

# The FAO 'Energy-Smart Food for People and Climate' Programme

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IEA Bioenergy-FAO Workshop on Sustainable  
Landscape Management for Bioenergy  
and the Bioeconomy

Rome, 11 October 2018



# 10 SDGs for which Energy-Food Links are Most Relevant



1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



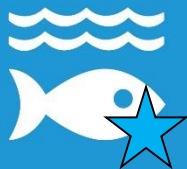
12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



16 PEACE, JUSTICE AND STRONG INSTITUTIONS



17 PARTNERSHIPS FOR THE GOALS



# Energy is Closely Linked to Food Security

- **Availability** : Energy is needed to produce food
- **Access**: Energy is linked to the price of agricultural inputs and therefore food prices and farmers' income, and can provide jobs
- **Utilization**: Adequate access to modern energy for cooking reduces health risks, **improves food quality/nutrition** and frees up time
- **Stability**: Volatility in energy prices can influence food price stability



# And to huge Water↔Energy↔Food Nexus Challenge

Now

- ❖ 0.87 billion people are undernourished
- ❖ 1.3 billion people lack access to electricity
- ❖ 0.9 billion people lack access to safe drinking water and 2.6 billion to adequate sanitation

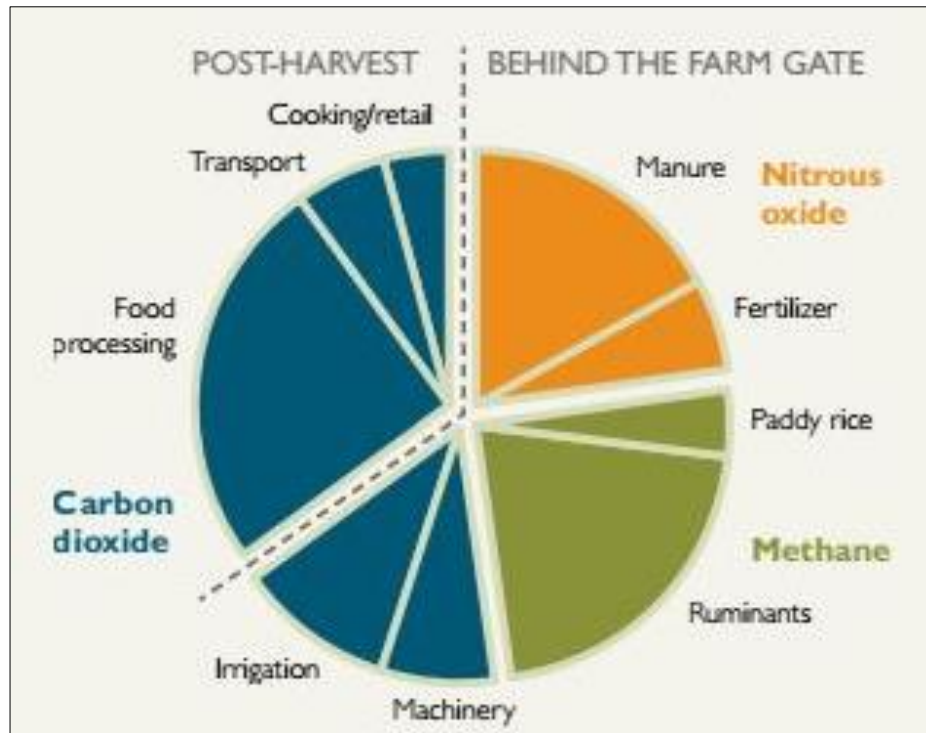
By 2030, if Business as Usual, simultaneous needs for:

- ❖ 50% more food
- ❖ 40% more water
- ❖ 40% more energy

Additionally –  
Natural resource are stressed  
Climate change does not help



# Energy is part of the Climate Change Problem in Agrifood Systems



Source: FAO, Opportunities for agri-food chains to become energy-smart, 2015

- ❖ Energy is responsible for ~20% GHG emissions from agrifood systems – mainly through direct CO<sub>2</sub> emissions in post-harvest stages + fertiliser manufacturing
- ❖ Often overlooked in agriculture because accounted for in the industry or energy sectors





# Energy also Influences non-CO<sub>2</sub> Emissions from Agrifood Chains

- ❖ **Reduced CH<sub>4</sub> emissions due to the production of biogas from manure**
- ❖ **Reduced CH<sub>4</sub> emissions from food losses through improved access to energy in post-harvest stages**
- ❖ **Interesting links with the use of biofuel by-products and animal feed**
  - Biofuel by-products can reduce need for land to grow animal feed
  - Trade offs on CH<sub>4</sub> and N<sub>2</sub>O emissions from the use of biofuel by-products as animal feed
  - Algae-based biofuels with algae-based animal feed

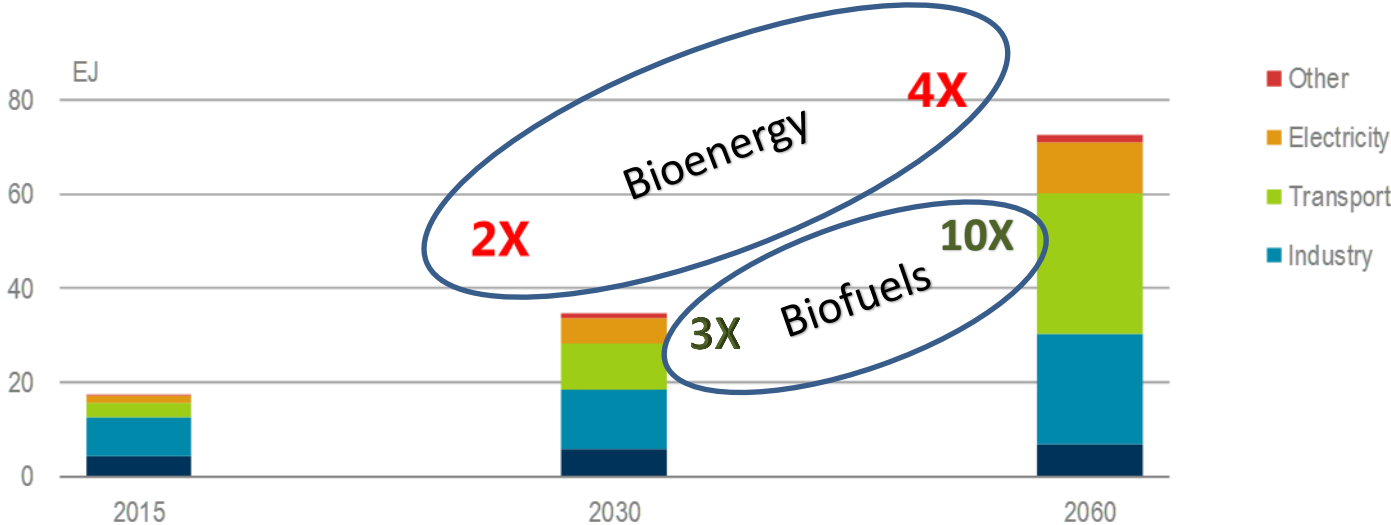
# Energy also Part of the Climate Change Solutions in Agrifood Systems

- ❖ **Mitigation** through (i) reduction of fossil fuel use in agrifood chains, (ii) reduction of GHGs due to reduced food losses, (iii) sustainable bioenergy as clean energy; (iv) Use of biofuel by-products as animal feed to reduce need for land to grow feed
- ❖ **Adaptation** through (i) increased farmers' self sufficiency in sustainable energy, (ii) income diversification through the sale of energy
- ❖ **Carbon sequestration** through (i) energy tree planting, (ii) increased soil carbon through bio-fertiliser from biogas



# Strong acceleration in bioenergy needed between now and 2030

Modern bioenergy in final energy consumption in 2DS



Compared to 2015, bioenergy in final energy consumption needs to double by 2030, and biofuels in transport treble.

Advanced biofuels will need a massive scale up (IEA 2017 Bioenergy Roadmap)





# 243 measures related to energy in and from agriculture representing 49/54 African countries in (I)NDCs

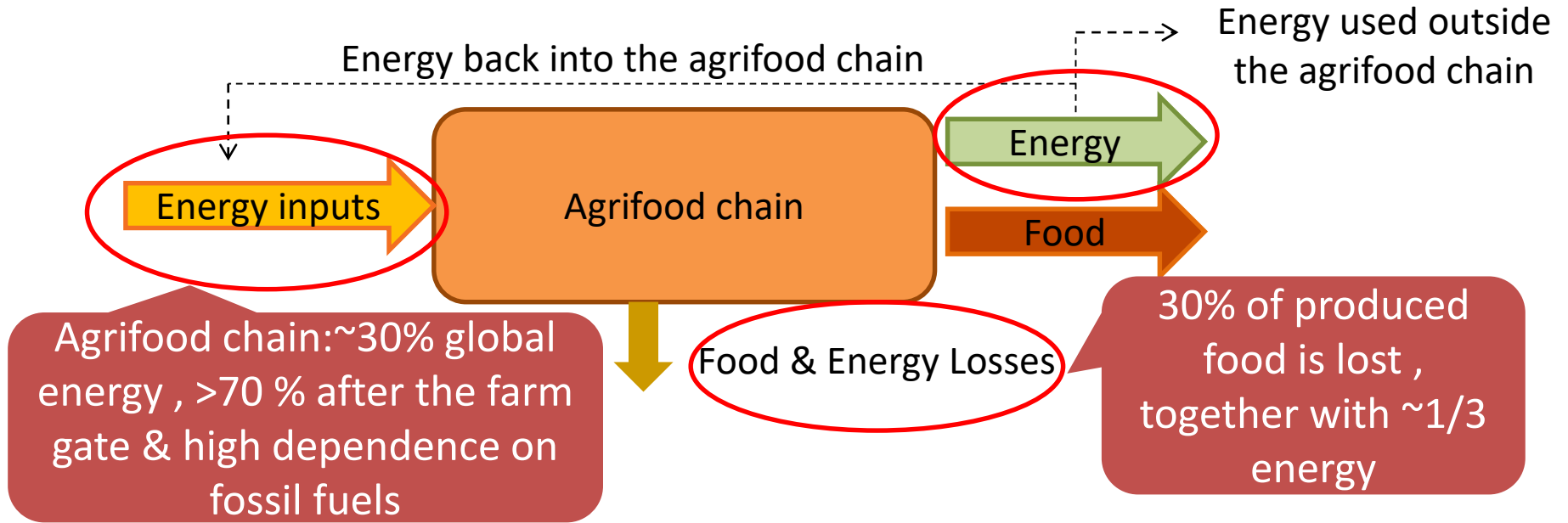
87 measures on modern bioenergy (41 countries): 28 for liquid biofuel, 26 for biogas, 15 for solid biofuel & 18 for unspecified feedstock.

95 measures on traditional bioenergy (41 countries): 24 countries combining sustainable wood to energy systems with efficient cookstoves 15 supporting efficient cookstoves only & 2 supporting more sustainable wood to energy systems only.

61 measures on energy use in agriculture (30 countries): 33 for energy use at the production stage, 16 for food value added in processing & 12 for post-harvest handling. 6 countries combine the 3 categories.



# The basic issue: Energy in Agrifood Systems is Needed for Food Security but is currently Unsustainable



# The solution/challenge: Need to decouple agrifood system development from the use of fossil fuels

Through “Energy-Smart Food” , with:

1. **Adequate access to modern energy** where needed in food chains, in four ways:
  2. **Improved energy efficiency**
  3. **Gradually more renewable energy**
  4. **Sustainable Bioenergy**
5. **A Water-Energy-Food Nexus approach** in the above



# Four areas of work of the Energy-Smart Food Programme

- ❖ **Renewable energy in food chains:** Overview Report + 3 food chains in 4 countries in the last two years
- ❖ **Sustainable Bioenergy:** ~20-25 countries in the last 10 years; 6 in 2016-17
- ❖ **Energy in refugee camps:** ~10 countries in 2016-18
- ❖ **Bioeconomy:** Development of Sustainable Bioeconomy Guidelines
- ❖ **Water-Energy-Food Nexus approach** in all the above



# Thank you for your attention

