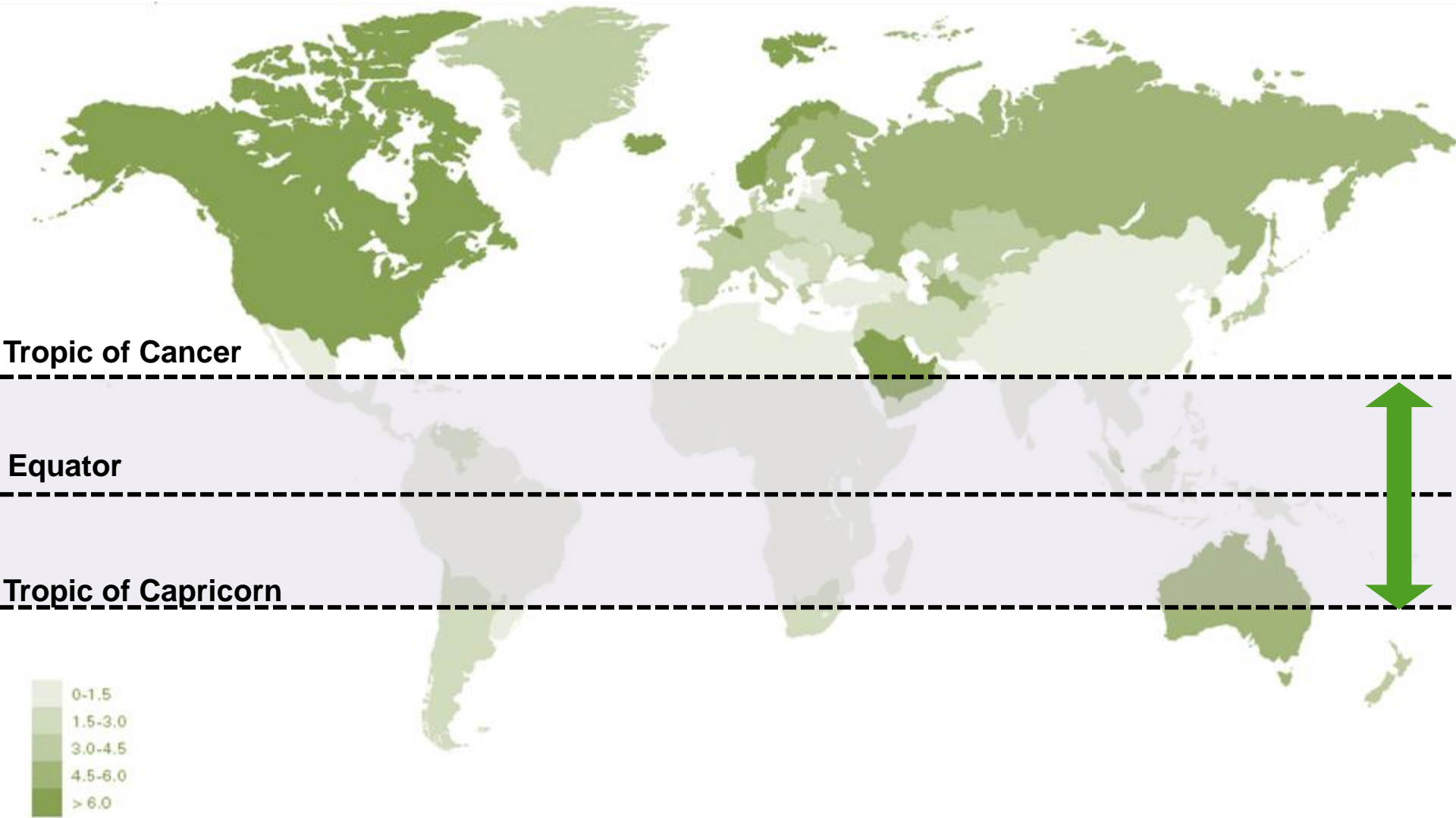


# **Policies for Sustainable Bionergy**



- I. Brazilian Experience**
- II. Selected crops – example;**
- III. Zoning results**
- IV. Site Location Method**
- V. Strategic vision;**
- VI. The Model Project;**
- VII. The Grass;**
- VIII. Advantages;**
- IX. Policy Questions**

# Tropical Belt



# Selected Crops - example

Backwards fit from weather/soil and social considerations

Fit to national strategic requirements



**Sugar Cane**



**Eucalyptus**



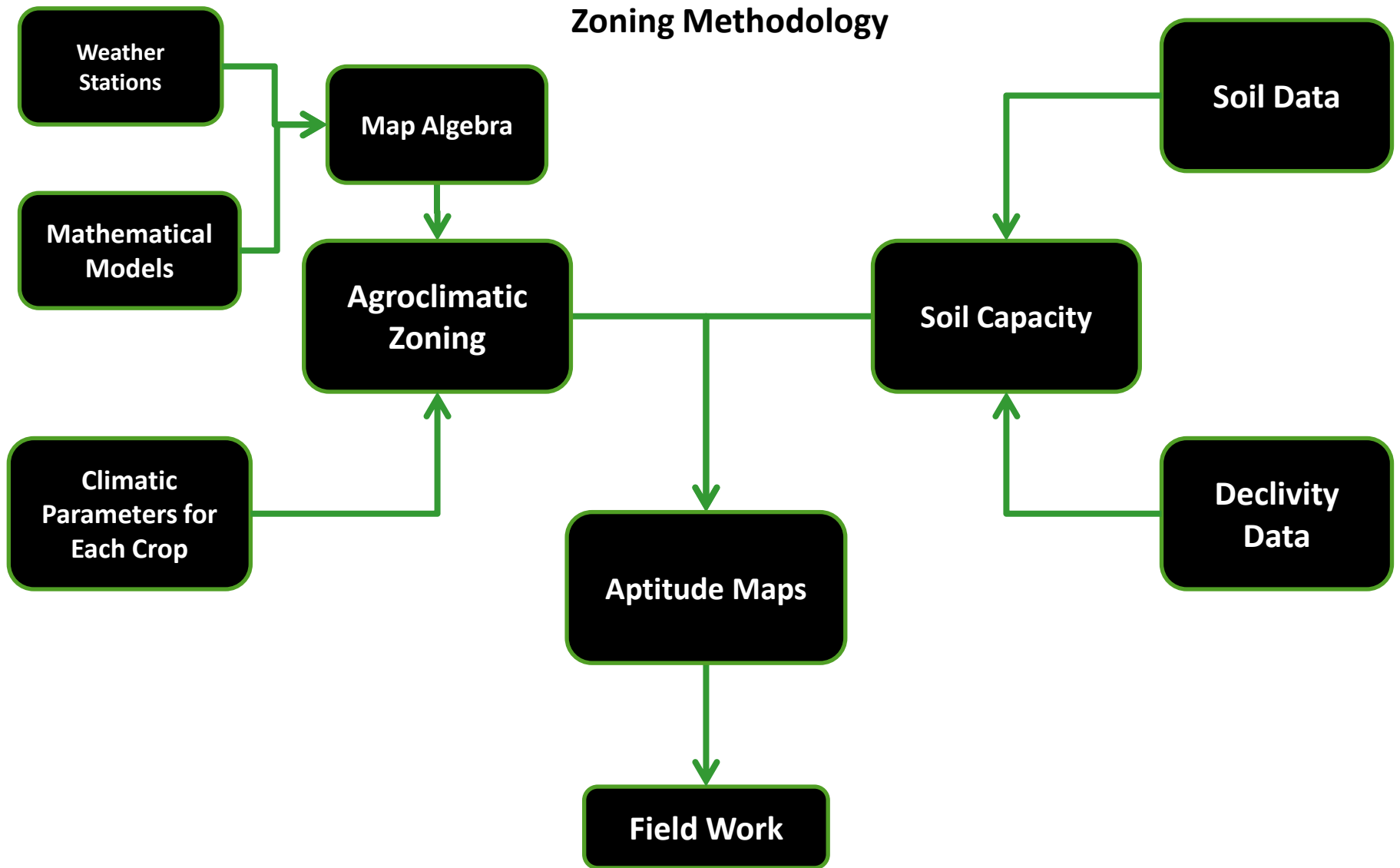
**Elephant Grass**



**Oil Palm**

# Zoning Results

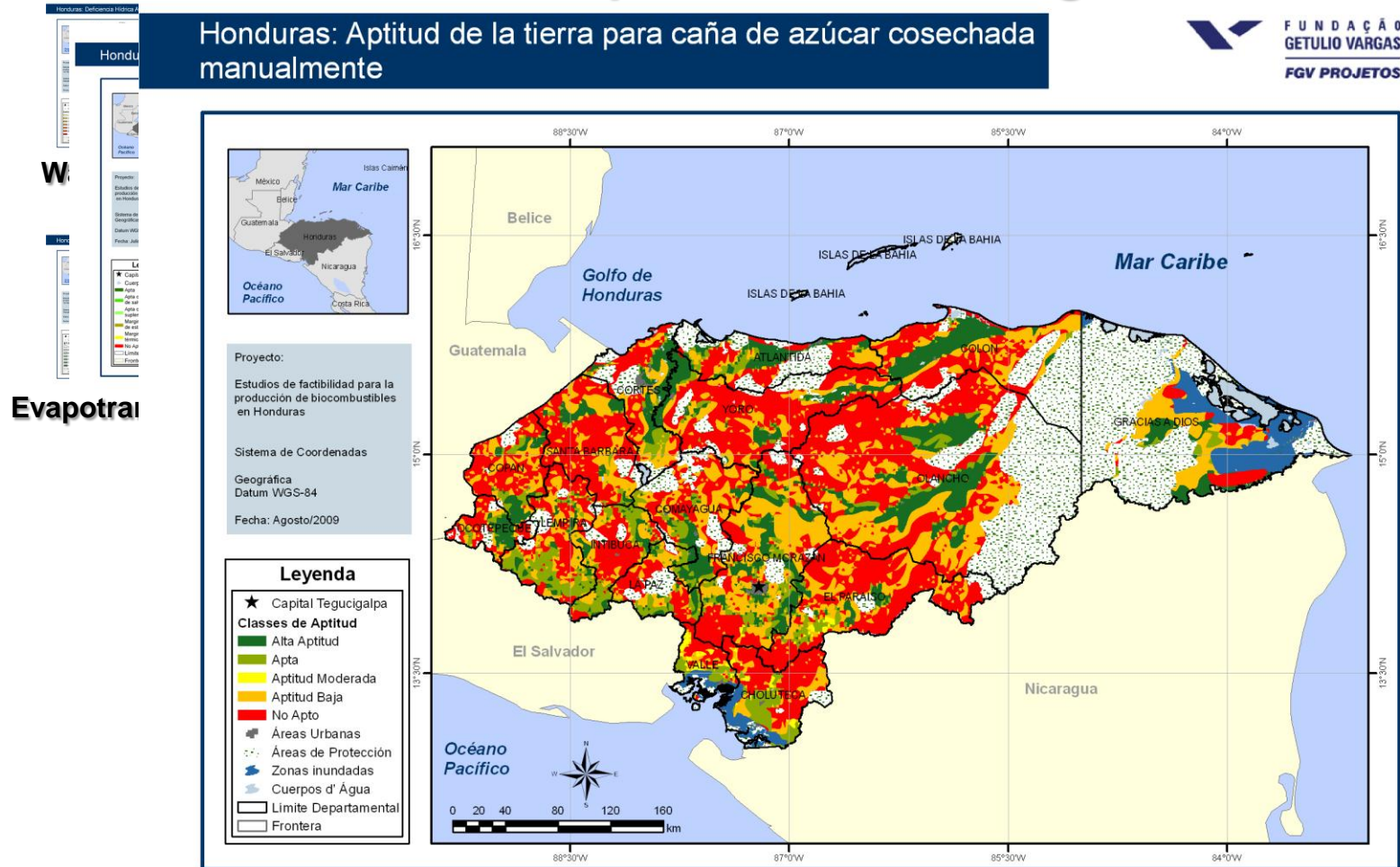
## Zoning Methodology



## Agroclimatic zoning      Edaphoclimatic zoning      Edaphic zoning

Honduras: Aptitud de la tierra para caña de azúcar cosechada manualmente

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FGV PROJETOS





# Considerations for Bioenergy Projects

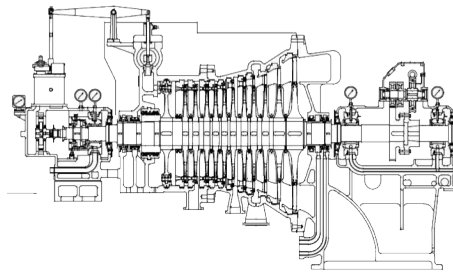
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- ✓ Produce rural jobs;
- ✓ Improve national balance of payments;
- ✓ Work with technology available today, but able to adapt to developments;
- ✓ Reduced “commodity sale pricing” risk;
- ✓ Provide knowledge and logistical platform potential food-related spin-off or additional projects;
- ✓ Low impact agricultural footprint;
- ✓ Sustainable – social, economic, environment.

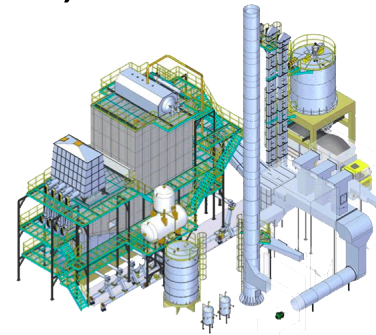


# The Model Project

- ✓ 10 MW thermoelectric plant fueled with a dedicated plantation of high dry matter producing perennial grass;
- ✓ Energy production 340 days per year, comparative to fossil fuel thermoelectric;
- ✓ Between 2000 and 3000 hectares plantation per unit;
- ✓ Ownership: 25% farmer's cooperative, 75% investor.



Turbina a Vapor de Condensação com Extração - Principais Componentes

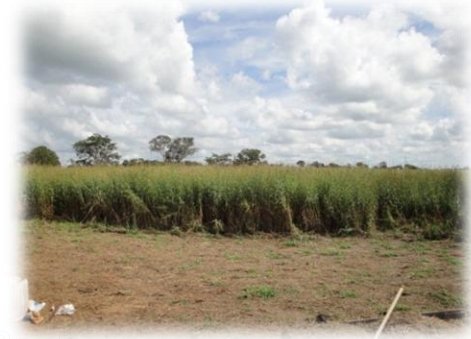


Layout de Caldeira





- **Common name:** Elephant Grass.
- **Scientific name:** Pennisetum purpureum Schum.
- **Origin:** Tropical Africa between latitudes 10 ° N and 20 ° S
- **General description:**
  - Perennial grass, reaching 5 meters height;
  - Up to 40 tons of dry matter per hectare/year;
  - Rainfall requirement over 800mm/year;
  - Adapts to different soils.



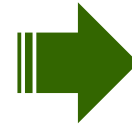
## Production chain



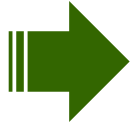
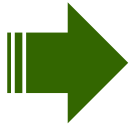
Soil Preparation



Planting



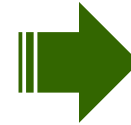
Growth



Harvest



Transportation



Burning

# Advantages (values per unit)

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- ✓ USD 3.6 mm balance of payment advantage;
- ✓ 3.6 million tons of CO<sub>2</sub> avoided;
- ✓ 300 direct jobs or regular income;
- ✓ 15% to 25% IRR, depending on factors;
- ✓ 2000 to 3000 hectares, small agricultural footprint;
- ✓ Retains smallholders in rural areas;
- ✓ Training and education base for technical jobs;
- ✓ Robust financial model.



- ✓ Requires off-take guarantee and price;
- ✓ Requires take or pay contract;
- ✓ Requires a cooperative, long-term effort;
- ✓ Requires precise boiler configuration.



## Group Exercise

- Are there existing processes within or between agencies that deal with land concessions? Please describe them. Who makes land concession decisions on the national, regional, district level?
- What potential land-use impacts are foreseen as a result of bioenergy, which are particular to your country?
  - Loss of key protected areas?
  - Biodiversity loss?
  - Impacting indigenous or traditionally marginalized communities?
  - GHG-related impacts?

- What mitigation approaches exist to guard against these risks? For example, are there national laws, policies, procedures already in place that deal with land-use mapping?
- What are the challenges of developing district or national approaches to mapping?
  - Is there appropriate and sufficient data? GIS capabilities?
  - Can policies be communicated easily?
  - How can these challenges be resolved?
- What are some other examples of actions that can mitigate land-related impacts? What lessons can be shared from your country?
- What outside assistance is required to build capacity or overcome challenges?



# Thank you

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