO**

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CHAPTER 1: THE OVERALL CONTEXT

A. The Challenge of Integrated Rural Development

The urgent need to support and promote integrated rural development in developing countries, and countries with economies in transition, stems from the fact that some 75 per cent of the world's poor live in rural areas. In absolute terms this amounts to approximately 1.2 billion people who are forced to subsist on less than US\$ 1 per day. Moreover, this poverty has an important gender dimension, with some 60 per cent of the world's poor being women and girls.

Eradicating poverty is a shared objective of the international community. The Millennium Declaration of the United Nations stipulates the target of halving the proportion of the world's poor, whose income is less than one dollar a day, from 29 per cent to 14.5 per cent of all people in low and middle-income economies by 2015. Another aim of the Millennium Declaration is to promote gender equality and empower women as effective ways to combat poverty, hunger and disease, and to stimulate development that is truly sustainable.

Efforts are currently underway in 45 countries to prepare Poverty Reduction Strategy Papers (PRSPs) that propose to put in place macroeconomic, structural and social policies and programmes to promote growth and reduce poverty. In preparing such PRSPs, Governments, in a participatory process, involve civil society and development partners. These studies are intended to address and analyze some fundamental questions: Who are the poor? Where do they live? What are the main barriers for them to move out of poverty? The answers can then help to set priorities for policy choice.

Rural development and gender equality must consequently be regarded as key elements of strategies to reduce poverty and create income and employment opportunities in many countries. Yet, these elements have historically been neglected, as resources and policies have continued to be biased in favour of urban development. This has led to a precarious imbalance in the development process, with detrimental effects on both rural and urban areas.

As rural areas have become progressively less able to provide opportunities for sustenance of their livelihoods, the burden of supporting the poor and rural population falls increasingly upon cities. The growing numbers of rural poor seeking work in overcrowded cities stretch social and physical infrastructure and economic opportunities in the urban areas beyond their capacity. On the other hand, the migration of rural men to urban areas leaves unbalanced family structures behind, with women, children and elderly expecting remittances.

Most of the rural population depends, directly and indirectly, on small-scale food crop agriculture and fishery, pastoral animal husbandry or rural wage labour associated with plantations and ranches, and ancillary activities linked to the economies of the rural life and rural townships. Many rural families need to diversify their sources of income and employment in view of growing smaller parcels of land, low agricultural productivity and adverse weather and soil erosion. Earnings from non-farm activities contribute 30 to 50 per cent of incomes in rural Africa, Asia and Latin America, and 20 to 50 per cent of employment.

The rural non-farm economy therefore plays an important role for wealth creation and well-being across countries. For example, small rural households with fewer than 0.5 hectares consistently earn more than half of their total income from non-farm sources. The composition is generally one-third manufacturing and one-third commerce and services, with mining and construction accounting for the rest.

A successful strategy for alleviating rural poverty thus would need to incorporate infrastructure development, education, investment in agriculture and the promotion of rural non-farm activities.

B. The UNIDO Response

UNIDO's support programmes address effectively the growing inequality and extreme poverty arising from asymmetries in global economic development, i.e. within the dynamics of production, investment, technological change and trade in industrial goods and services. Market forces alone are insufficient to reverse the income gap between industrialized countries and Least Developed Countries (LDCs) that has widened from 40:1 to nearly 80:1 in the past three decades. Without a robust industrial base, developing countries in general and LDCs in particular will remain disadvantaged and dependent on declining prices of natural resources and on largely agricultural, rural-based economies. Unless developing countries exploit the long-term growth opportunities offered by industrial development, they will be unable to achieve the Millennium Development Goals (MDGs).

The dynamic transition from agricultural to industrial production is a major driving force of economic and technological transformation. In this context, the diversification towards rural non-farm activities, initially based on the processing of natural resources, is of crucial importance. The promotion of decentralized industrial development patterns can stem rural-urban migration, bring employment opportunities to rural areas, reduce regional income disparities, thus build equity concerns into the economic structure and ultimately fight poverty at its very source. Therefore, emphasis needs to be placed on building up and strengthening productive capacities through micro, small and medium enterprises, a process in which women in rural areas play a major role. The main challenge is to *stimulate income-generating productive capacities with a view to promoting sustainable local markets*.

In this process of stimulating broad-based domestic entrepreneurship, UNIDO has a crucial mandate. The Organization has developed a comprehensive integrated programme approach to supporting developing countries attain economic growth and productivity gains, which are the main long-term weapons to fight the debilitating manifestations of poverty. Being modular in nature, and offering a wide range of interventions aimed at enhancing productivity and stimulating growth, this approach is flexible in meeting the industrial development needs of developing countries at all stages of development, from LDCs to relatively advanced middle-income countries. The technical cooperation programmes offered by UNIDO thus span the full spectrum of support services at the policy, institutional and, where appropriate, enterprise level required by developing countries. These technical cooperation services are supplemented by targeted research activities documented in a variety of publications, such as the *UNIDO Industrial Development Report*.

With a view to stimulating integrated rural development, UNIDO provides a basic set of support services towards pro-poor industrial growth through such interventions as entrepreneurship development, promotion of networking and ICT use for small-scale industrial producers, development of technological capabilities, investment promotion, fostering innovation, developing quality systems, encouraging sound environmental management and cleaner production, and developing sustainable sources of industrial energy for rural use.

Recognizing the centrality of agro-industrial development for integrated rural development, UNIDO concentrates its expertise on this sector and offers specialized support in industries such as textiles, leather, food-processing, wood-processing and fisheries. This involves the upgrading of production technology and the provision of related support services; capacity building and technology transfer to reduce post harvest losses and the preservation of natural resources; and increasing market access and establishing market linkages. In all of these support programmes, the adoption of cleaner production approaches, the treatment of effluent and the minimization of waste are integral dimensions. These interventions are delivered in a concerted manner that has become UNIDO's hallmark, as Integrated Programmes with a country or regional focus to leverage resources, enhance impact and amplify synergies.

CHAPTER 2: UNIDO's SPECIALIZED INTERVENTIONS

A. Policy Advice and Institutional Capacity Building for Rural Entrepreneurship Development

Policy environment and regulatory framework

Integrated rural development requires the formulation and implementation of sound industrial strategies and policies that address both efficiency and equity objectives and, in this context, the special needs of micro, small and medium enterprises. Based on international best practice, UNIDO advises governments on such policies. In this context, UNIDO also promotes the creation of transparent regulatory and administrative structures that encourage the development of SMEs and entrepreneurship, and business diversification. The compliance with complex regulatory requirements is more expensive for rural entrepreneurs than for urban and larger enterprises. The public administration in rural areas has relatively weak capacities to implement policies and to maintain conducive framework conditions for promoting entrepreneurial initiatives. The local authorities often do not have sufficient understanding of what to regulate and how to regulate. This can result in arbitrary exercise of regulations. In Mozambique, for example, the Organization has supported the establishment of provincial one-stop-shops for business licensing, which have improved transparency, simplified procedures and reduced the cost for entrepreneurs of complying with regulations, as detailed in Box 1.

Box 1: UNIDO Support for Transparent Regulatory and Administrative Structures

Cutting red-tape in Mozambique

In the commercial centre of Quelimane, the capital of the Zambézia Province, UNIDO has helped to establish a "Balcão Único", or "One-Stop-Shop" for small-enterprise licensing requirements. This Unit is intended to coordinate the regulatory functions of provincial directorates. It represents an innovative attempt to reduce the bureaucratic constraints confronting the small-enterprise sector and attract increased private investment in Zambézia Province.

As part of a general policy to support the growth of the private sector, the Government of Mozambique has made a number of changes in licensing requirements in the last few years. While the changes have improved the situation considerably, the impact was limited to Maputo, the capital city of the country, and the proper implementation has been slow in the provinces. In the provinces, many entrepreneurs are not fully aware of the new regulations. Even the officials of the provincial capitals, and more so those in the districts, are not sufficiently aware of the present legal requirements and continue to rely on an outdated licensing regime.

The Balcão Único reflects the determination of the Zambézia authorities to reap the benefits of the changes in licensing requirements that have been seen in Maputo and their commitment to change from a regulation - focused culture to a service culture. The basic concept of the Balcão Único is "coordination, consultation, transparency and information sharing" among provincial departments and between the provincial authorities and the private sector.

The Balcão Único has been well received by the local business community, with surveys of entrepreneurs who had dealt with the agency showing that the vast majority regarded the staff of Balcão Único as efficient and professional, and considered their uniform and consistent interpretation and application of regulations, their reliable information on licensing procedures and the transparency of their services to be of great value.

Institutional capacity-building for entrepreneurship development

UNIDO is particularly active in supporting the establishment or strengthening of institutional support services for enterprise and entrepreneurship development in rural areas. Examples of such cases, where UNIDO is building capacity for community-centred projects to provide employment through local

entrepreneurship in several South Pacific Island States, are presented in Box 2. Other notable projects of this kind are currently being implemented in Rwanda (where, in a post-conflict environment, the focus is on women often as sole breadwinners) and in Viet Nam.

In addition, UNIDO stimulates self-help initiatives (often involving NGOs) for upgrading technical and managerial skills, e.g. through the master craftsmen programme, as applied successfully in Uganda and described in Box 3. Special attention is paid to the poverty-reducing potential of promoting cooperation within rural clusters of small-scale producers.

Box 2: UNIDO Support for Institutional Capacity Building for Entrepreneurship Development

Federated States of Micronesia: Micronesian Entrepreneur Development Centre

This project was launched in March 1998 and was intended to replicate the Micronesian Entrepreneur Development Center (MEDC) project piloted for two years in the state of Pohnpei in 1993-1995 with the support of UNDP and UNIDO, by creating similar institutions in the three other States of Chuuk, Kosrae and Yap for the promotion of micro- and small enterprises. The purpose was to promote micro-, small- and medium enterprises, with special emphasis on job creation. In the 2nd phase, the project gave more focus on generating employment in rural areas and outer islands, and on assisting women. The strategy was to develop the capabilities of institutions to render effective assistance to new entrepreneurs and existing enterprises by providing entrepreneurship and business management training, technical and managerial support services, business information dissemination, and improving the policy and regulatory environment.

During this project, UNIDO developed entrepreneurship development methodologies and manuals, the Village Industries Promotion Package, which were later also successfully adapted to other countries, including Solomon Islands and Turks and Caicos Islands.

UNIDO activities in the Federated States of Micronesia (including the pilot project in Pohnpei) resulted in the creation or expansion of more than 650 enterprises with MEDC assistance (corresponding to about 1/3 of the existing enterprises in FSM), and the creation of almost 1,500 new jobs. The total new investments of enterprises assisted have now reached an estimated US\$ 13.5 million. The support capacities of the MEDC network of institutions have been improved and Business Development Acts to improve the business environment have been approved or are in the approval process. Small loan schemes and access to bank finance have also been facilitated.

Solomon Islands: Employment generation and sustainable livelihoods in rural areas

Solomon Islands is among the least developed countries in the Pacific. It forms an archipelago, consisting of six large islands and many smaller ones. Most of the population of about 350,000 people live in rural areas and derive their income from a mix of subsistence and commercial activities. There was an urgent need to address an acute shortage of job opportunities in the provinces of Solomon Islands and subsequently to reduce migration from the provinces to the capital, Honiara, which already cannot offer jobs opportunities to all employment seekers.

Responding to this need, UNIDO initiated two complementary projects in 1996 with the common aim of generating new job opportunities and sustainable livelihoods through the promotion and development of small-scale and cottage industries in rural communities in the Malaita, Makira, Isabel and Western Provinces as well as Guadalcanal and Honiara.

The project has been providing technical and managerial training and advisory services for entrepreneurs and on-the-job training to the staff of government agencies, technical institutions and NGOs in order to ensure the continued availability of national capacities to carry out these services after the conclusion of the project. For training activities, the project staff adapted and developed training materials for entrepreneurship development based on a training package developed in Micronesia by another UNIDO/UNDP project.

The project has also established consultative committees in the provinces, consisting of the local authorities and private sector representatives in each province, to discuss, implement and coordinate measures to promote small-scale entrepreneurship. It also addressed constraints faced in small business development emanating from traditional land tenure practices, administrative barriers, and inadequate access to credit and information.

Two community-based projects were assisted in establishing resource-based processing activities, and the methods for providing integrated assistance for this type of project were documented and taught.

More than 1000 new employment were created in the 5 target provinces through the start up of almost 200 new businesses and the expansion of about 185 existing businesses over a period of about three years.

Box 3: UNIDO Support for Self-Help Initiatives for Upgrading Technical and Managerial Skills

Private sector assists private sector in Uganda

Entrepreneurs in rural areas suffer from a lack of training and advisory opportunities that would allow them to upgrade their managerial and technical skills and solve immediate production problems to improve productivity and to increase profitability.

The government often does not have a sufficient budget to finance the costs of training and advisory institutions. The technicians of public institutions may not have the necessary private-sector orientation and business spirit to provide practical advice to entrepreneurs.

In Uganda, where more than 70 per cent of enterprises employ less than 20 people on average, micro- and small enterprises play an important role in the economic and social life of the majority of citizens. However, the growth and competitiveness of this sector is hampered by a lack of managerial and technical skills, weak infrastructure, difficulties in accessing loans, and complicated company registration processes.

In order to help improve the access of small entrepreneurs in rural districts to advisory services and training, UNIDO has launched a project based on the concept of a Master Craftsmen Programme (MCP) in six districts of Uganda. It is a self-sustaining, demand-driven and private sector-led system of assistance to rural entrepreneurs in Uganda, coordinated by the Uganda Small-Scale Industries Association (USSIA).

About 100 small-industry entrepreneurs of USSIA have been selected from the six districts of Masaka, Mbarara, Kabarole, Mubende, Mbale and Lira, and trained to become advisors to other micro and small-scale industrial entrepreneurs in their respective districts.

The driving force of this strategy are the dynamics of communal obligations, which cause business people within a particular community to help each other. However, clients were not used to paying fees for training and advisory services, sometimes affected by entirely donor-subsidised services. The UNIDO project has not given any financial incentives or any subsidies to the MCP, but helped in the conceptual development, preparation of methodologies and manuals, training of advisors and campaigning for the fee-based services.

The MCP services are focused on metalworking, electrical and electronics engineering, food processing, textile, leather and woodworking. The major services of MCP are industrial advisory services, training in business and technical skills upgrading, encouraging the formation of entrepreneurial self-help groups, and secretarial services at the association's district offices.

Salient features of the programme include:

- *100 entrepreneurs and skilled technicians have been trained as MCP advisors and are operating in six districts.*
- *Over 750 entrepreneurs in the six districts improved their managerial and technical skills with the support of the MCP advisors*
- *Training manuals and operational manuals for the MCP are being used.*
- *Neighbouring districts have requested for the services of the MCP advisors.*
- *USSIA district officers have been trained in the management of the association and the coordination between the national and the district offices has improved.*
- *A network of NGOs cooperating with MCP has been expanding.*

Women entrepreneurship development

Women entrepreneurship in rural regions is actively promoted by UNIDO through a combination of managerial and technological business development services in high-priority industrial sub-sectors, such as agro-processing and textiles. The Organization's Women Entrepreneurship Development Programme supports poverty-reducing economic growth by helping to create the conditions needed to unleash existing but under-utilized entrepreneurial capacities. Promotion of gender equality is a prerequisite for the strategy. The strategy complements and supports the growth of modern and export-oriented sectors.

Entrepreneurs identify needs in the market and seize business opportunities. Women entrepreneurs are the driving force for competitive rural small industrial enterprises, which are affordable and manageable by rural people. They create a large number of non-farm employment and income opportunities in

relatively poorly developed areas, and require modest capital outlays and less sophisticated managerial and technical skills. They are also the seedbed for a broad-based development of the private sector throughout the country by being suppliers and buyers of urban enterprises through traders, forming the foundation for the national economy and social development at the grassroots.

The Programme aims at improving the business performance of existing small enterprises owned by women, facilitating the transformation from the informal to the formal sector and increasing the number of start-ups. In pursuit of these objectives, the programme focuses on the following priorities:

- Strengthening of the public administration to improve the regulatory and administrative environment conducive to rural and women entrepreneurs (see also Box 2);
- Human resource development for competitive entrepreneurship, technology absorbing capacities and women's control over asset management; and
- Development of policy advocacy and collective self-help capacities of women entrepreneurs.

Laws and regulations that explicitly or implicitly discriminate against women entrepreneurs exacerbate the already constraining social environment. The gender-sensitivity of many officials in the rural areas tends to be more heavily influenced by the local tradition than in the case of urban areas. Similarly, specialized business support institutions are often not available in rural areas, or the services of the private sector are not affordable for rural entrepreneurs. For women entrepreneurs, specialized support institutions hardly exist to cater to their specific needs.

In this context, the provision of entrepreneurship and technical training for women entrepreneurs plays a particularly important role, as does the provision of associated advisory and information programmes. Targeting specific industrial sub-sectors, such as agro-processing and textiles, these training programmes cover such subjects as marketing surveys, production process management, product development, technology upgrading, business plan writing, costing and pricing strategies, and organizing handicraft production for export markets. The programme also applies specific methodologies and manuals for women entrepreneurship development, and training modules on teamwork, negotiating and monitoring and evaluation.

Women entrepreneurship development focuses on LDCs, African countries with special needs, such as post-conflict zones or countries with high inequality leading to pockets of poverty. It centres on individual entrepreneurial initiatives with emphasis on women, rural population, youth, ethnic groups, refugees and displaced people. The programme is tailored to local needs based on a comprehensive root-cause analysis – and not on a blueprint design. It builds on existing assets and seeks to tie in with local initiatives by forming strategic alliances with other operators of similar projects at the local level in order to create synergies for greater impact. An example of a UNIDO project in Morocco is given in Box 4.

Box 4: UNIDO Support to Women Entrepreneurship

Morocco: Promoting productivity improvements in rural women's businesses

Women entrepreneurs in Morocco are often faced with a lack of operational and managerial skills resulting in low productivity and competitiveness. Cultural constraints are an additional obstacle that inhibit the efficient conduct of business for women. The resulting loss of productivity not only has adverse effects on their income but also on economic growth.

Some of the most promising sectors for the Moroccan economy and those in which women are the most numerous can be found in the North of Morocco, the most disadvantaged region of the country. However, inefficient production mechanisms and a lack of managerial skills have resulted in a loss of productivity and income for women entrepreneurs. This is particularly true for traditional weaving, olive oil production as well as industrial processing of figs, prunes, medicinal and aromatic plants. In the past, traditional weavers exclusively used artificial fibres, thus attaining only low prices for their products. Almost 20 per cent of olive oil was lost due to inefficient production methods and the high acidity in the oil was hazardous to the health of the consumers. No processing of figs and prunes took place. The fruits thus had to be sold on local markets at low margins or perished quickly without processing.

UNIDO's project aims to enhance the competitiveness of enterprises managed by women. As a first step, the project attempts to make women aware of how they can improve their production and thus their income. They are then trained in both business management and production techniques. The trainers are either members of women's groups or existing public and private support institutions, which have been assisted by UNIDO in improving their capacity to provide services to women entrepreneurs.

Two types of training are currently offered by the project: (1) training of trainers, to create a network of people skilled in areas such as economic activity identification, information provision, business management and marketing, who will be able to follow up on the women they train and (2) direct training of women. Trainers are in regular contact with women's groups to identify the exact needs of these women and to adapt the courses accordingly. A third type of training in formation of associations and the administration of cooperatives is being introduced.

A fundamental element of the training is the improvement of production techniques. At a pilot training unit, the project provides training on new methods using locally available equipment. In the traditional weaving component of the project, women learn how to diversify their products, how to work on subcontract and to use natural fibres in order to increase the export potential of their products. The project component concentrating on the processing of figs, prunes, medicinal and aromatic plants focuses on drying of the products, packaging and marketing. The equipment was developed by UNIDO in collaboration with the University of Vienna and is also being used in other projects.

- The project has so far provided comprehensive training including coaching in production, business management and marketing to 339 women (traditional weaving: 60 women, olive oil: 156 women, processing of figs and prunes: 123 women).
- The training in the weaving component of the project resulted in the participation of some of the participants in trade fairs. As a result, one cooperative has doubled its income.
- About a dozen new weaving businesses have so far been started as a result of the training.
- As a part of the coaching programme of the olive oil component of the project, a pilot association has received assistance in quality control, in business and financial management, in the preparation of a label, in registering their trademark, in promoting the products and in the procurement of packaging material.
- The project is creating a critical mass of trainers (both technical and managerial) who are staff of local support institutions as well as a network among these institutions, local NGOs and credit institutions.

Supporting rural clusters of small enterprises

Micro and small-scale enterprises have a formidable potential to trigger sustainable development in rural areas, particularly in terms of employment generation, income diversification and on-the-job skill creation. The potential of small enterprises to trigger sustainable development in rural areas, generate employment and fight poverty, seldom fully realized because small enterprises are isolated and thus unable to specialize, reach profitable markets and improve product quality. Overcoming this isolation is

the objective of the Cluster Development Programme that UNIDO has been implementing in Africa, Latin America and Asia over the last decade. The programme aims at increasing cooperation among small enterprises as well as between such enterprises and the surrounding environment (service providers, government, banks, etc.). It focuses on existing clusters, which are sectoral and geographical concentrations of enterprises which produce and sell a range of related or complementary products. Often, small enterprise clusters can be found around rural villages where product specialization is the outcome of an often age-old artisan tradition. Examples of UNIDO's cluster support programme are provided in Box 5.

Box 5: UNIDO support to rural clusters and networks of small enterprises

India: Upgrading traditional textiles clusters

In the case of the artisan cluster of Bagru/Sanganer, two villages in the Indian state of Rajasthan, the Programme targeted 250 micro units specialized in hand-block printing of cotton textile. Over a period of six years, the producers of the cluster tapped nearly 1.2 m USD worth of new business and broke into several new markets (both in India and abroad). These results were achieved by fostering cooperation among artisans on initiatives like joint participation in national/international fairs (in New Delhi, Jaipur, Florence, Osaka), establishment of mutual credit guarantee funds in collaboration with the Small Industries Development Bank of India (SIDBI), and pooled purchase of business development services from the National Institute of Fashion Technology (NIFT) or the National Institute of Designs (NID). The creation of self-managed consortia and self-help-groups among MSEs, the involvement of MSE support institutions such as the Indian Institute of Crafts and Design (IICD), the Rajasthan Industrial Investment Corporation Ltd. (RIICO), or the Rajasthan Chamber of Commerce and Industry (RCCI) and the determination of local government ensured the continuation of these initiatives even after the completion of the UNIDO programme.

Nicaragua: Strengthening a milk-products supply chain

In Nicaragua, UNIDO is working in Boaco and Chontales, two neighbouring departments in the Central Region, where poverty concerns 40 per cent of the population in urban areas and 70 per cent in rural ones. These departments have a strong, well-established specialization in the production of milk and milk products. Using an approach based on direct participation by local entrepreneurs and institutions and acting at different levels of the value chain the following results have been achieved:

- *Technical norms established and diffused for fresh milk and milk products (in cooperation with Ministry of Environment, Ministry of Health, Ministry of Agriculture and Ministry of Industry and Trade). These norms permit improvement and stabilization of product quality and enhance their export potential.*
- *Five new products launched on the market (training and technical assistance provided in cooperation with INPYME and the Interamerican Development Bank)*
- *Quality improvements, especially in the application of hygiene and production efficiency, with an average 25 per cent increase in yields*
- *Reduced pollution of residual water by as much as 70 per cent*
- *Subcontracting arrangement with a large multinational company to decentralize production of one type of cheese to some cooperatives in the cluster, with the multinational company supplying equipment and training the members of the cooperative to run the facility*
- *Support for the creation of the Nicaraguan Chamber of the Milk Sector (CANISLAC).*

B. Promotion of Technology Transfer and Business Linkages

Technology transfer and management

Rural poverty reduction depends on the spatial distribution of production processes around centers of population other than the major urban centres. This distributive process in turn involves promoting the absorption and mastering of technology at the local level to increase local productivity and generate

increased employment opportunities in the formal sector, based on the empirically accepted positive correlation between investment/ technological resource flows and poverty reduction. To support these processes of importing, absorbing, adapting and mastering new technology, UNIDO strengthens the learning and innovation capacities of developing countries by helping them to acquire the necessary information, knowledge and skills.

Technology Foresight is the most upstream element of the technology development and management process. UNIDO has an active Technology Foresight programme, in the context of which an international conference – the Technology Foresight Summit – has been planned for March 2003 in Budapest. With its special focus on biotechnology and related issues concerning the agro-food industry and the environment, this conference will suggest strategies that will have direct positive impacts on rural development and poverty reduction.

UNIDO also operates ten International Technology Centres that serve as a ‘Technological Facility’ aimed at promoting international collaboration and diffusing technological knowledge and innovations at various geographic and industrial levels. They assist in the formation of technology partnerships and stimulate trade in technology and the commercialization of knowledge. By encouraging industrial investments in new technologies and incremental innovations, solutions to problems at rural levels can be delivered. Illustrative examples on the poverty impact of projects undertaken by UNIDO Technology Centres are given in Box 6.

Box 6: UNIDO support in the transfer of technology for rural development

India: South-South cooperation in low-cost building materials

Within the framework of the International Centre for Advancement of Manufacturing Technology (ICAMT) based in India, UNIDO and India have launched a technology transfer and investment promotion project for production of cost-effective building materials for low-cost housing in Africa. These value-added products are manufactured from recycled agro-industrial wastes & local materials resources.

One set of simple machines can generate the employment of 100 skilled, 220 semiskilled & 600 unskilled workers. The project is being converted into a large-scale South-South programme between India and a number of Asian, African and Latin American and Caribbean countries. It will help strengthen two sectors of rural industry: the local production of materials and the local manufacture of equipment. The application of new technologies will also result in energy saving by up to 40 per cent, waste management and poverty alleviation.

The Cane and Bamboo Technology Center

With the creation of the Cane and Bamboo Technology Center (CBTC) in the remote North-Eastern Region of India, UNIDO has contributed greatly to the development of bamboo processing through technology transfer and capacity building. The main objective of the project is to turn "Poor Man's Timber" into a "Cash Crop" by means of promoting non-traditional industrial processing technologies. More than 35 trainings and workshops were conducted with a total of nearly 900 trainees (more than 10% female participation) and 16 national representatives and counterparts were sent on international study tours to establish especially South-South cooperation. The erection of a processing demonstration unit and the manufacture of value-added products like bamboo furniture and flooring etc. have already led to the creation of 27 bamboo-processing companies resulting in 300 direct jobs supporting particularly the rural economy.

Fast growing bamboo with its vast root system contributes as well to soil stabilization on degraded lands. In addition and as valid substitute for wood, it reduces the pressure on national forests allowing sustainable management of natural resources and preservation of the environment.

For sub-Saharan African countries, UNIDO has formulated a strategy to develop the agricultural machinery and tools sub-sector through an integrated approach, which has already been applied to develop the agricultural machinery industrial system in Ethiopia, Eritrea, Ghana and Nigeria. The approach acknowledges the importance of agricultural machinery for improving agricultural productivity and the creation of agricultural surpluses at the rural level. Agricultural machinery is in essence an investment good that can only be financed through income that is generated from agricultural activities, underlining the need to bring farming from subsistence to a commercial status. The support structures for private sector engineering industries are crucial to keep all rural income generating activities operational, including the non-farm ones, through local and affordable production, repair, and maintenance services.

Furthermore, UNIDO helps to restructure and rehabilitate rural technology centers and provides extension services for rural industries in specific sub-sectors, as shown in Box 7.

Box 7: UNIDO Support in Upgrading Rural Technology

Diffusing technology in rural areas of Ethiopia and Eritrea

In Ethiopia, a project funded by the Danish Government has been implemented to formulate a programme to restructure and rehabilitate nine rural technology promotion centres and the Government has already taken measures to implement the programme.

Also in Ethiopia, within a large project on post harvest losses reduction funded by the Government of Japan more than 80 PDS (Pilot Demonstration Stations) have been established in 5 selected regions for training and demonstration. Some 100 metal workshop technicians, agro-engineers, and trainers/extension agents as well as 800 farmers were trained. The PDS were equipped with various post harvest equipment including carts, fruits/vegetables boxes, various storages, hand operated or engine driven millers, threshers, grinders, milk churners, oil presses, etc.

Increasing threshing efficiency and improved storage have reduced the post harvest losses from 25 to 20% and at the same time increased farmers' revenue significantly.

In Eritrea, a project funded by the Danish Government is currently being implemented and will contribute, inter alia, to upgrading the workshop facilities of the Agricultural Engineering Research Centre.

Providing extension services to producers of hides and skins in Nigeria

Extension services are being provided to producers of hides and skins in two Northern regions of Nigeria. Assistance is being offered in particular in improving flaying techniques, quality grading, preservation, and in the collection and transport of raw hides and skins. Pilot small-scale slaughter houses are being equipped with suitable flaying knives, the skills of flayers are being upgraded through practical on-the-job training, and appropriate chemicals are being supplied for the preservation of the hides and skins. In addition, information material, including leaflets and posters, on measures to improve the quality and increase the quantity of the product (e.g. by reducing wastes) has been printed in local languages and circulated widely. These measures will enhance the value of the hides and skins supplied by the producers, which will ultimately leads to higher incomes for the local population.

Promoting business linkages

The expected flows of investment to most developing countries have not materialized even after the implementation of extensive economic reforms and the development of domestic industrial capacities. In many countries, meaningful productivity gains expected to be stimulated by foreign direct investment (FDI) have not been observed. Responding to these disappointing trends, UNIDO's investment and technology promotion activities focus on promoting partnerships and supporting ties in the fields of technology transfer, sub-contracting, joint marketing and other forms of collaborative business agreements between foreign and domestic enterprises as a route to generating FDI and stimulating

domestic investment. An illustration is the Investment Promotion Agencies (IPA) network launched for sub-Saharan Africa and extensive industrial project formulation conducted in Burkina Faso, Ghana, Ethiopia, Nigeria, the United Republic of Tanzania, Cuba, Columbia and Honduras.

Institutional capacity building programmes on the technology and investment promotion cycle, using UNIDO tools, methodologies, training packages and software packages, have also been extended to community-based organizations, where appropriate. Promotion of design and marketing partnerships for the production and sale of tourism-related industrial products enhances the trading capabilities of rural artisans, including women. The use of information and communication technologies has been encouraged at enterprise level, including at rural community level, as a vehicle for trade promotion and business development.

Market access facilitation

In recent years, greater participation in international trade has offered opportunities for developing countries to share in the benefits of globalization and thereby reduce poverty. However, developing country products, both urban and rural, have to compete in conformity, quality and price and comply with myriad technical standards, health and safety requirements and regulations. These concerns have been aired with the Doha Round and particularly within the New Partnership for Africa's Development (NEPAD) initiative. In order to address those trade concerns and marginalization from global trade and markets, UNIDO launched the "Market Access" initiative for Quality, Standards and Metrology to support developing countries gain greater market access. This has become a pivotal activity of UNIDO in assisting developing countries to compete, conform and connect with international markets. Related technical assistance activities focus on developing standards, metrology and conformity assessment infrastructure across a broad range of production functions, and assisting the testing laboratories obtain international accreditation, supporting capacity development for ISO 9000 and ISO 14000 and in upgrading quality and productivity. Projects engaged in such capacity building are located in particular in Algeria, Lebanon, Sri Lanka, and the Western African Monetary Union (UEMOA) region.

In this context, particular efforts have been made to increase the tradable supply capacity of rural areas through the diffusion of best practices relating to process/product upgrading. In the case of the food processing industries, this has involved the dissemination of improved post-harvest technology as well as the dissemination of Good Hygienic Practices (GHP) and Hazard Analysis Critical Control Points (HACCP) systems. An example of the effectiveness of such measures is given in Box 8 with reference to Burkina Faso.

Box 8: UNIDO Support in Promoting Market Access through Technology and Quality Improvements

Burkina Faso: Solar Energy for improved drying of fruits and vegetables in Burkina Faso

In Burkina Faso, UNIDO has helped to develop a new technology to improve the drying of fruits and vegetables. This technology uses solar energy and a supplementary source of energy, and has been introduced to three groups of women entrepreneurs comprising some 200 individual entrepreneurs. It has enabled a reduction in production costs by 40 per cent and a considerable improvement in the quality of the dried products. The dried fruits (mainly mango) and vegetables are exported as natural/organic products.

A stimulus for rural growth is to support farmers to move from subsistence farming to commercial operations, thus creating income that can be partially invested back so as to increase productivity and stimulate diversification into other non-farm economic activities and associated sources of income.

Although such measures will ultimately strengthen the rural economy through the promotion of non-farm income generating activities and rural livelihood diversification, the interventions actually selected have to be in line with the development stage of target beneficiaries, and therefore show a wider variety of approaches including:

- Adding value in the food, leather, textile, wood processing and agricultural equipment industries;
- Reducing post harvest losses and the depletion of natural resources through the promotion of preservation, storage, processing, and packaging; and
- Increasing market accessibility for agro-products and establishing linkages with markets, inter alia through product development and innovation.

An example of such an intervention in Uganda is provided in Box 9.

Box 9: UNIDO Policy Support for Food Safety

Food safety and quality assurance in Uganda

Commendable progress has been made with UNIDO assistance towards the establishment of a reliable and sustainable food safety and quality assurance system in Uganda, where the responsibility for food control had previously been shared between different ministries and institutions, leading to the duplication and ineffectiveness of regulatory activity, fragmented surveillance and lack of coordination. To overcome these weaknesses and ensure effective collaboration between all sectors involved in the management and control of food safety and quality, a National Food Safety Bill was submitted to the 1st Parliamentary Council for approval. The Food and Nutrition Policy was completed and adopted on 20th December 2001 by the Food and Nutrition Council chaired by the Minister of Agriculture, Animal Industry and Fisheries, and a Food Safety Strategic Action Plan is under preparation for the implementation of the Food Safety Bill. As a result of the awareness raised by UNIDO activities in this field, the Ministry of Agriculture, Animal Industry and Fisheries, together with the Ministry of Health and the Ministry of Trade, Tourism and Industry, the Uganda National Bureau of Standards and the Uganda Consumer Protection Association, decided to organize an Annual Food Safety Week, the first of which was held on 10-22 November 2002 with UNIDO's assistance.

This policy advice has been accompanied at the sector level by assistance to improve fish handling and the strengthening of the inspection facilities, which has resulted in Uganda having one of the best fish inspection and quality control systems in Africa. This, in turn, has led to the lifting of the EU ban on Uganda's fish exports, and Uganda being placed on List 1 of countries exporting fish and fishery products to the EU since 15th October 2001. Through these support measures, UNIDO has contributed to the saving of some 200,000 jobs in the fishing industry personal and generating income for around 700,000 other people engaged in related activities. Fish has become the biggest export earner in 2001/2002, with export revenues amounting to US\$ 87m. and exceeding the US\$ 84m. generated by coffee, which has hitherto been the country's principal export earner. The capacity established in fish safety and quality assurance is also being used in other food sub-sectors.

Similar examples of how the provision of marketing and technology advice by UNIDO has helped to strengthen local agro-based industries in various developing countries and improve their export potentials is provided in Box 10 with reference to leather-related industries in Kenya and Egypt.

Box 10: UNIDO Support in Promoting Market Access to Leather-based Industries

Kenya: "Out of Africa" sandals

In Kenya, by utilizing the Training and Production Centre for the Shoe Industry (TPCSI) as a "Marketing-Service Centre", an export consortium of four companies was created to facilitate the export of "Out of Africa Sandals". This resulted in valuable exports of sandals to Italy, Spain, USA and Japan, thus creating a niche market for "Out-of-Africa" made footwear. A similar activity is now being repeated in Egypt, Eritrea, Ethiopia and Morocco.

Egyptian participation in international trade fairs

In Egypt, micro- and small-scale enterprises manufacturing shoes and leather goods are assisted by the UNIDO-established Footwear and Leather Industry Service Centre (FLISC) in developing and designing new products, producing samples, and offering them on international trade fairs. About a dozen local companies have participated in the last four shoe exhibitions in Riva del Garda, Italy. Similar technical assistance was provided to Eritrean shoe manufacturers.

C. Environmentally Sustainable Rural Development

Programmes for industrial ecosystems

UNIDO further implements specific programmes for industrial ecosystems in developing countries, which cover policies and support activities to secure the socio-economic well-being of rural communities. Typical examples of such activities are a UNIDO project on product and market development for sisal and henequen in Tanzania and Kenya that supports small-scale sisal farmers in technology upgrading for generating bio-energy and animal feeds from sisal wastes. Similarly, UNIDO is actively engaged in programmes for the restoration of industrial fisheries, which focus on large marine ecosystems of developing countries. While the objective of these programmes is to increase sustainable fish harvests in order to meet the growing nutritional needs of the local populations, food security and the socioeconomic well-being of coastal and rural communities are given top priority. Other UNIDO activities of this kind include a proposed project in Morocco to combat land degradation through the promotion of sustainable agricultural technologies, and a project in north-eastern India to prevent land degradation through the promotion of bamboo plantations, which help to stabilize the soil and provide the raw material for a variety of income-generating industrial processing activities.

A particular effort is made in the field of artisanal gold mining, which is often a significant source of livelihood in rural areas. This UNIDO programme concentrates on the challenge of reducing mercury emissions, which have a serious adverse impact on health, bio-diversity and the environment, through education and training as well as technology transfer and equipment manufacturing. Key components of this programme are measures to ensure the participation of women. The strengthening of local institutional capacities is ensured by close collaboration with local laboratories and the enhancement of their capacities for mercury pollution monitoring. This programme is described in greater detail in Box 11.

Box 11: UNIDO Support for Mercury Abatement in Artisanal Gold Mining

Protecting the rural environment through mercury abatement in artisanal gold mining

UNIDO has provided assistance for many years to the small-scale mining sector. Particular attention has been paid to the artisanal gold mining industry, which represents an essential activity in many developing countries as it provides an important source of livelihoods, particularly in rural areas where economic alternatives are limited. A major environmental challenge confronting artisanal gold miners in developing countries is the need to reduce mercury emissions in the extraction process. Many governments have become increasingly aware and concerned about the dangers involved in the release of mercury into the air and aquatic systems by artisanal gold miners. Since the issues related to the impact of mercury on health and the environment are multifaceted and complex, Governments are requesting UNIDO support, especially in education, training and the transfer of technology. In responding to these requests, UNIDO offers cross-disciplinary programmes comprising measures for environmental protection, the introduction of new technologies, and manufacturing of equipment and training. Special efforts are made in these programmes to ensure that women participate and benefit equally from the introduction of new equipment and processing techniques.

UNIDO's approach in addressing the mercury problem is to help phase out processes with low recovery rates and high consumption and discharge levels of mercury with environmentally safe and high-yielding gold extraction alternatives that will sharply reduce or eliminate the use and discharge of mercury. A large-scale GEF funded project was launched in August 2002 aimed at establishing the extent of mercury pollution through studies of the general health conditions of those living in selected areas, conducting geochemical sampling and analysis in order to identify "hot spot" areas, collecting and analyzing human specimens and other biological samples, studying mercury migratory patterns in the area, and assessing the impact and extent of mercury pollution in watercourses. In collaboration with respective governments, local laboratories are being identified and their resource capacities enhanced in order to enable them to develop and conduct continuous monitoring of mercury pollution of watercourses in artisanal gold mining areas. The project will also formulate and implement measures for remediation of the identified "hot spots".

Protecting rural communities from the effects of harmful pesticides and chemicals

The UNIDO programme on Persistent Organic Pollutants (POPs), implemented under the Stockholm Convention, assists developing countries and economies in transition to reduce and eliminate POPs by building national capacities and implementing demonstration projects for alternatives that protect rural incomes and agricultural incomes. POPs, which include pesticides used in agriculture and industrial chemicals, pose risks to health and bio-diversity through their environmentally persistent nature and their bio-accumulating processes through the food chain. As acknowledged by the Stockholm Convention, POPs pose a serious threat globally including to rural communities because of their extensive diffusion by natural means even to regions where they have never been used. Details of this programme are provided in Box 12.

Box 12: UNIDO Support for the Elimination of Persistent Organic Pollutants

The UNIDO POPs programme

Persistent Organic Pollutants (POPs) are organic substances that persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects to human health and the environment. With the evidence of long-range transport of these substances to regions where they have never been produced or used and the consequent threats they pose to the environment of the whole globe, the international community has now, through the Stockholm Convention, called for urgent global actions to reduce and eliminate releases of these chemicals. Twelve industrial chemicals are currently classified as POPs.

POPs substances impact on rural development because nine of these chemicals are pesticides used in agriculture, which contributes a substantial share of GDP in developing countries and is the mainstay of the rural populations of these countries, who comprise about 80 per cent of the total populations. The UNIDO POPs programme assists some 40 developing countries and countries with economies in transition in developing their national implementation plans under the Stockholm Convention. These countries are required to come up with priorities for funding alternatives to POPs chemicals in agriculture and industry. UNIDO will subsequently assist these countries in reducing or eliminating the use of POPs chemicals by jointly putting in place demonstration projects for alternatives and adapting to these alternatives. It is intended that these pesticides will in most cases be replaced by environmentally friendly Integrated Pest Management (IPM) strategies, which will ensure the reduction or elimination of the use of POPs as well as protecting the environment and granting higher yields and profits for the farmer.

There has been a deliberate effort to decentralize development from the cities to rural areas, where most of the population lives, and also to stem rural-urban migration. This includes rural electrification and the development of small-scale industries. It is imperative that in the provision of electricity to the rural folk, care should be taken that the transformers and capacitors to be used do not contain toxic chemicals such as PCBs. UNIDO, through its network of National Cleaner Production Centres, will transfer clean industrial technologies to rural areas in order to avoid the emission of dioxins and furans. UNIDO's programme on non-combustion technology for the destruction of POPs substances will benefit rural areas, where most of the obsolete pesticides and de-commissioned transformers and capacitors may be stored. The clean-up of contaminated sites may also make more land available for agriculture and other uses, while stopping the contamination of surface and ground water.

Sustainable rural development and natural resources management

To date, UNIDO has established 25 National Cleaner Production Centres (NCPCs) and a number of other cleaner production programmes the world over. Their primary purpose is to promote cleaner production among the SMEs so that they can reduce both their environmental impacts and their costs. In a number of cases, the centres have worked with small-sized and micro-enterprises located in primarily rural areas. As one example, the Nicaraguan Cleaner Production Centre has worked with artisanal potters in the small town of San Juan de Oriente, where 90 per cent of the potters work at home, exposing themselves and their families to smoke from their rudimentary open wood furnaces. In addition, they use expensive imported pigments containing hazardous materials like zinc, manganese, cobalt and chrome. Working with a local NGO, the Nicaraguan CPC assessed the working practices of a number of potters and helped them to introduce a number of simple, low-cost or no-cost options that increased the efficiency and

reduced the smoke emissions from the furnaces, and limited the exposure of families to the remaining emissions. In addition, the Centre and the NGO are helping the potters to investigate the use of natural and locally available pigments. The beneficiaries have spread the word and now take pride in being considered by their peers as “promoters of cleaner workshops”.

In addition to the promotion of cleaner production technologies, UNIDO also provides assistance with end-of-pipe measures to minimize the environmental damage caused by industrial activities. An example of such an activity is given by the common effluent treatment plant in the rural leather producing centre of Kasur in Pakistan described in Box 13.

Box 13: UNIDO Support in Treating Leather Tanning Effluents

The common effluent treatment plant in Kasur, Pakistan

A Common Effluent Treatment Plant (CETP) has been established and is now operational in Kasur, Pakistan. This CETP and its supporting modules (grit chambers in tanneries, pipelines, pumping stations, outfall channel) serve 240 tanneries operating in the town. The pollution control system collects all liquid effluent and solid wastes from tanneries, treats effluent to an acceptable purity standard and transports the treated effluent to a channel located at a distance of 8 km from Kasur. A pilot chrome-recovery unit eliminates 98 per cent of this heavy metal from the effluent, with the recovered chromium being used again in the tanning process. The project eliminated three large stagnant pools of accumulated effluent, which resulted in the recovery of a considerable area of fertile land now being cultivated by local farmers.

D. Rural Energy for Productive Use

The issue

The energy-poverty nexus and its implications, highlighted as a major theme at the World Summit on Sustainable Development, are widely acknowledged. Energy is a prerequisite for sustainable development and for fighting poverty. The availability of affordable and sustainable energy to all people is critical to the achievement of a number of the objectives agreed by the international community at the Millennium Summit in September 2000, including the goals of halving extreme poverty, halving the number of people suffering from hunger, achieving universal primary education, promoting gender equality and empowering women, reducing child mortality and ensuring environmental sustainability.

A workable policy framework to enable rural access to energy involves the combination of international cooperation, strong national commitment and private public partnership funding necessary to build basic energy service structures. In rural areas, 1.6 billion people lack access to modern energy services. UNIDO's rural energy programme addresses firstly the reality that these people are too poor and isolated to attract commercial energy and secondly the fact that some of the fuels used for cooking and heating cause health problems and deforestation.

In recent years, a global consensus has been reached that enhanced international cooperation is required to bring energy services to those currently without access to modern energy. As these segments of a population are not easily attracting private sector activity, there is agreement that a combination of international cooperation, strong national commitment and public funding are necessary to build the necessary basic energy service delivery structures.

Considering the scale of the problem, it is essential to formulate well-structured and focused approaches to reach the people that currently do not have access to reliable and affordable sources of energy. While it is expected that future electrification and other infrastructure programmes will mainly concentrate on

improving access to modern energy for households in urban areas and medium-sized settlements, specific programmes need to be formulated for those in rural areas.

In order to be affordable and sustainable in rural areas, energy programmes would have to be largely based on the utilization of indigenous and renewable sources of energy (essentially biomass, solar, wind and mini-hydropower), taking into account the development priorities of the national government and the suitability of different energy sources for different applications. It is also likely that such energy systems, based on decentralized and cleaner energy, are better suited to meet the needs of the rural poor.

The target groups for rural energy programmes are essentially those that fall into two broad categories: those that are without any access to modern energy delivery systems, e.g. people living in remote areas at great distance from existing energy sources, and those that could possibly be connected to grid-based systems, but are unable to pay for those energy services, in particular the initial investment cost of energy-related installations. For both groups of the poor – who depend at present for their basic energy needs on their own time and labour in order to gather what they need – any level of additional expenditure on a daily basis is considered to be a major burden.

Past experiences with energy programmes for rural areas have also shown that such efforts must aim not only at providing the necessary infrastructure for the generation and distribution of energy services, but must also be directed at resolving other related issues if they are to be successful and sustainable. For this, more comprehensive “packages” of rural energy programmes need to be developed that address a number of economic, social and regulatory issues as well as technical and infrastructural ones. Programmes targeted at rural populations should aim at developing energy services that are both reliable and at a low-cost, requiring minimal maintenance and repair. Furthermore, it is believed, that approaches should be incorporated in such energy programmes that facilitate income-generating activities, made feasible through the access to reliable and affordable sources of energy.

It is evident that the approach followed will greatly depend on the prevailing situation, as the causes for the lack of access to modern energy can be substantially different in rural areas in South Asia compared with Central America or sub-Saharan Africa. A special situation exists in the Small Island Developing States (SIDS), that are currently in most cases dependent on expensive fossil fuels and conventional biomass (wood) for energy generation. The negative impacts of these on the environment as well as the heavy financial burden on the SIDS and the low efficiency of energy use make these vulnerable countries a special case

The UNIDO solution

Against this background, UNIDO launched a special initiative on rural energy for productive use at the WSSD in Johannesburg in August 2002. This initiative is aimed at demonstrating the technical and social viability of selected forms of energy generation; creating sustainable local enterprises that can deliver energy services based on renewable technologies; and identifying activities related to the production and use of energy that lead directly to income generation. The main features of the UNIDO initiative are the maximization of local inputs and manufactures in the applicable energy solutions and assistance to energy users in the identification and development of income generating uses related to the production and/or use of the energy. Apart from the immediate benefit of job creation and capacity building, these measures are also aimed at reducing the cost of the energy solutions, thereby increasing their economic viability.

The ultimate beneficiaries of such a programme would be the rural poor who would gain access to affordable and reliable energy services for basic needs (cooking, heating and lighting) as well as for productive uses, which is expected to result in a measurable impact on poverty alleviation, brought about by the creation of new opportunities for establishing micro and small-scale businesses. It is also hoped

that this strategy will demonstrate the validity and effectiveness of rural energy development to donor and developing countries, and attracting financial resources for replication of the approach in other areas by both public and private sector entities.

Regional cooperation will be explored when identifying potential for and promoting the assembly and manufacture of renewable energy equipment for which economies of scale are important. UNIDO considers it essential to secure the involvement of the private sector in such activities at an early stage, and will therefore seek to package programmes and projects in such a way as to make them feasible for private sector participation. To aim for long-term sustainability and commercial profitability is central to UNIDO's approach.

The proposed "energy solution" options will mainly be determined by the availability of local sources of renewable energy and could encompass technologies such as micro and mini hydropower, biomass (biogas, fermentation, direct combustion, etc.), solar energy (photovoltaics, water heaters, dryers, water desalinators, etc.), wind energy systems. UNIDO also promotes renewable-energy based information and communication technologies (ICT) in rural areas. Examples of UNIDO's work in this field are given in Box 14.

Box 14: UNIDO Support in Rural Energy Generation for Productive Use

GHG emissions reduction in Chinese township and village enterprises (TVEs)

A major share of China's overall greenhouse gas (GHG) emissions emanates from industrial TVEs. The project concept is to remove the barriers to improving energy efficiency in the TVE sector and lead to a widespread market-based dissemination of energy-efficient technologies in China's TVEs. Four sectors have been selected: foundries, cement, coking, and brick making.

Modern renewable energy services in Isla de la Juventud, Cuba

The main objective of the project is to displace the existing diesel-based electricity generation of the island's main electrical mini-grid with renewable energy alternatives. The project will identify, evaluate and prioritize the barriers preventing increased uses of renewable energy sources for the provision of modern energy services (mostly electrical) and to design activities for their reduction/removal on the Isla de la Juventud.

Rational use of energy in SMEs in Ethiopia

The project forms the energy component of UNIDO's Integrated Programme for Ethiopia (IPE). The objective of the project is to contribute to raise awareness regarding the cost-effectiveness of rational energy use in productive activities; building institutional capacity (strengthening of the Basic Metals and Engineering Industries Agency (BMEIA)) for assisting Small-medium enterprises (SME) in both, the public and private sectors, in formulating and implementing energy conservation measures.

The multifunctional platform initiative for decentralized rural energy supply in Africa

In many developing countries, particularly in Sub-Saharan Africa where less than 8 per cent of the rural population have access to electricity, poor people, especially women, spend many hours collecting water and firewood for food preparation, agro-processing and the multitude of other tasks that sustain rural livelihoods. Widening access to modern energy services can therefore be a catalyst for sustainable human development, given these patterns of energy use. To provide the rural population with this access to energy, UNIDO has developed and installed so-called multifunctional platforms in several African countries. They have simple diesel engines that can power a variety of tools, such as cereal mills, huskers and/or battery chargers. The engine can also generate electricity for lighting, refrigeration and water pumping. These platforms constitute the core of village workshops in which rural women can engage in income-earning productive activities, primarily related to basic food processing

Renewable energy-based ICT promotion

While the social and economic development opportunities that are offered by information and communications technologies (ICTs) are potentially far-reaching, large sections of the rural populations of developing countries and countries with economies in transition have not been able to benefit from them owing to their lack of access to the energy needed to power such technologies. This is widening the 'digital divide' between the developed and developing nations, which in turn is further restraining the development of developing countries. By developing rural power generation services using renewable energy sources, UNIDO has facilitated the introduction of ICTs into the rural regions.

CHAPTER 3: CONCLUSION

Without denying the growing evidence of urban poverty, in developing countries poverty is overwhelmingly a rural phenomenon. Both dimensions are obviously interlinked: where land pressure and shortages of opportunity exist in rural areas, they will push rural population groups (at least the more dynamic, mobile segment) into migrating to urban centers thus increasing the numbers of the urban poor.

To stem this trend, and to fight poverty at its root cause, economic opportunities need to be generated in the rural areas themselves. In this, the transition from agricultural to industrial economies is key. Entrepreneurship needs to be actively promoted so as to stimulate diversification into rural non-farm activities, initially in particular related to agro-processing and other areas of adding value to natural resources.

It is the creation and expansion of industrial micro and small enterprises that offers a path out of poverty – creating employment, generating incomes, enhancing skills and providing a seedbed for entrepreneurship – in a manner that builds equity concerns into the economic structure rather than relegating them to redistribution measures.

In supporting this crucial transformation process, UNIDO plays an important role through its technical cooperation programmes. These span a wide spectrum of policy interventions, institutional capacity-building, technology upgrading support, entrepreneurship development (with emphasis on women) and market access facilitation. The introduction of cleaner production, minimization and management of waste, and promotion of rural energy sources are integral dimensions of UNIDO's expertise.

In conclusion, the process of enhancing productive capacities in rural areas must acknowledge complex interactions between social and cultural parameters, policies, institutions, market incentives and the actions of economic agents. Integrated responses are required. In its domain, i.e. industrial development, UNIDO is offering country-specific Integrated Programmes to meet this challenge.