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ENI'S INITIATIVES FOR VERTICAL INTEGRATION IN BIOREFINING
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Keeping global warming within the 1.5°C threshold is the greatest challenge of our time, and the future of our planet depends on it. It is a challenge that involves all of us - governments, institutions, international agencies, the private sector, citizens - and in particular the energy sector. There is no sustainable economic future without a transition taking into account the security and sustainability of the energy system.

At Eni, we have chosen to play a leading role in this transformation, contributing to the development of local energy markets, working with communities, preserving the environment and promoting human development. The Strategy presented in March 2022 strengthened our ambitious decarbonization targets, which will lead us to net zero emissions by 2050. Biofuels will play a key role in this path, speeding up the transition to sustainable mobility.

The innovative projects we are carrying out around the world, starting from Kenya, Congo and Italy and which are illustrated in this book, are part of this. There is a common link among agriculture and energy, and our transition is connected in particular to that of the African continent. It is in this spirit that we are developing an agri-industrial supply chain for the production of raw materials for our biorefineries.

In Kenya and Congo, we have started vertical integration initiatives with the aim of securing volumes of vegetable oil in a challenging market in terms of prices, growing energy demand and availability of sustainable oils. The two countries will be able to produce significant volumes of agri-feedstock as early as 2023. The search for new opportunities in the agri-industrial supply chain has also begun in Angola, Mozambique, Benin, Rwanda, Ivory Coast, Algeria, Kazakhstan and Italy with the aim of covering 35% of the supply of our biorefineries by 2025 through the vertical integration of the feedstocks, including waste & residues. To this end, we are collaborating with governments, local research centres and universities in
the countries where we have agreements.
The images presented in this volume are a record of the work we have done so far. In Kenya and Congo we are recovering degraded land, creating new job opportunities and providing market access to local communities, using the skills, experience and innovative solutions we have already applied in Italy to support this model of an integrated supply chain.

We cultivate plants that do not compete with the food chain, in line with the European directive and we recover abandoned areas threatened by climate change, desertification, erosion and pollution.

Under this model, agricultural products are sent to the agri-hubs, i.e. centres for collecting and pressing the seeds produced, from which the extracted oil is sent to the biorefineries. Land regeneration is of great value to both farmers and industry, which receives its supplies with the guarantee of a certified process in line with the highest international sustainability standards.

Eni’s distinctive approach has a positive impact on both local communities and the energy industry, generating long-term value. In particular, the social and economic impact on rural populations is very significant, as it guarantees access to land and creates new economic opportunities through long-term contracts, fully respecting human rights and promoting sustainable development through the “seeds” of the new energy.

We are therefore very pleased to present you this photo book, to illustrate the journey that began in Italy, in Venice, in 2014, with the conversion of a traditional refinery into a biorefinery. It is a path that continues today and opens up to new experiences to deliver on the fair and inclusive energy transition that we are striving for together with our partners.
With a population of 6 million people, Congo is a rapidly urbanizing country with great potential. Agriculture contributes with 9.6% to the GDP and employs over 50% of the population, mainly in rural areas, while the energy sector contributes with 50% to the GDP and over 80% to the export. The production of small farmers is for local and family consumption, with average plots of less than two hectares. Some agri-industrial businesses are present. They focus on export-oriented products, such as cocoa and sugar cane. There are a number of local and international agricultural companies that manage large areas in degraded parts of the country, with great potential for the development of agri-feedstock initiatives.

In October 2021, Eni and the Government of Congo signed a Memorandum of Understanding to jointly carry out studies for agricultural development aimed at the production of agri-feedstock on an industrial scale for Eni’s biorefineries, creating job opportunities in the country and developing agriculture on marginal and abandoned lands, while avoiding impacts on areas currently used for food production.

More specifically, the project involves growing agri-feedstocks within large concessions, using modern mechanized farming techniques. At the same time, these crops are being introduced into family farming systems for rural communities in the areas of interest. As in Kenya, we plan to build a network of agri-hubs in Congo as early as 2023, where vegetable oil will be pressed and biofertilizers will be produced for the benefit of local farmers.

Oil will first be produced from castor-oil plant cultivations and it is expected to be available in 2023. For this purpose, an agri-hub with a capacity of 20,000 tonnes will be built.

In subsequent phases, the cultivation of other crops, such as safflower and brassica, will be promoted, again with a low impact (ILUC). These crops are well suited to the established agricultural systems of Congo, with extensive mechanization available.

Project status (May 2022)

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Kenya is one of the most developed economies in sub-Saharan Africa. The agricultural sector plays a dominant role, contributing for 33% to the Gross Domestic Product (GDP) and making Kenya one of the world’s leading countries in the tea and coffee, floriculture and horticulture industries. More than 75% of the approximately 43 million inhabitants live in rural areas, where agriculture employs well over half of the total labour force. Agricultural production extends across the vast arid areas of the country and is mostly carried out by small farmers, with about 1 hectare of land each, from which they generate a livelihood for their families by supplying the local market. Low productivity and poor opportunities for market access are among the main problems faced daily by small farmers in deprived areas of the country.

In Kenya, where Eni has been present since 2013, we have initiated projects to create vertical integration supply chains in agriculture that do not compete with food cycles, integrating existing systems with the production of agri-feedstock crops. In addition, carbon offsetting activities in line with the highest international certification standards are being developed.

In July 2021, Eni and the Government of Kenya signed a Memorandum of Understanding to jointly carry out studies for the recovery of waste, such as used cooking oil (UCO), for agricultural development, to convert a conventional refinery into a biorefinery, and to build a cellulosic bioethanol plant. Besides contributing to the decarbonization and diversification of Kenya’s energy mix, this initiative also contributes to the development of sustainable agriculture and to the circular economy, creating new jobs and income for farming families.

Within the framework of the agreement, an agricultural development project for agri-feedstock production was initiated. This includes drought-resistant crops, suitable for soils that are not in competition with food production and forests, and the establishment and management of vegetable oil collection and pressing centres (agri-hubs). These centres, which are designed to the highest standards, will be supplied by local farmers, and will also provide support services for production and mechanization.

The first oil production, expected in 2022, will be ensured by growing castor beans, harvesting croton extracted from the nuts of a wild tree that is widespread in the country, and exploiting the co-products of the local cotton industry.

Project status (May 2022)

**ACTIVITIES**

**KICK-OFF:** DEC. 2021

**LOCAL FARMERS INVOLVED:** ~25,000

**HOURS OF WORKS IN THE CONSTRUCTION OF THE AGRI-HUB:** 55,000 (100% LT FREE MAN HOURS)

**EARLY AGRICULTURAL PRODUCTION:** 30,000 TONS PER YEAR BY 2023

**FULL DEVELOPMENT PRODUCTION:** 200,000 TONS PER YEAR BY 2026

**FAMILIES**

**EARLY AGRICULTURAL PRODUCTION:**

**FULL DEVELOPMENT PRODUCTION:**

**FAMILIES**
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KENYA
For Eni, Sardinia is the perfect location to develop projects for research on and cultivation of oil plants for the production of biofuels for the group’s biorefineries in Italy. According to recent studies carried out as part of the Horizon 2020 projects, the potential land for growing energy-related crops on marginal land in Italy amounts to several million hectares, mainly in the centre and south of the peninsula.

In this context, Eni intends to develop agri-feedstock initiatives on degraded and abandoned lands, by recovering contaminated agricultural areas with a land regeneration process.

At the end of 2021, Eni and BF Group created a joint venture to jointly develop improved seeds and agricultural techniques to promote the growth of Eni’s agri-feedstock initiatives worldwide. Bonifiche Ferraresi is Italy’s largest agricultural enterprise in terms of land use, with about 7,750 hectares distributed across several Italian regions.

At Bonifiche Ferraresi’s farm in Sardinia, research projects have been launched in collaboration with Italian universities to evaluate and select seeds for agri-feedstock production and identify the best agricultural practices. The plant species tested in the “open-air laboratory” were identified on the basis of the sustainability criteria set out in EU biofuel legislation and are suitable for cultivation in an arid environment using sustainable cultivation techniques.

The research and development initiatives we have launched in Sardinia allow us to strengthen the technical skills needed to develop Eni’s agricultural supply chain projects in Italy and Africa, creating opportunities for exchange and technical training of personnel, and supporting agricultural producers.

Within this context, we launched an “agri-feedstock Academy” project, the ideal place to train Eni people, farmers and our project partners.

Project status (May 2022)

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