



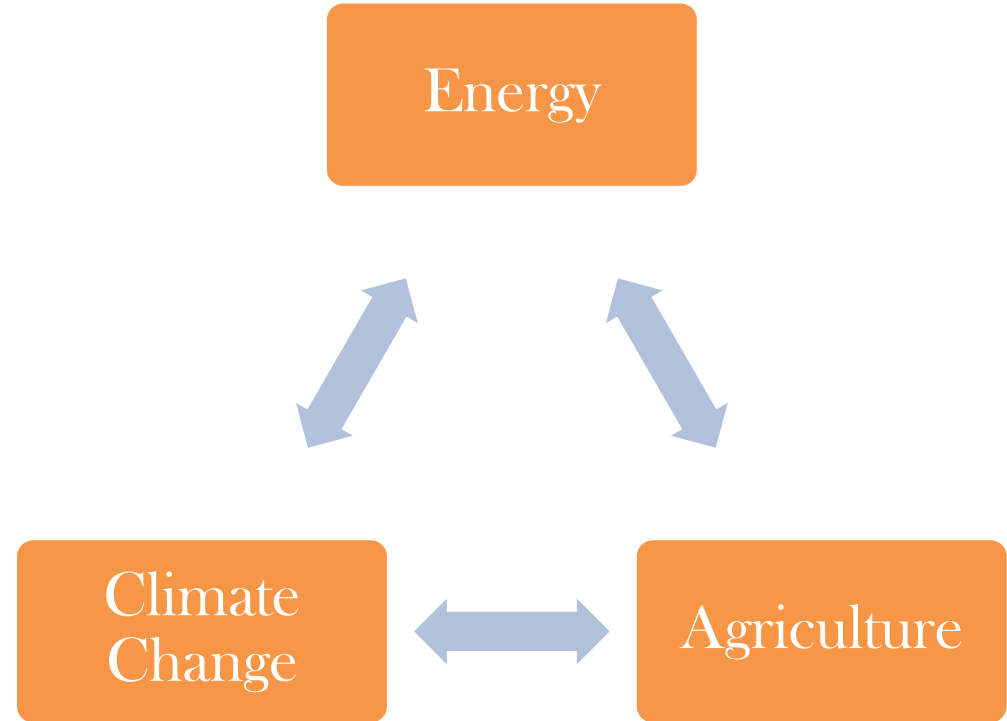
Food and Agriculture Organization
of the United Nations

Energy, Agriculture, NAMAs and (I)NDCs

Inter-linkages

Energy, Agriculture and Climate Change are interlinked

- Energy is required to produce food
- Energy can be derived from agriculture (Biogas, Agricultural residues)
- Agriculture emits GHG and contributes to climate change
- Climate change affects agriculture

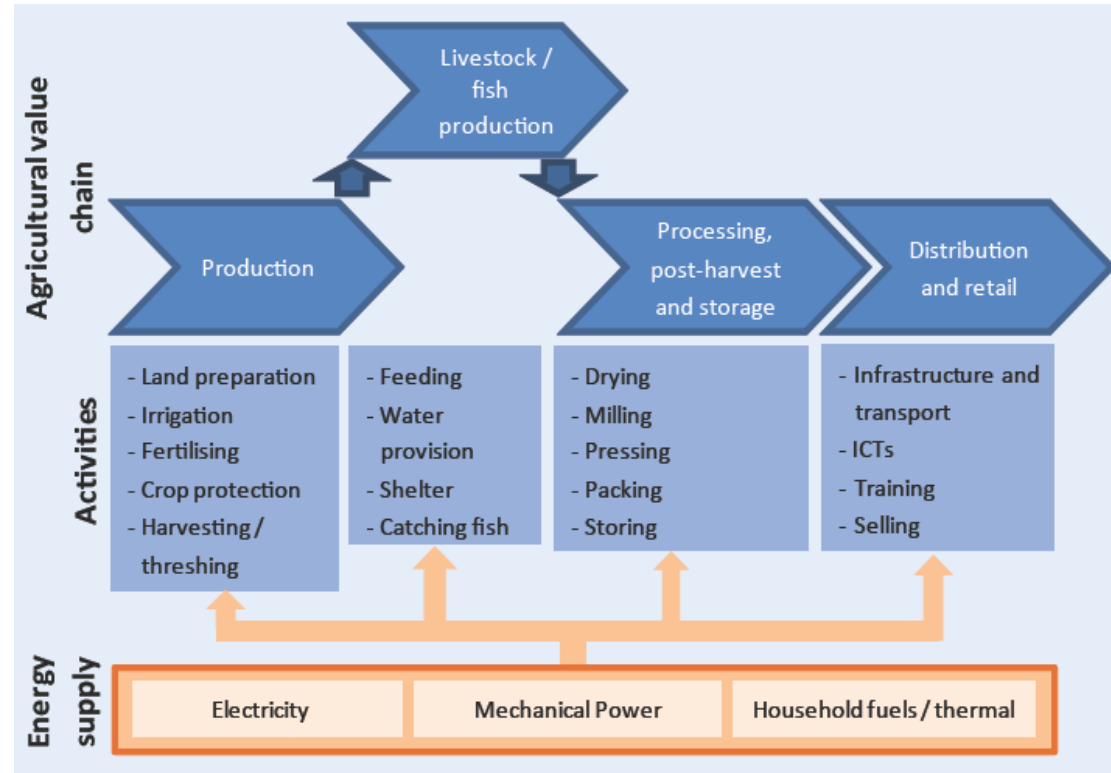


Energy in Agriculture

Agriculture is an energy intensive sector

Highly dependent on fossil fuels

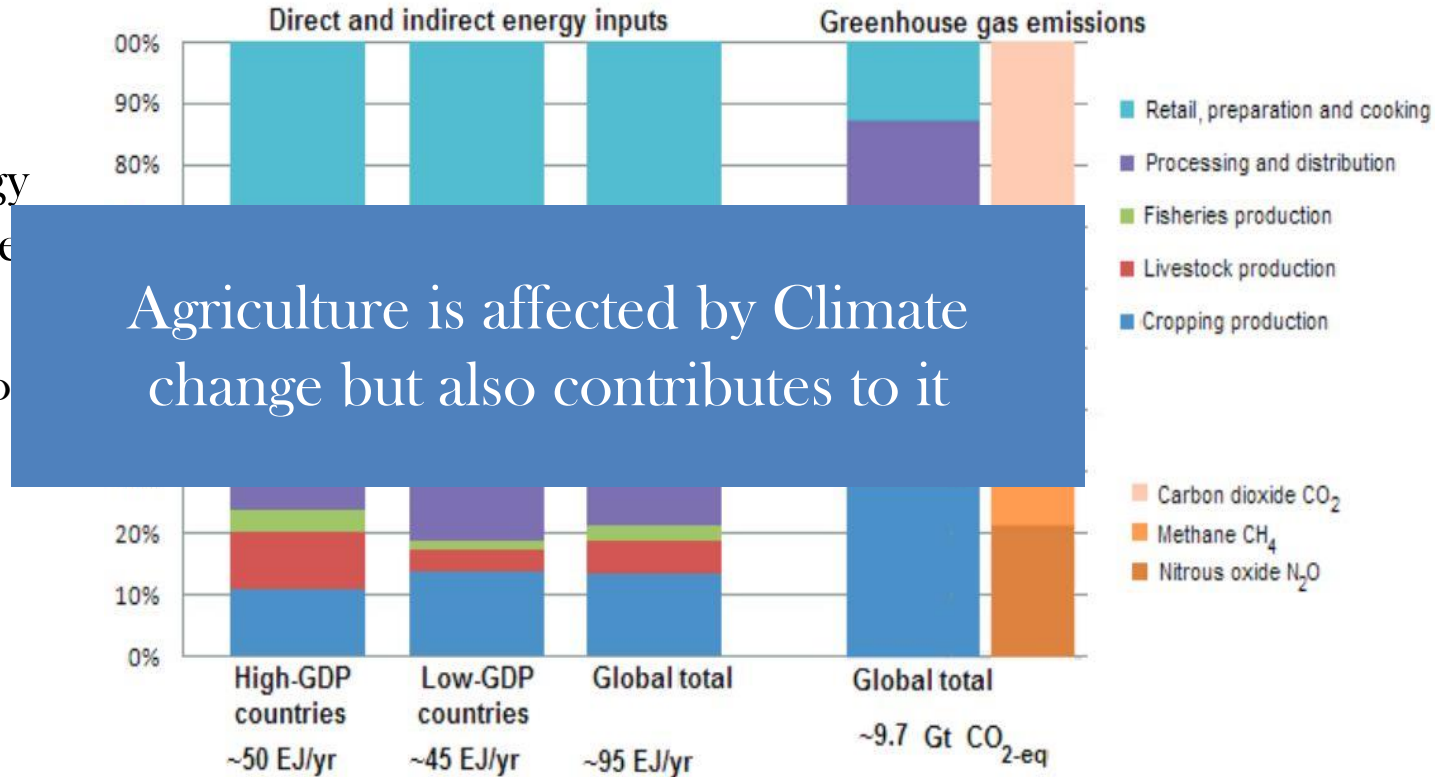
Energy is consumed at each step of the food value chain



Energy in Agriculture

Around 30 % of global end use energy is used in Agriculture

Results in 20 percent of total GHG emissions



Future..

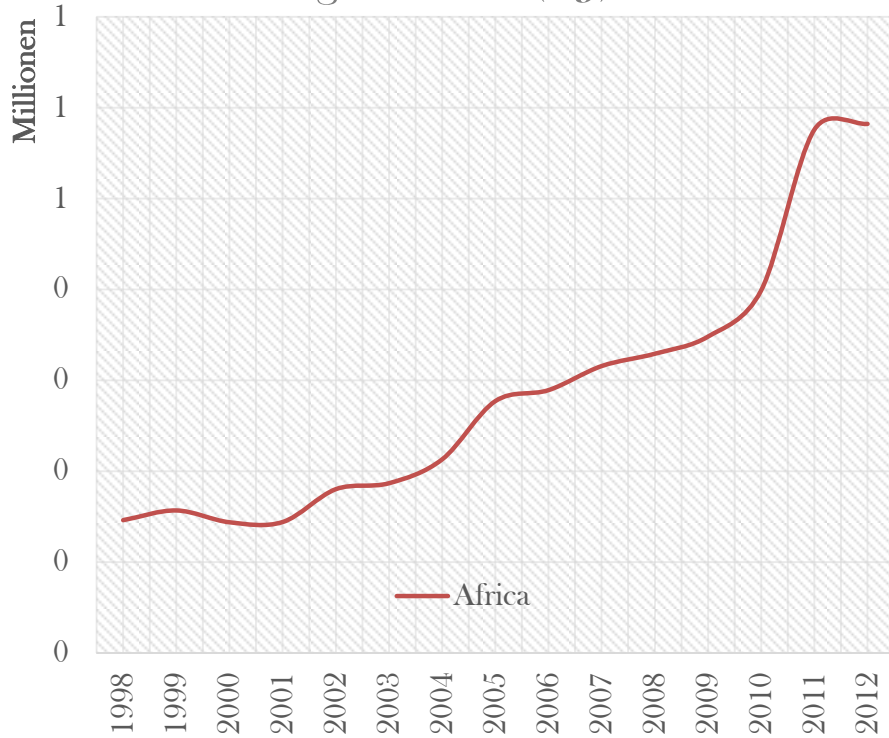
By 2030:

- 40-50% more food (FAO, 60% by 2050)
- 40% more water (FAO, mainly for agriculture)
- 40% more energy (IEA)

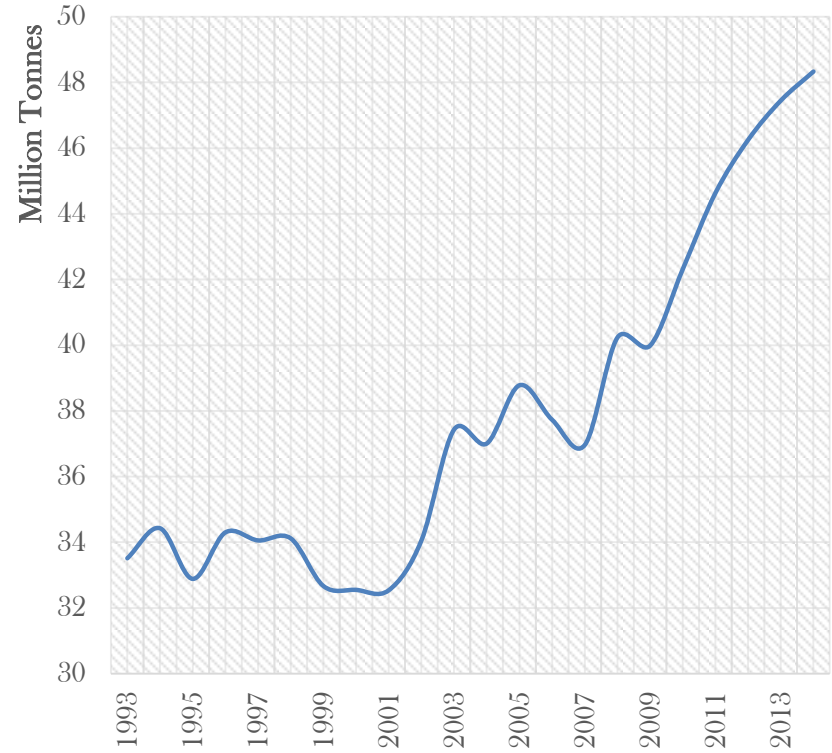


Additionally –
Natural resource are stressed climate is
changing

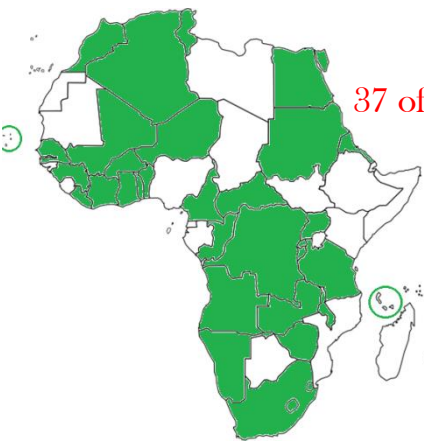
Energy Consumption in Agriculture (TJ)



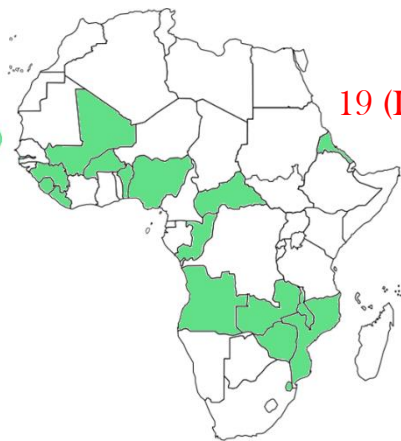
Biomass burned: Africa



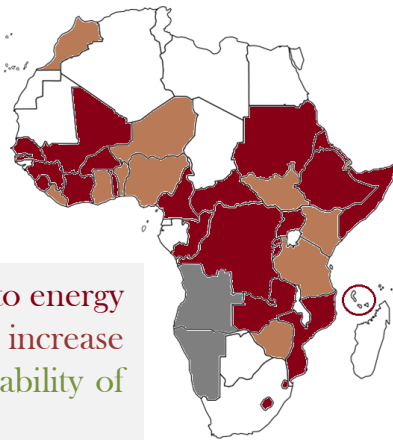
Energy-agrifood links for Africa: (I)NDC



37 of 53 (I)NDCs* mention biomass for the production of energy.



19 (I)NDCs mention the use or the production of biofuel for transport.



23 (I)NDCs indicate the need to combine more sustainable wood to energy systems with more efficient cook stoves. 14 mention programs to increase the efficiency of cook stoves. 2 would like to improve the sustainability of traditional biomass without distributing efficient cook stoves.



19 (I)NDCs indicate the need to reduce post-harvest losses, improve value added processing and the use of renewable energy in food processing

*All African countries except Libya have published their (I)NDC.

FAO support in reaching the energy targets

How do we achieve NDC targets ?



NAMAs is one way to reach
INDC targets

Challenge

To understand from which sector and how much contribution can NAMAs make to INDCs !!

FAO Energy tools and methodologies : Assessing renewable energy options and increasing energy efficiency in agriculture to **reduce GHG emissions**.

- a) Develop Sustainable Bioenergy (BEFS)
- b) Develop Integrated Food Energy Systems (IFES)
- c) Increasing energy efficiency in food value chains
- d) Reducing food losses



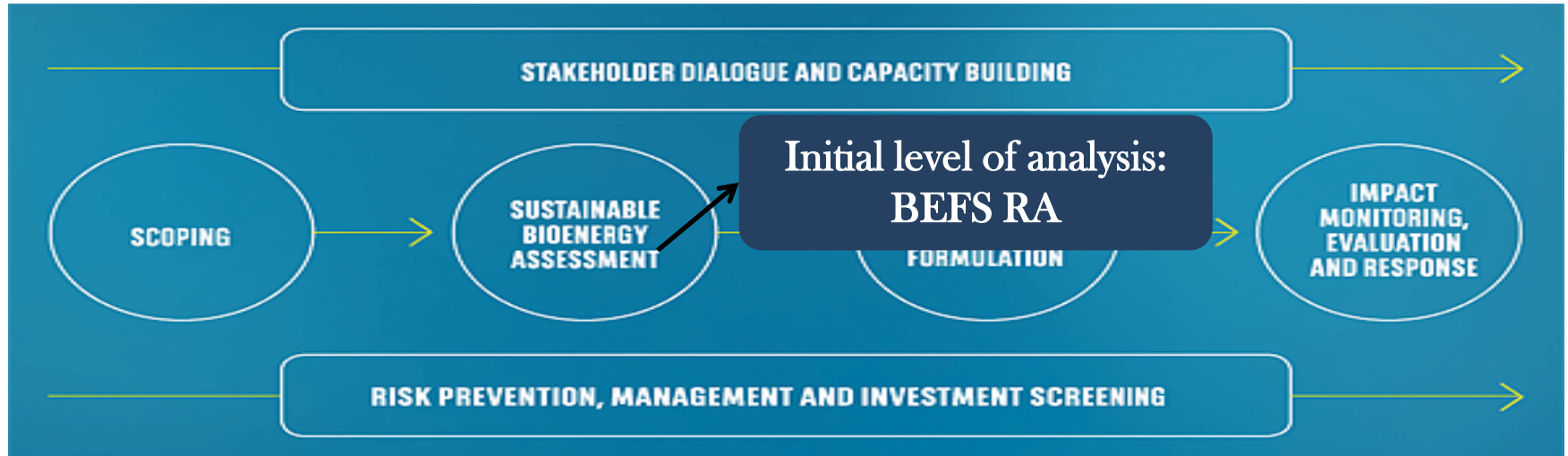
Mitigation Potential
(NAMAs)

Bioenergy and Food security Approach (BEFS)

Design and implement sustainable bioenergy policies and strategies that foster

- Food and energy security, and
- Contributes to agricultural and rural development

Six areas of support



BEFS Rapid Appraisal

Excel based tools to

Define country context

- Main economic and environmental indicators

Identify bioenergy feedstock resources

- Crop and livestock residues, Agro-processing residues etc.

Estimate energy production potential and costs

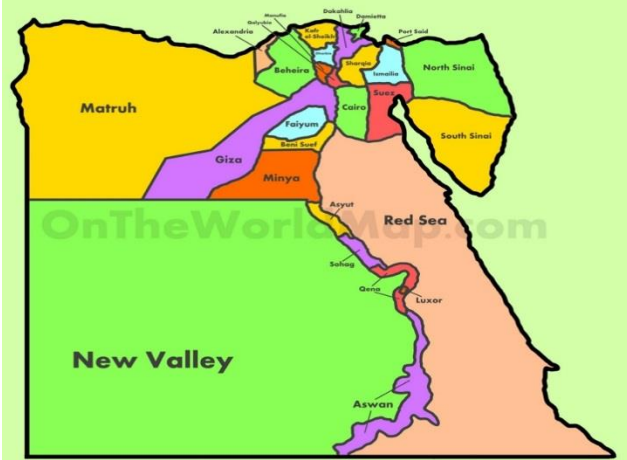
- Heating and Cooking - Charcoal, Briquettes, and Biogas
- Rural Electrification - Gasification, Straight Vegetable Oil (SVO) and Combustion
- Transport - Bioethanol and Biodiesel

Estimate GHG mitigations potential



Bioenergy and Food Security
(BEFS)

BEFS Example Egypt



Large agriculture sector



Burning of Agriculture Residues



Bioenergy

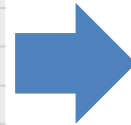
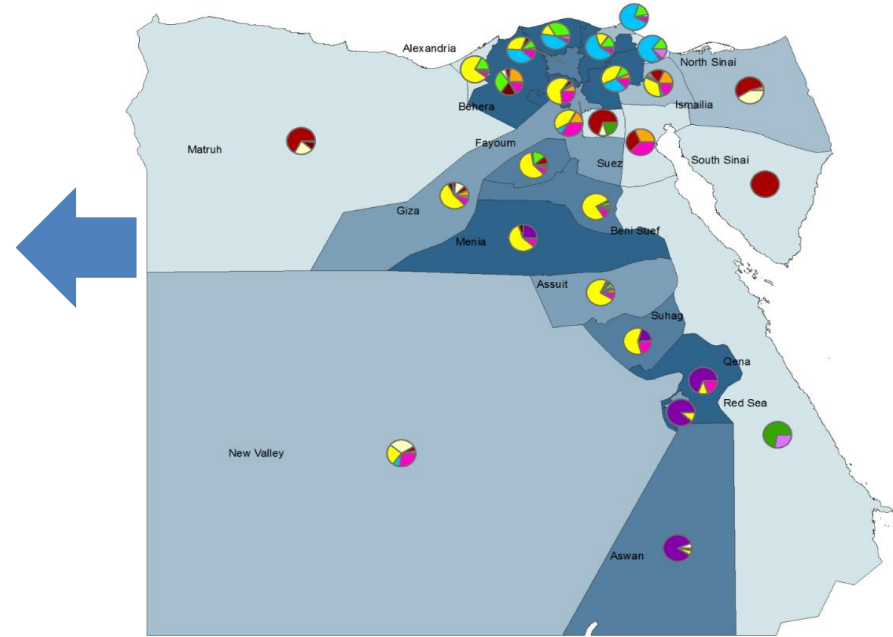
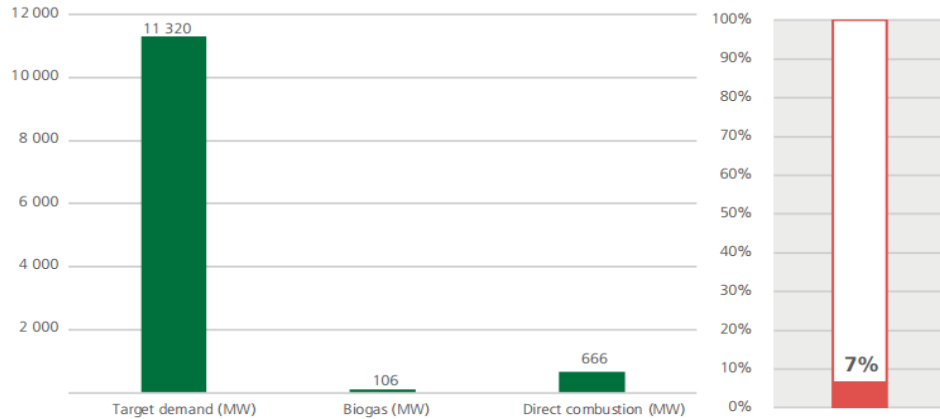


BEFS Example Egypt

RESIDUE TYPE	CROP OR LIVESTOCK FROM WHICH THE RESIDUE IS GENERATED
Straw	Wheat, rice, broad bean, barley, flax, lentil
Stalks	Maize, cotton, sorghum, sesame, sunflower
Prunings	Citrus/orange, palm dates, grapes, olives
Haulms	Sugar beet, peanuts, soybeans
Bagasse	Sugar cane
Manure	Chicken and cattle



Contribution to Egyptian 2020 renewable energy targets



7 percent of the 11,320 MW renewable energy target, supply more than 2.2 million households and avoid **2.9 million t CO₂ eq/year**.

Integrated Food – Energy Systems (IFES)

- A system to provide both food and energy at the same time
- Ensures access to more food, fodder and renewable bioenergy from sustainably managed resources



From Food **VS** Fuel  Food **AND** Fuel

Conclusion

- It is essential to address energy and agriculture to achieve mitigation targets.
- Dual benefit of reducing emissions from agriculture and delinking food production from fossil fuel use.
- Important to **assess sustainable pathways** to develop renewable energy options and **quantify achievable targets** that contribute to NDC targets.
- FAO has the tools to support countries identify sustainable energy pathways and targets to develop NAMAs and contribute to their NDC targets.

Thank you