BEFS
Bioenergy and Food Security

Integrating Agriculture and Energy Needs

Finding Sustainable Bioenergy Options

FNSSA Expert Meeting

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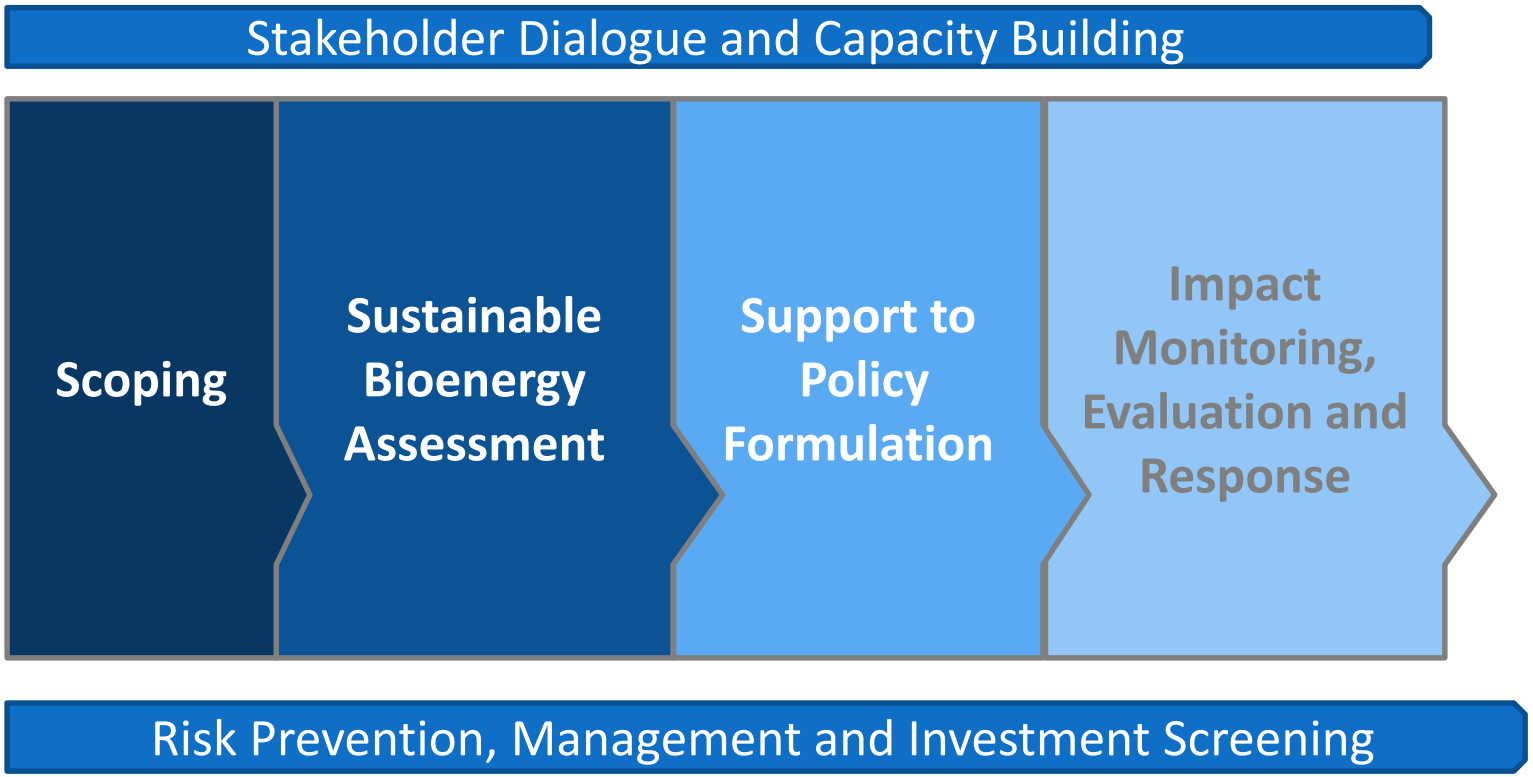
FAO's Bioenergy and Food Security (BEFS) Approach

- Assisting countries with the development of a sustainable, food secure bioenergy sector that integrates the agricultural sector
- Six areas of support



BEFS

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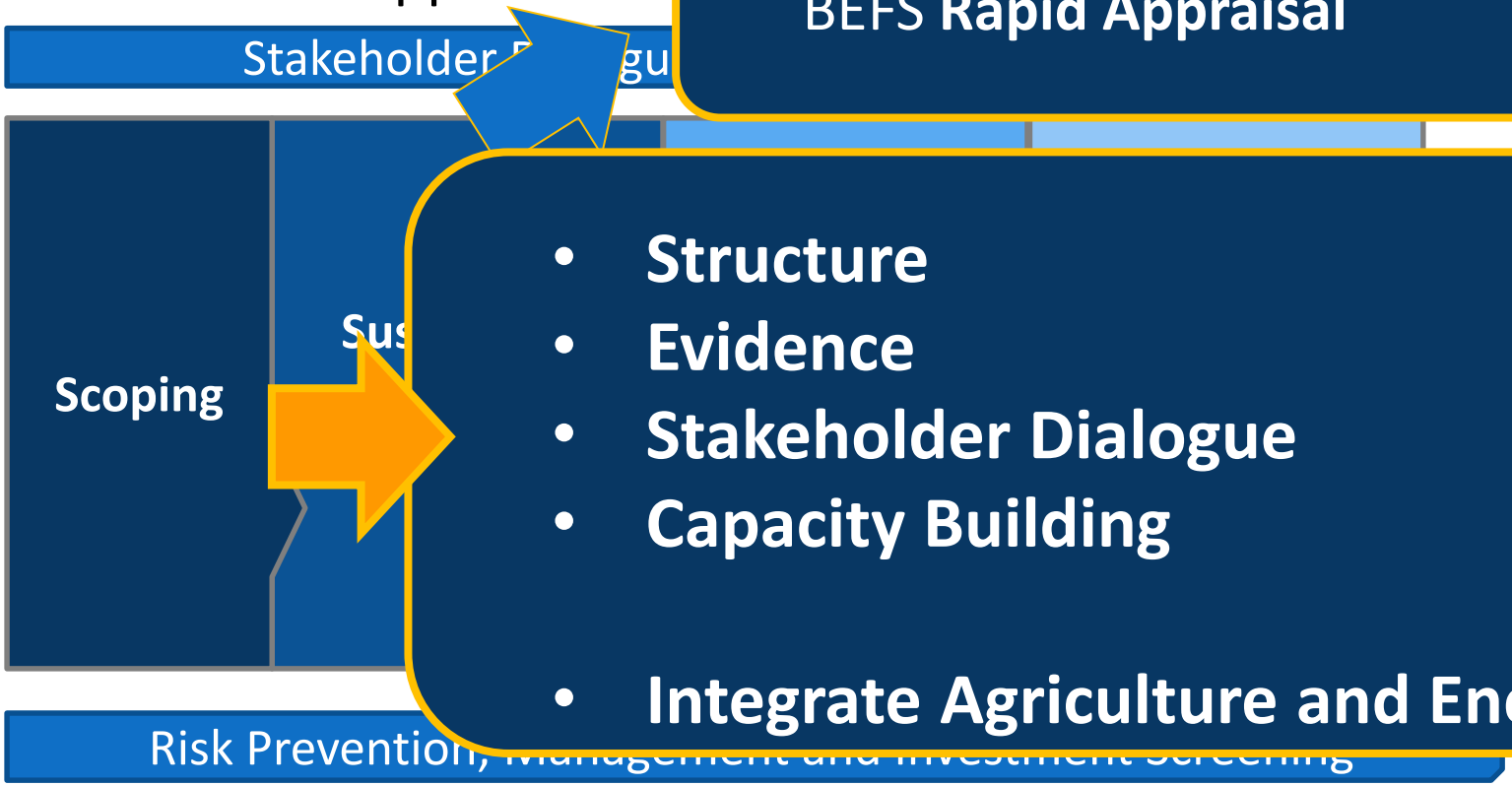
- Six areas of support

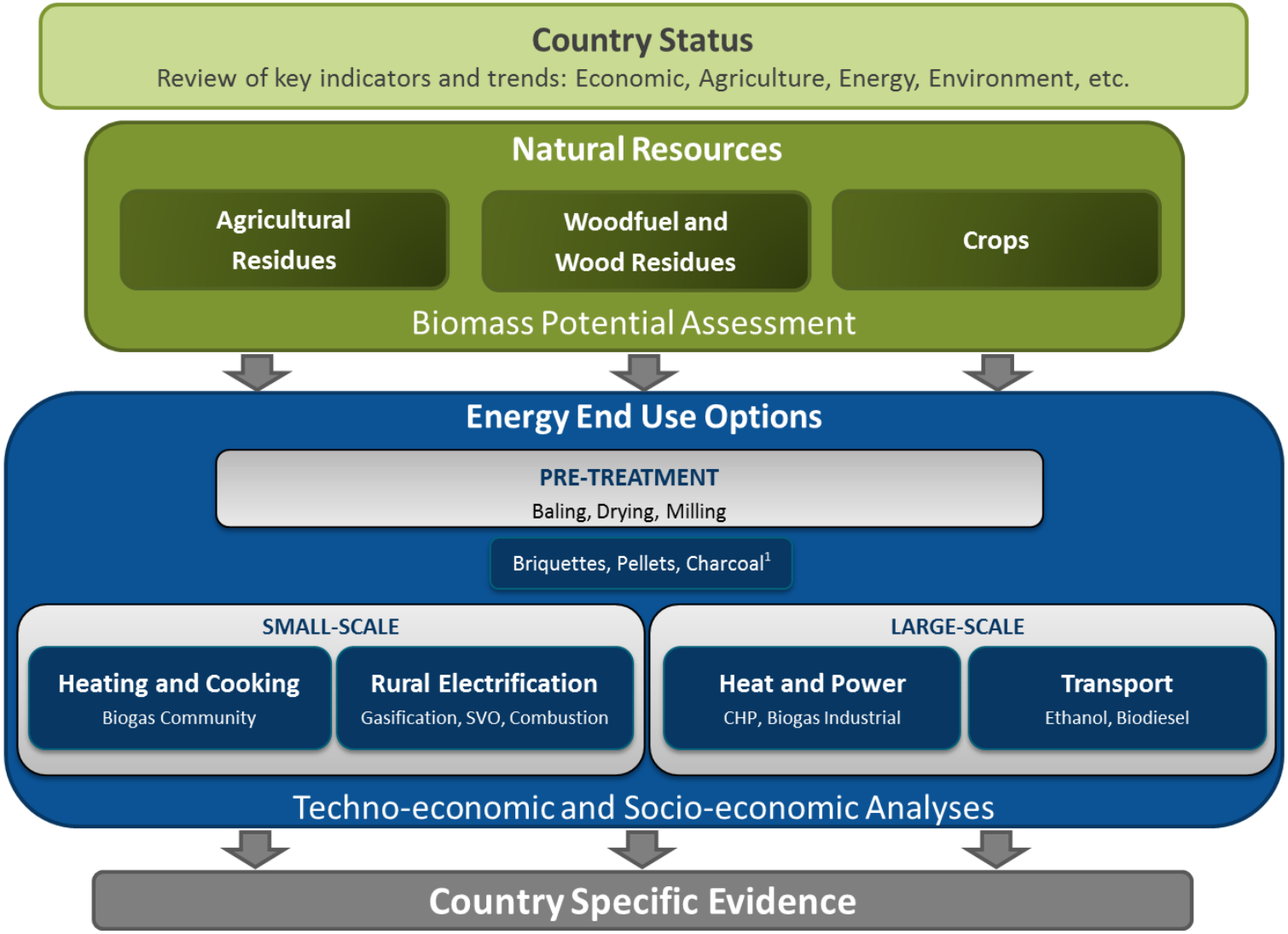
Initial level of analysis:
BEFS **Rapid Appraisal**



- **Structure**
- **Evidence**
- **Stakeholder Dialogue**
- **Capacity Building**

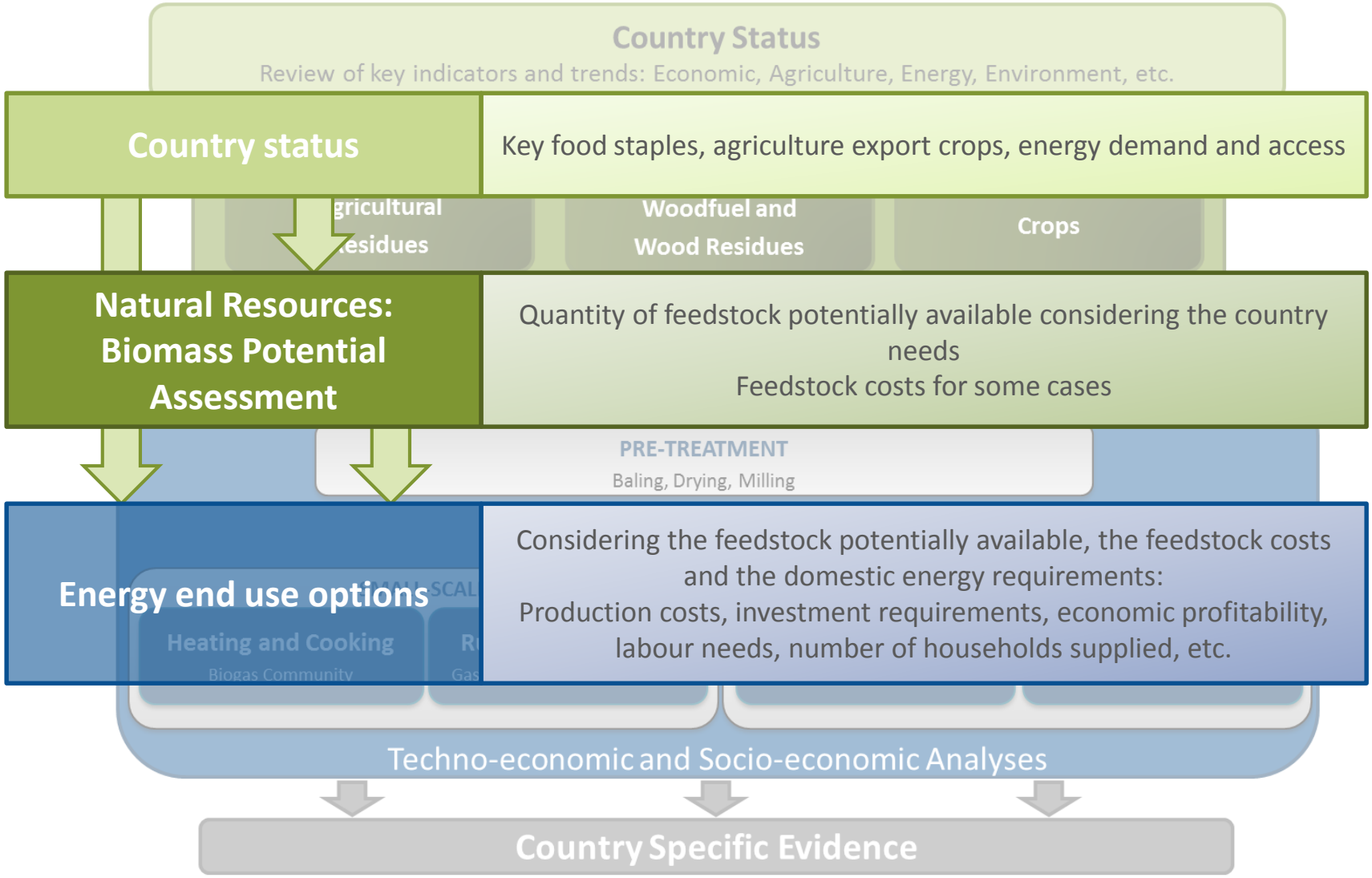
- **Integrate Agriculture and Energy**

Initial Assessment: The BEFS Rapid Appraisal



[1]These products may be used either as final products for heating and cooking or as intermediate products in the rural electrification options.

Initial Assessment: The BEFS Rapid Appraisal



[1]These products may be used either as final products for heating and cooking or as intermediate products in the rural electrification options.

African Context

- **Agriculture** plays a **key** role in terms of food security, livelihoods and employment
- **Sustainable** and **inclusive** investment can drive up agriculture productivity aiming to stimulate agriculture production and generate livelihood opportunities
- **Poverty levels still high, access to energy problematic** and very limited in rural areas, as low as 1 or 2 percent in many southern African countries
- **Biomass** for energy **links the agriculture and energy sector**, in this what options can be sustainable while safeguarding food security?

BEFS Assessment in Egypt

Option if Agriculture Residues

Bioenergy

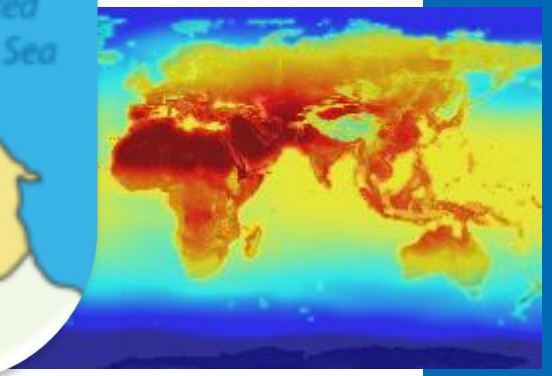
Biomass Source: Agricult

Energy End Use Options:

Problematic

1

Availability and viability



Burning of Agriculture Residues

Climate Change

BEFS Assessment in Egypt

Option if Agriculture Residues

?

Bioenergy

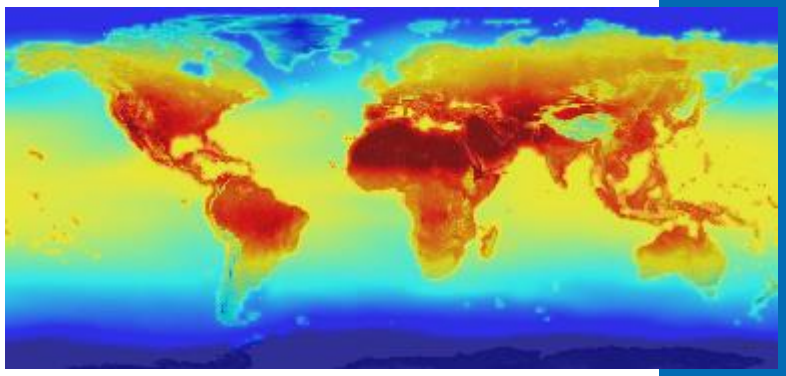
Biomass Source: Agriculture Residues
Energy End Use Options: Briquettes, Pellets, CHP and Biogas Industrial

Problematic

1

Availability and viability

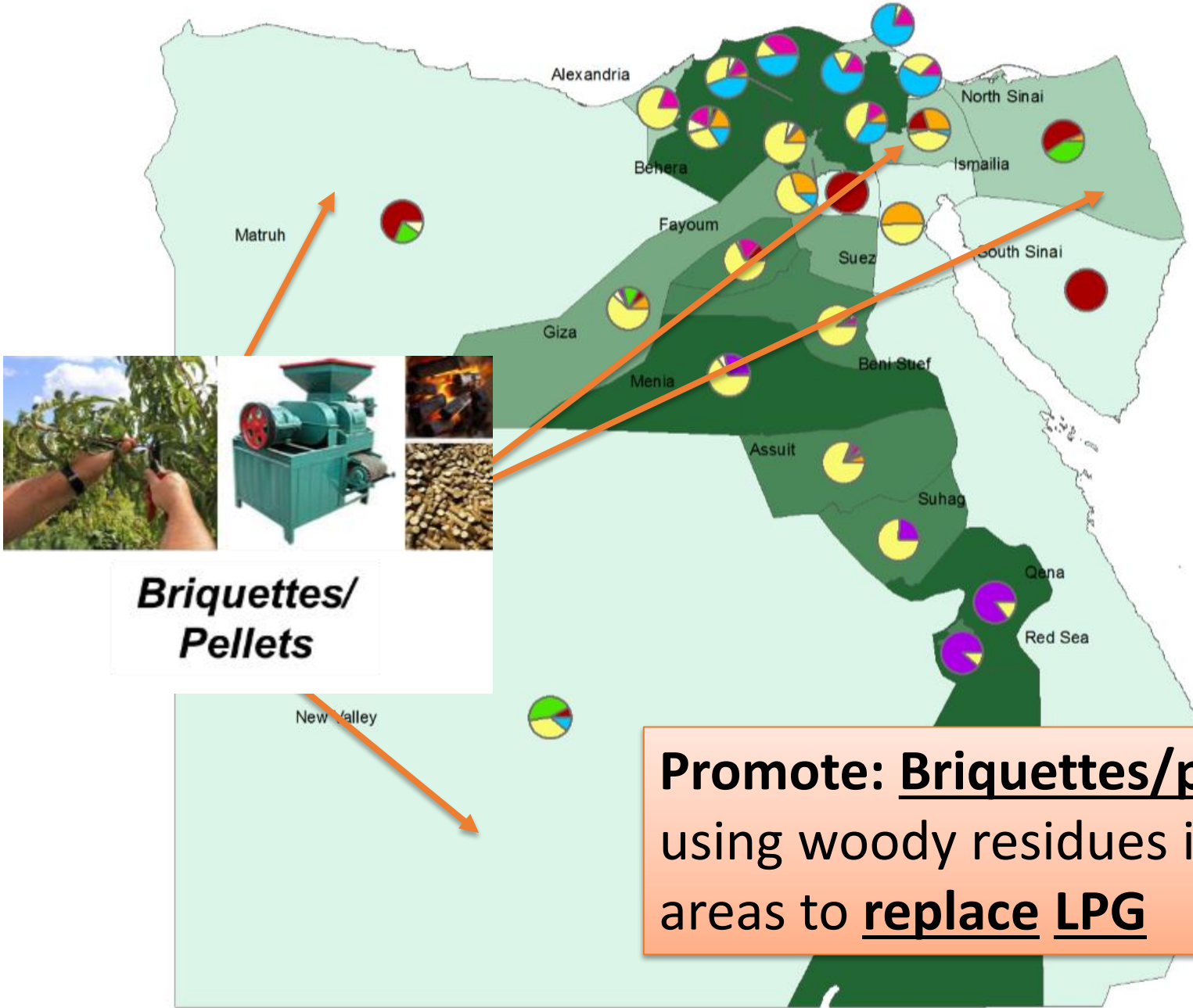
2



Burning of Agriculture Residues

Climate Change

Bioenergy Promising Options in Egypt

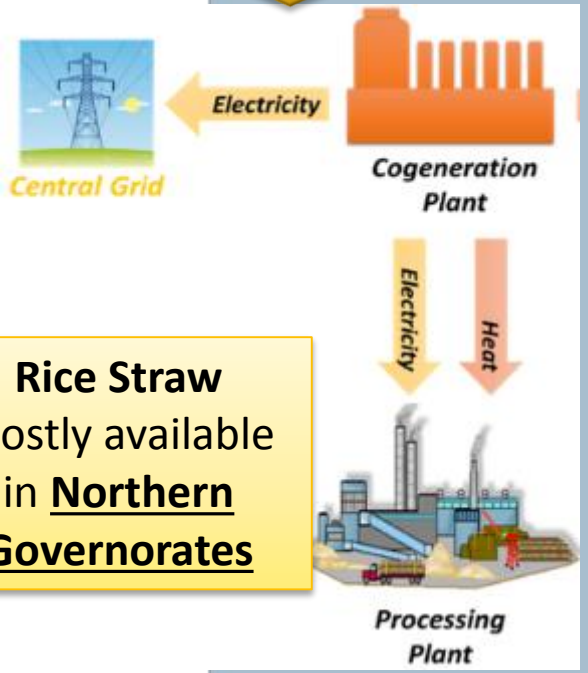


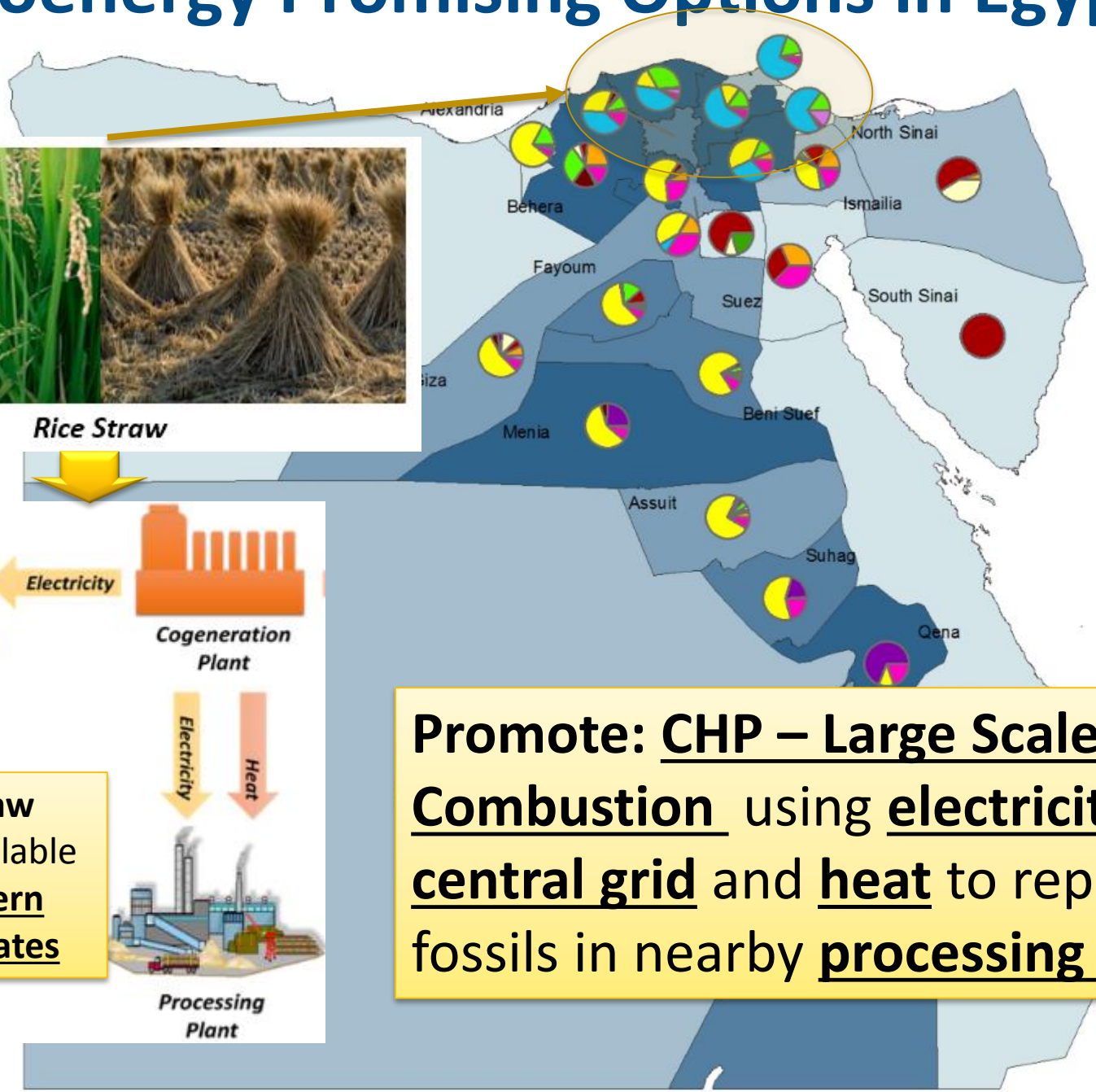
Briquettes/ Pellets

Promote: <u>Briquettes/pellets</u> using woody residues in desert areas to **<u>replace</u> <u>LPG</u>**

Bioenergy Promising Options in Egypt

Rice Straw





Rice Straw mostly available in **Northern Governorates**

Promote: CHP – Large Scale Direct Combustion using **electricity** in **central grid** and **heat** to replace fossils in nearby **processing plants**

Bioenergy Promising Options in Egypt

Maize Stalk

Central Grid

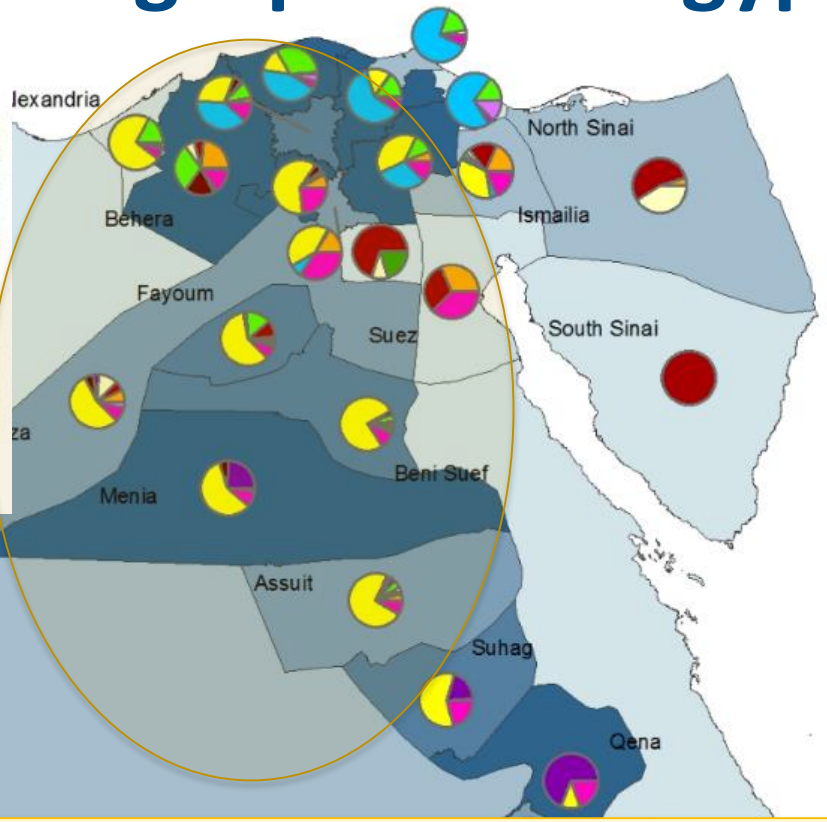
Electricity

Cogeneration Plant

Electricity

Heat

Processing Plant

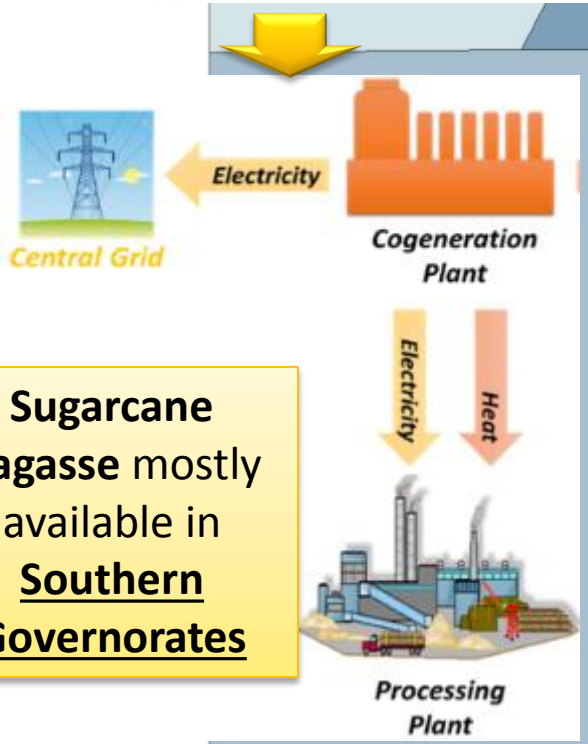


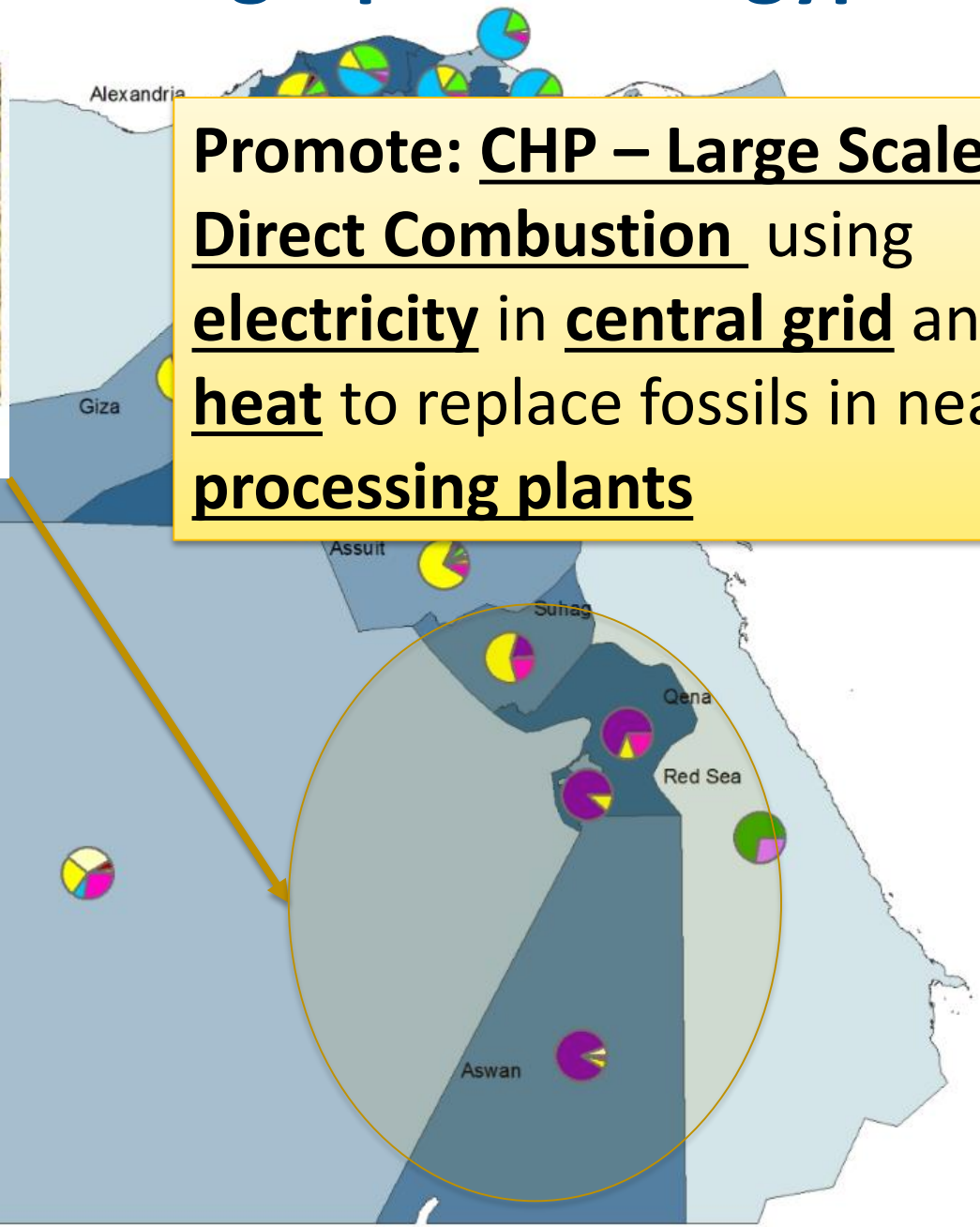
Maize Stalk mostly available in **Central Governorates**

Promote: CHP – Large Scale Direct Combustion using **electricity** in **central grid** and **heat** to replace fossils in nearby **processing plants**

Bioenergy Promising Options in Egypt

Sugarcane Bagasse





Promote: <u>CHP – Large Scale Direct Combustion</u> using **<u>electricity</u>** in **<u>central grid</u>** and **<u>heat</u>** to replace fossils in nearby **<u>processing plants</u>**

Sugarcane Bagasse mostly available in **<u>Southern Governorates</u>**

Concluding remarks

- The analysis has identified some **potential to produce energy from agriculture residues** in Egypt (7 percent for electricity and 31 percent for heat at given availability levels), for a **specific set of residues and locations** illustrating options that could be profitable
- The general agreed perception with stakeholders is that potential exists but **accessibility and logistics to unlock the potential** is **blocking further developments**
- Next steps would require:
  - **Local** level **verification and validation of residues availability and accessibility**, including also local level needs, feasibility and viability
  - Biomass mobilization schemes to reap the potential
  - Identifying ***real*** **cases that can work and address the collection /logistics bottleneck**

References

- FAO Energy website: http://www.fao.org/energy/home/en/
- FAO Bioenergy website:
  - BEFS Approach:

    http://www.fao.org/energy/bioenergy/bioenergy-and-food-security/en/
  - BEFS Rapid Appraisal:

    http://www.fao.org/energy/bioenergy/befs/assessment/befs-ra/en/

- BEFS Egypt Assessment:

http://www.fao.org/3/a-i6684e.pdf

- IEA FAO How2Guide for Bioenergy

Forthcoming Jan2017