

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION



A WORLD WITHOUT HUNGER IS POSSIBLE

Best practice cases of UNIDO technical cooperation

September 2023

CHALLENGES

The global food system is out of balance. It fails to provide for a growing number of people: 828 million individuals, the equivalent of 10% of the global population, were facing hunger in early 2021. Up to 3 billion people are unable to afford a healthy diet. Undernutrition affects children disproportionally. Nearly half of all deaths in children under 5 are attributable to undernutrition. At the same time, and at the global level, the current food system involves excessive waste. About one-third of the food we produce is lost and wasted, not reaching a plate. The wasted produce nonetheless required upstream inputs like seed material, labor, clearing of land for cultivation, water, provision of plant nutrients, irrigation, transport, etc. and caused social, economic and environmental impacts. Moreover, overconsumption affects health outcomes since, by now, one in four, or more than 2 billion people worldwide, are considered overweight, resulting in a worrying increase in associated illnesses like diabetes and cardiovascular disease.



While these symptoms testify that the food system is deficient, we are convinced that a world without hunger and a more healthy, sustainable and inclusive food system is possible.

The global food system has come under increasing strain in recent years. The global Covid-19 pandemic highlighted how inter-connected and vulnerable our food system is. Similarly, the unexpected and distressing new outburst of armed conflict in the middle of Europe and one of the world's bread baskets, now affects grain-trade and supply of agricultural input materials worldwide, pushing fertilizer and cereal prices out of reach for many. Climate change is another factor that reduces the predictability of seasons, redefines cropping regions, and affects the spread of biological vectors for pests and pathogens. Companies in the food processing industry are confronted with the challenge of reliably sourcing raw materials.

This brochure showcases solutions that UNIDO contributes towards addressing these challenges.

Drivers of future food demand, and corresponding cropland expansion



Demand for food will increase by 47 % over the coming 30 years



Growing demand for food will require an expansion of cropland by 47% by 2050



By 2050, climate change impacts will require a 9% increase in cropping area



Food waste is projected to nearly double by 2050 without further interventions





In some of the Sub-Saharan African countries, small holder farmers contribute up to 90% of food production



Agro-modernization and agro-innovation would reduce the required expansion of cropland by 38%



There are several ways UNIDO projects contribute to improving food security. Many of them include measures that improve agricultural output, resulting in better food availability. More food production can also be utilized by reducing food loss and waste by introducing improved dry and cold storage facilities and better processing and preservation techniques, including sustainable packaging.

A significant effect of how UNIDO projects contribute to food security is through economic development – as household incomes improve and diversify, e.g. through more off-farm employment, individuals accumulate savings and access food markets in case of crop failures. Further market mechanisms of agrifood industries are that they allow to increase the scale of production, connect food markets and reduce unit prices, which makes food more affordable.

Moreover, measures are important that work on food utilization at the household level and stability across the three other areas. Since UNIDO typically takes a marketdriven approach, the project examples showcased below are sorted along the causal chain of value addition ranging from:

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Value chain segments:	INPUT MATERIALS	PRIMARY PRODUCTION	PROCESSING	LOGISTICS, LINKAGES, PACKAGING	MARKET ACCESS, RETAIL, EXPORT
Examples of intervention areas:	Provision of seed- material, fertilizer energy	Cultivation of produce, aggregation, sorting, grading, and linking smallholder farmers to markets	Agri-food industry, transforming, processing, food safety measures	Improved transport, storage, cold -chains, packaging, and food quality concerns	Conformity to trade -standards, removal of barriers







DURATION November 2015 to October 2022







DONORS Global Environment Facility

INPUT MATERIALS

MARY DUCTION PROCESSING

DGISTICS, NKAGES, ACKAGING MARKET AC-CESS, RETAIL, EXPORT

Reducing Greenhouse gas emission through conversion of waste into green energy in **KENYA**

CONTEXT

The project promotes investments in waste-to-energy (WTE) technologies for improved energy access and reduced greenhouse gas emissions in Kenya. In Kenya, agro-industrial wastes are generally underutilized and, in most cases, disposed of by burning, dumping or unplanned landfilling. Dumping and unplanned landfilling results in methane generation and its subsequent release into the atmosphere. Access to electricity for productive use is still unreliable in many rural areas, and it is estimated that industrial-scale power/co-generation using biogas produced from agricultural residue could abate 1.6 million CO₂ per year.

UNIDO APPROACH

UNIDO facilitates technology transfer, linking objectives of energy access, waste management and productive use activities to create a direct impact, in particular with piloting new technologies, including WTE. The project contributes to the key component of SDG2 through adopting sustainable agricultural practices that reduce waste and promote resource efficiency, creating jobs, income and alleviating rural poverty.

RESULTS

- Waste-to-energy plants established for a cumulative capacity of around 1,856 kW and 1,397 kW the
- Human capacities developed in waste-to-energy for 50+ policy makers and 50+ project developers, agroindustries and other stakeholders
- Information and best practices platform for WTE technologies established

COUNTERPARTS; IMPLEMENTING PARTNERS

Ministry of Environment, Climate Change and Forestry; Ministry of Investment, Trade and Industry; Ministry of Energy; Ministry of Agriculture and Livestock Development; Kenya Industrial Research and Development Institute; National Treasury and Planning; Biogas Stakeholders Network; Council of Governors; Dagoretti Environment Management Association





UGANDA

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GEOGRAPHICAL COVERAGE

INPUT MATERIALS PRIMARY PRODUCTION

PROCESSING

LOGISTICS, LINKAGES, PACKAGING MARKET AC-CESS, RETAIL, EXPORT

Reducing vulnerability of banana producing communities to climate change through banana value-added activities in **UGANDA**

CONTEXT

The project supports vulnerable communities in Western Uganda to better adapt to the effects of climate change through banana value-addition activities. In Western Uganda, climate change impacts the growth of key economic sectors as they are dependent on raw materials from climate-dependent natural resources and agriculture. The region is considered among the most vulnerable to climate change as the majority of the population is dependent on near subsistence agriculture for livelihoods and food security.

UNIDO APPROACH

The project supplies of disease-free banana planting materials, demonstration on the use of banana waste for biogas and as compost for soil fertility and agricultural practices to enhance retention of field and plantation nutrients. In addition, the project promotes improved food safety and quality value-added products to improve market access and increase incomes in rural communities. Value-added banana-based products include banana flour and chips, banana juice and banana wine.

RESULTS

- Banana farmers supported with 71,000 disease-free, tissue-cultured banana plantlets to establish 156 acres of banana mother gardens
- At least 2,500 climate-risk-exposed farmers received clean planting material from these mother gardens
- Farmers supported with bio-digesters for biogas
- Eight processing facilities producing value-added banana-based products, including banana flour and chips, banana juice and banana wine, upgraded to improve their quality and production volumes
- Nine community-based banana processing facilities were upgraded to increase their production capacities and quality and to support vulnerable farmers to engage in income diversification through value-addition activities These facilities also serve as training/incubation centres

COUNTERPARTS; IMPLEMENTING PARTNERS

Ministry of Agriculture, Animal Industry and Fisheries; Ministry of Trade, Industry and Cooperatives





GEOGRAPHICAL COVERAGE

SUDAN



DURATION January 2018 to December 2023



TOTAL BUDGET

EUR 4,439,269 (Phase I and Phase II)



DONORS

Italian Government through the Italian Agency for Cooperation and Development

INPUT MATERIALS PRIMARY PRODUCTION

PROCESSING

OGISTICS, INKAGES, ACKAGING MARKET AC-CESS, RETAIL, EXPORT

Agro-value chains and finance services for inclusive economic growth in Kassala State **SUDAN**

CONTEXT

The project creates sustainable job opportunities through value chain development, clean energy and access to finance. The agricultural sector is the core of Sudanese life and a main driving force for its economy. Despite its strategic importance, the agriculture sector remains characterized by poor value-addition capacity and generally low yields. Limited access to financial services leaves the sector's potential unfulfilled.

UNIDO APPROACH

The project aims to increase the added value in selected value chains by supporting start-ups of agro-micro, small and medium enterprises. Particular attention is given towards youth and women for access to financial and non-financial services and the uptake of renewable energy technologies.

RESULTS

- 7,907 jobs created or retained
- 627 business plans for SMEs prepared
- 120 farmers accessing green technologies
- 2,728 agro-entrepreneurs financed, \$812,859 loans

COUNTERPARTS; IMPLEMENTING PARTNERS

Ministry of Production and Economic Resources of the Kassala State Sudan; Federal Ministry of Industry; Central Bank of Sudan – Microfinance Unit





European Union-East African Community Market Access Upgrade Programme in **KENYA**

CONTEXT

The EU, in partnership with the East African Community (EAC), launched the Market Access Upgrade Programme (MARKUP) to support member countries in market access of agro-food products to the EU and regional markets.

UNIDO APPROACH

The project enhances value chain actors' capability to produce and trade according to the international market requirements.

RESULTS

- 1,425 farmers trained on Good Agricultural Practices in 9 counties on selected value chains
- 3,244 stakeholders' capacity built on standards, market requirements, food safety, Good Agricultural Practices and post-harvest handling, clean planting materials
- Exporting companies supported with training and compliance trainings

 100 laboratory staff from Kenya Bureau of Standards, Kenya Plants Health Inspectorate Service and National Public Health laboratories are trained on ISO Standards 17025, 17020

COUNTERPARTS; IMPLEMENTING PARTNERS

Kenya Bureau of Standards, Agriculture and Food Authority Horticulture and Crops and Nuts Directorate, Kenya Plant Health Inspectorate, Fresh Produce Exporters of Kenya, Fresh Produce Consortium, Ministries of Agriculture Livestock, Fisheries and Cooperatives, and Ministry of Industrialization, Trade and Enterprise Development and Kenya Agricultural and Livestock Organization, Pest Control Products Board, Ministry of Health – National Public health laboratories services, and County Governments







Honey for job creation for youth, women and people with disabilities in IRAN (Islamic Republic of)

CONTEXT

The project creates decent and productive work for young women and men and people with disabilities through the development of high-potential sectors. Honey was the sole product of the beekeeping industry in Iran for decades. Limited attention was given to aspects of the ecosystem services like pollination and economic diversification into high-value-added by-products.

UNIDO APPROACH

With the participation of the private and public sectors, the project was launched with the aim of building successful cases in skills improvement, development of value chains, and institutionalization at the provincial and national levels. In order to improve the value chain of by-products, various activities were designed and implemented with a special approach to knowledge sharing and localization, skills development, value chain investment, private sector participation in research, and development activities in compliance with SDG2.

RESULTS

- Two gold medals for quality in the London Competition Honey Awards 2020 and a bronze medal in the commercial class category in the 45th Apimondia, Turkey, 2017
- Specialized skills in the beekeeping sector improved through 50+ courses provided for 4,500 beekeepers, 10% of whom were women
- Value chain of the high-value-added product (Royal Jelly) was fully created and developed
- Value of the by-products market increased to USD 2.5 million

COUNTERPARTS; IMPLEMENTING PARTNERS

Ministry of Cooperative, Labor and Social Welfare of Iran







DURATION

May 2019 to

December 2021



GEOGRAPHICAL COVERAGE

INPUT MATERIALS PRIMARY PRODUCTION

PROCESSING

TOTAL BUDGET USD 1,000,000

000

LOGISTICS, LINKAGES, PACKAGING

MARKET ACCESS, RETAIL, EXPORT

DONORS

Commerce

China Ministry of



Improving agro-industrial practice and capacity for poverty alleviation in Quannan CHINA

CONTEXT

The project strengthens local capacity, productivity and quality along selected value chains. Quannan province was faced with challenges, including its low processing level of agro-products, limited value addition to agro value chains, needs of farmers and agro-processing enterprises to improve their technical exposure, capacities and compliances, small-scale and low efficiency of local agro-production, and the insufficient storage conditions and infrastructure at the post-harvest stage.

UNIDO APPROACH

The project provides technical support to smallholders and farmers' cooperatives with good agriculture practices and relevant certification to improve their compliance, productivity and efficiency. Cooperating entities were led by the project for safety and quality improvement and internationally certified for good agricultural practices. For logistics and transport, the project facilitated the construction of a cold chain structure for better storage conditions during distribution and transportation.

RESULTS

- four farmers' cooperatives/processing companies were certified by the Good Agricultural Practices for eight types of agro-products
- Approximately 1,800 growers directly or indirectly benefited from participating in the Good Agricultural Practices training and certification
- two cold storages were established with a capacity of 600 cubic meters total and a range of refrigerating temperature from 0 to 5 degree Celsius

COUNTERPARTS; IMPLEMENTING PARTNERS

Quannan local County Government





GEOGRAPHICAL COVERAGE

MONGOLIA



DURATION October 2017 to June 2021







INPUT MATERIALS

PRIMARY PRODUCTIO PROCESSING

LOGISTICS, LINKAGES, PACKAGING

MARKET ACCESS, RETAIL, EXPORT

Agribusiness Employment Creation in MONGOLIA

CONTEXT

The project upgrades skills in the livestock and horticulture sectors to spur economic diversification. Livestock husbandry and crop production are the main agricultural subsectors and play a major role in the economy of Mongolia. With 25% of the population living below the poverty line, and one-third of the youth unemployed and underqualified, the creation of employment opportunities and improvement of livelihoods is a high priority for the Government.

UNIDO APPROACH

Addressing gaps at the firm and institutional levels, the project aims to address the productivity of livestock and vegetable agricultural value chains. A focus on valueadded and competitiveness of the products aims to ensure sustainable economic growth and job creation.

RESULTS

- 4,099 professionals trained
- Developed a milk supply scheme that connects primary producers with large dairy companies

- Assisted in the formation of 11 dairy producers' groups; supported the establishment of four cooling centers with a combined capacity of 14.2 tons in three provinces
- Established a model small-scale abattoir, fully complying with the meat hygiene standards that apply to establishments
- Increased incomes of 450 growers from 28 farmers groups, six farmers cooperatives and seven companies in the framework of contract farm promotion

COUNTERPARTS; IMPLEMENTING PARTNERS

Food and Agriculture Organization of the United Nations ; Mongolia Ministry of Food, Agriculture and Light Industry (MALI); World Packaging Organization







GEOGRAPHICAL COVERAGE

ETHIOPIA



DURATION January 2023 to December 2025



TOTAL BUDGET EUR 2,000,000



DONORS Italian Agency for Development Cooperation

INPUT MATERIALS PRIMARY PRODUCTION

PROCESSING

OGISTICS, INKAGES, ACKAGING MARKET ACCESS, RETAIL, EXPORT

De-risking investment in the Ethiopian coffee sector ETHIOPIA

CONTEXT

The project increases access to financial services to increase the volume, quality and value of Ethiopian coffee. The initiative, formulated in close cooperation with local and international public and private stakeholders, operationalizes a risk-sharing business model.

UNIDO APPROACH

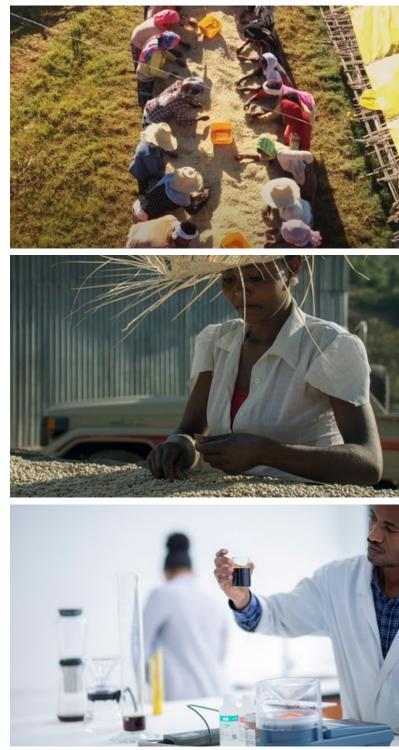
The project focuses on the coordination of three intervention modalities: (1) technical assistance to support the Commercial Bank of Ethiopia to invest efficiently and sustainably in the Ethiopian coffee sector through de-risking; (2) establishing a dedicated credit line facility to provide concessional loans to investment proposals from the coffee value chain that have high socio-economic and environmental impact; and (3) partnership-based private "de-risking" system to seek the active engagement of the international private sector in supporting local private stakeholders through the improvement of bankability, environmental and socioeconomic sustainability of their investment project proposals to be presented to the project.

RESULTS

- Domestic institutional capacity built and strengthened to successfully manage all project components such as investment identification, credit line management, monitoring etc
- Credit line operational manual prepared
- Technical and financial assistance provided to support coffee companies with a credit line for financing investment proposals from the coffee growers

COUNTERPARTS; IMPLEMENTING PARTNERS

Ethiopian Coffee and Tea Authority (ECTA); illycaffè and Ernesto Illy Foundation; International Coffee Organization (ICO); Commercial Bank of Ethiopia (CBE); Fondazione Politecnico di Milano, Politecnico di Milano, SDA Bocconi







INPUT MATERIALS

PRIMARY PRODUCTIO PROCESSING

LOGISTICS, LINKAGES, PACKAGING MARKET ACCESS, RETAIL, EXPORT

Food safety compliance and value addition for livelihoods in PAKISTAN

CONTEXT

The project revitalizes the livelihood of meat value chain actors in Khyber-Pakhtunkhwa (KP) and apple value chain actors in Balochistan through improved compliance and productive capacities, and value addition. Meat consumption is central to dietary habits in Khyber-Pakhtunkhwa and contributes significantly to the livelihood of value chain actors. Meat sold in unhygienic conditions can lead to severe foodborne illnesses, contributing to productivity losses of USD 1.5 billion per year in Pakistan through higher health care costs and inability to work or decreased productivity of consumers.

UNIDO APPROACH

UNIDO is enabling regulatory and industry shifts towards food safety compliance and integration of socio-environmental safeguards within the meat sector through the developing and endorsing of the Good Hygiene Practices (GHP) and the Good Animal Husbandry Practices standards by local regulatory authorities, followed by specialized training of trainer sessions delivered by international food safety experts to regulatory staff, food safety inspection and managers, as well as cascade training to field assistants on GHP and Food Safety Training booklets in the target districts. Further, UNIDO and the KPFSHFA launched the KP Safe Meat Competition to train butcher shops in Peshawar, Dera Ismail Khan, Abbottabad, and Kohistan, which was paired with supporting the integration of GHPbased inspections checklist within the KPFSHFA's digital management inspection system.

RESULTS

- 200+ butcher shops were trained and evaluated on integrating GHP and food safety practices in their operations and the top 35 businesses were awarded meat processing equipment
- 11,740 people with access to quality, safe meat
- 70 meat processors engaged in food safety compliance, entrepreneurship, and value-addition trainings
- 70 apple farmers awarded under the Good Agricultural Practices competition for improving GAP at the farm level

COUNTERPARTS; IMPLEMENTING PARTNERS

Government of Japan; JICA; Ministry of National Food Security and Research; Livestock and Dairy Development Department (KP); Local Council Board (KP); Khyber Pakhtunkhwa Food Safety and Halal Food Authority; Agriculture Department, Government of Khyber Pakhtunkhwa (KP); Agriculture Extension Department (Balochistan); Balochistan Food Safety Authority (BFA).







GEOGRAPHICAL COVERAGE

CAMBODIA



INPUT MATERIALS

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PRIMARY PRODUCTIO PROCESSING

LOGISTICS, LINKAGES, PACKAGING

MARKET ACCESS, RETAIL, EXPORT

CAPFish Capture – Post-Harvest Fisheries Development CAMBODIA

CONTEXT

The project contributes to the development of postharvest fisheries through the upgrading of the regulatory and institutional system, as well as the adoption of better practices and innovation by the private sector. The institutional capacity of the Competent Authority for establishing official control systems and supporting the development of post-harvest fisheries were in need of strengthening, in particular, to access export markets such as the EU.

UNIDO APPROACH

The project focuses on scale-up opportunities and the sustainability of the project interventions beyond its duration. Innovative approaches are used in food safety support and food waste reduction through the development and implementation of a voluntary food safety certification scheme - Cambodia Quality Scheme (CQS); value chain financing through investment support schemes and facilities offering blended financial products, equipment, and technical support; and multistakeholder involvement and participation, through a collaborative Food Technology, Research, and Innovation Platform, that brings together government, academia, and private sector representatives promoting research and development. Gender, environmental and social considerations are streamlined throughout all project activities.

RESULTS

- National Action Plan for Inspection and Control of Quality and Safety of Fishery Products developed and approved
- Voluntary food safety certification scheme, Cambodia Quality Seal developed
- Pool of 15 national food safety trainers and 14 CQS auditors was established to ensure food safety compliance; 7 national laboratories in established Quality Management System against ISO17025, and one laboratory (Institute of Pasteur of Cambodia) was successfully accredited
- 360 full & part-time jobs retained in 28 enterprises
- Technology Research and Innovation Platform (FTRIP) supported to introduce new technology solutions and products, processes and green technologies in the post-harvest fishery sector

COUNTERPARTS; IMPLEMENTING PARTNERS

Fisheries Administration of the Ministry of Agriculture, Forestry and Fisheries, Business Development Service Providers, Financial Institutions, universities, business associations and other relevant Ministries and institutions

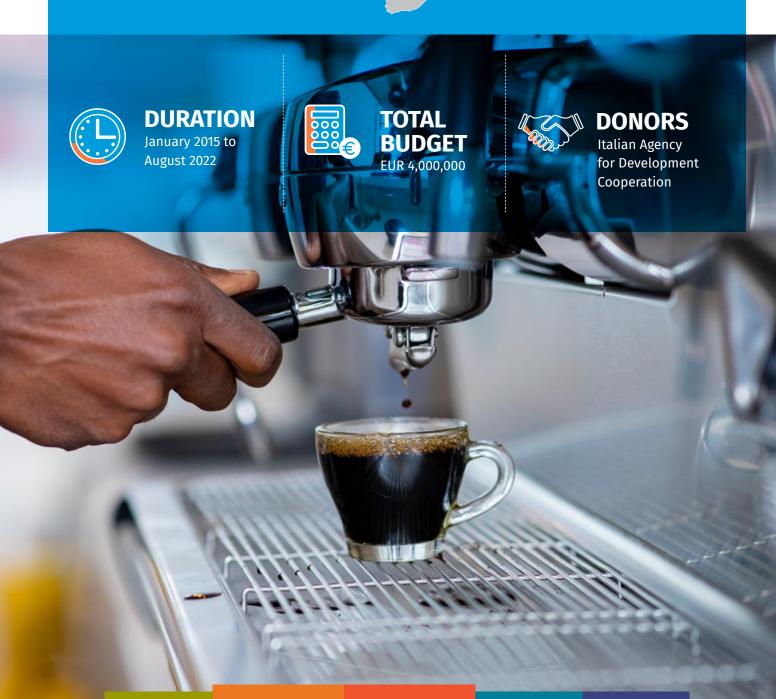






GEOGRAPHICAL COVERAGE

ETHIOPIA



INPUT MATERIALS PRIMARY PRODUCTION

PROCESSING

LOGISTICS, LINKAGES, PACKAGING MARKET ACCESS, RETAIL, EXPORT

Finding sustainability measures to improve the Ethiopian Coffee Value through private partnership ETHIOPIA

CONTEXT

Coffee in Ethiopia represents the major source of income for about 20 million people, who are employed at different levels of the value chain. Moreover, coffee is the first item in terms of export revenues (with a share of about 30%). Because of the high potential of creating added value, the coffee sector can strongly contribute to the growth of the industrial sector share in the national GDP. Since its establishment in 2015, the Ethiopian Coffee and Tea Authority (ECTA) represents the focal point for the development of the Ethiopian coffee value chain and is the Institutional Partner for UNIDO in this initiative. The project is framed on a value chain approach, therefore it targets smallholder farmers through the introduction of Best Agronomic Practices for improving the quality of the yields, as well as it supports the dissemination of technical skills for an optimized post-harvest process, with the creation of a knowledge hub on coffee science and economics.

UNIDO APPROACH

In strong collaboration with the project private and public partners, UNIDO has intensively worked with ECTA for upgrading its technical capacity at the national level, as well as for leveraging ECTA positioning in the global coffee arena. Through these lines of action, from coffee plantation to coffee knowledge and entrepreneurial skills development, the project has operated across the entire Ethiopian Coffee Value Chain increasing its social, environmental and economic inclusiveness, integration and long-term sustainability.

RESULTS

- Establishment of coffee training center (CTC) State of art knowledge hub on coffee, which takes steps from Illycaffé experience with the University of Coffee in Trieste Italy, focuses on upgrading professional training opportunities on coffee in Ethiopia and in the Region.
- Technical assistance for 30,000 farmers on coffee agronomic, processing and marketing best practices
 Attention has been kept on increasing the quality of green coffee, implementing a range of activities at farm, cooperative and union levels, with quality and volume of coffee produced by 21 cooperatives increased.
- Ethiopian coffee and tea authority (ECTA) leveraged its position among global coffee stakeholders -Increased visibility of ECTA in the International Coffee Organization events, High – Level visits from Donor and International Organizations, sponsorship of Study Tours both for technical and political purposes and creation of CTC within its premises as center of excellence for the coffee industry.

COUNTERPARTS; IMPLEMENTING PARTNERS

Ethiopian Coffee and Tea Authority (ECTA), illycaffè, Ernesto Illy Foundation





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