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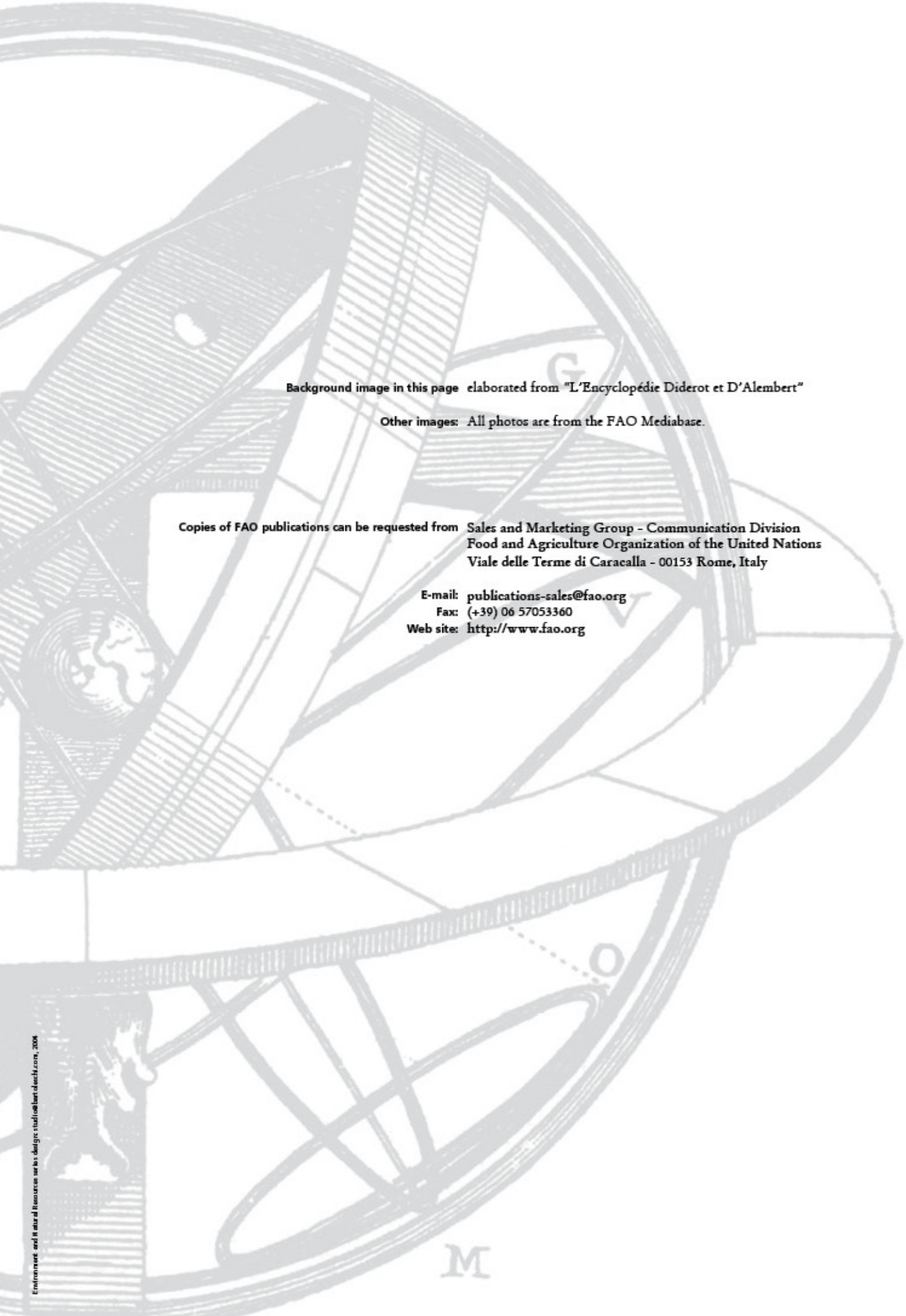
Energy-Smart Food at FAO:

An Overview

ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT WORKING PAPER

CLIMATE CHANGE [ENERGY] TENURE



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This paper is the outcome of a collaborative effort between the Natural Resources Management and Environment Department, the Agriculture and Consumer Protection Department, the Fisheries and Aquaculture Department, the Economic and Social Development Department, the Forestry Department and the Regional Offices of the Food and Agriculture Organization of the United Nations (FAO). The lead authors of the paper are Erika Felix and Olivier Dubois with contributions from Irini Maltsoglou and technical contributions of Anne Bogdanski, Jake Burke, Francis Chopin, Merritt Cluff, Beau Damen, Felipe Duhart, Jorge Fonseca, Theodor Friedrich, Pierre Gerber, Ileana Grandelis Ari Gudmundsson, Yianna Lambrou, Harinder Makkar, Danilo Mejia, Seth Meyer, Michaela Morese, James Muir, Divine Nije, Carolyn Opio, Andrea Rossi, Christina Seeberg-Elverfeldt, Reuben Sessa, Florian Steierer and Doris Soto and the kind assistance of Sharon Darcy, Maria Guardia, Fabrizio Puzzilli, Denise Martinez and Gordon Ramsay.

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SCOPE OF PAPER

This paper presents FAO's work on energy in relation to specific components of the agrifood chain. It complements two recent publications, *Energy-Smart Food for People and Climate Issues Paper* and the policy brief, *Making the Case for Energy-Smart Food*.

These publications presented the findings of a 2011 study commissioned by FAO that examined the linkages between energy and agrifood systems and their implications for food security and climate. The study looked at energy uses along the entire agrifood chain from field to plate and the potential of agrifood systems to produce energy. Findings confirmed that agrifood systems use a large share of the global energy supply, rely heavily on fossil fuels to meet production targets and contribute to greenhouse gas emissions. The study concluded that agrifood systems will have to become 'energy-smart' to meet future food and energy challenges, and recommended establishing a major long-term multi-partner programme on energy-smart food systems based on three pillars (i) improving energy efficiency in agrifood systems, (ii) increasing the use of renewable energy in these systems and (iii) improving access to modern energy services through integrated food and energy production.

In response to these recommendations, FAO has launched the multi-partner Energy-smart Food for People and Climate (ESF) Programme. This paper illustrates how FAO's longstanding work in the area of energy and agrifood systems contributes towards the ESF Programme's objectives.

The paper is divided into three parts. Part one summarizes the findings and recommendations from the *Energy-smart Food for People and Climate Issues Paper.* It also gives a general overview of the ESF Programme and necessary background information about the role that energy plays in food security, how the agrifood chain can help improve energy security and how changes in the agrifood system can reduce the impact of climate change. The second part of the paper describes FAO's work in various components of the agrifood chain, looks at the energy dimension for each of these components and highlights how this work contributes to the ESF Programme. This part is divided into thematic sections that look at the energy links in relation to cropping, fishing, livestock and forestry production. The section also looks at the energy issues in food processing and post-harvest operations. The bioenergy section presents an overview of FAO's work on sustainable bioenergy and the technical and policy assistance FAO is providing in this area

to countries. The economic and gender dimensions of energy in relation to FAO's work are also considered. The final section puts into context the relationship between energy-smart food systems and climate-smart agriculture. The third part of the paper emphasizes the need to build partnerships to effectively address the linkages between energy security, food security, climate change and water.

KEY MESSAGES

Making a gradual shift to energy energy-efficient agrifood systems that make greater use of renewable energy technologies and better integrate food and energy production, may be the most viable solution for simultaneously reducing agrifood systems' dependency on fossil fuels and building their resilience against higher energy prices. This shift to energy-smart agrifood systems can also improve productivity in the food sector, reduce energy-poverty in rural areas and contribute to achieving goals related to national food security, climate change and sustainable development.

FAO has launched the Energy-Smart Food for People and Climate (ESF) Programme, a multi-partner initiative, to assist member countries make the shift to energy-smart agrifood systems. The Programme focuses on three thematic areas:

- energy efficiency,
- energy diversification through renewable energy
- energy access and food security through integrated food and energy production.

FAO has been working on aspects of energy in the agrifood sector for many years. The Organization's experience and ongoing work in this area are an integral part of the ESF Programme.

The ESF Programme follows an interdisciplinary 'nexus' approach to ensure that food, energy, water and climate issues are jointly addressed, trade-offs considered and appropriate safeguards are put in place.

While FAO and other organizations have been working on components of the ESF Programme for some time, scaling up the Programme will require more collaborative learning and action among other UN agencies, multilateral organizations, donors, policy-makers, civil society and the private sector. Building partnerships is critical for the ESF Programme's success.