

# ***Renewable Energy Mapping & Monitoring***

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Stimulating innovation  
Supporting legislation*



# Renewable Energy Mapping & Monitoring in Europe and Africa

## Activities

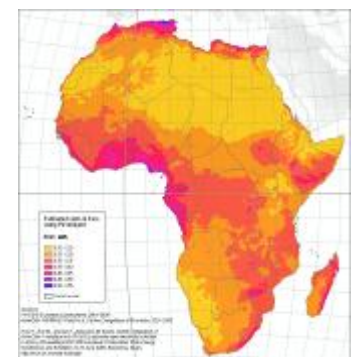
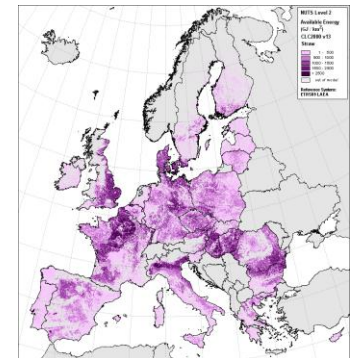
Monitor RES development

Assess resource use & potential: biomass, solar, wind, hydro

Engage in the EU-Africa Energy Partnership

Support to SET Plan

Technology assessment

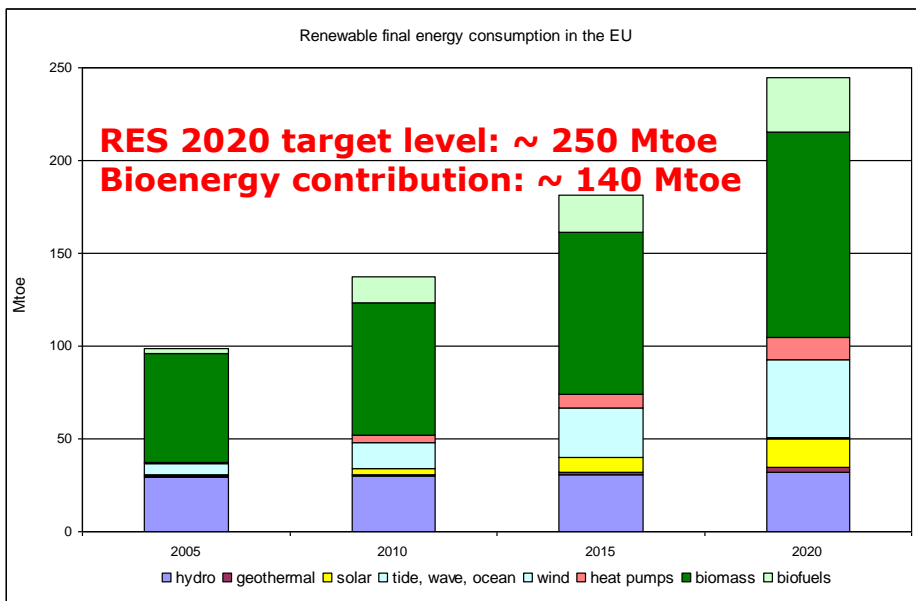


# Monitoring RES development

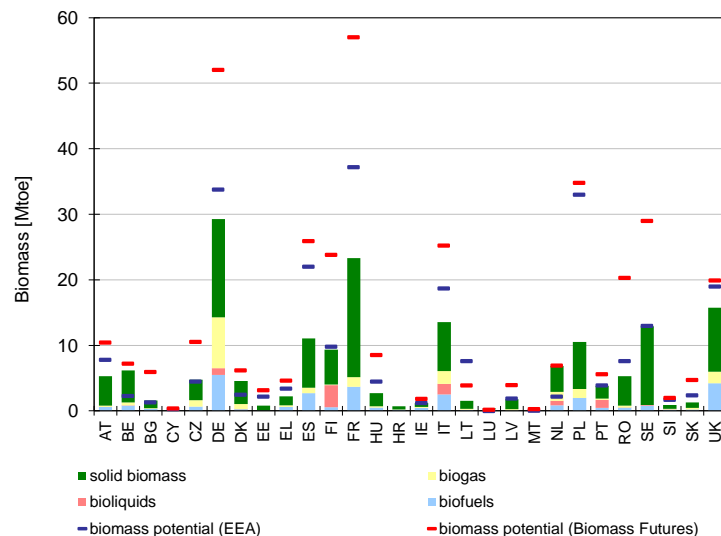
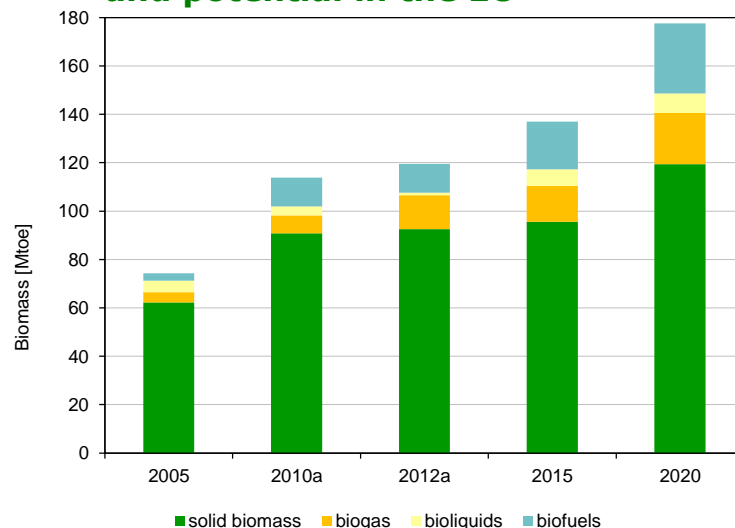


- RES and bioenergy targets and perspectives
- Sectoral analysis of bioenergy development
- Assessing biomass demand vs. potential
- Land use impact of bioenergy
- Addressing sustainability

## Renewable final energy consumption



## Biomass demand, domestic supply and potential in the EU



Data sources: National Renewable Action Plans (NREAPs) and Progress Reports

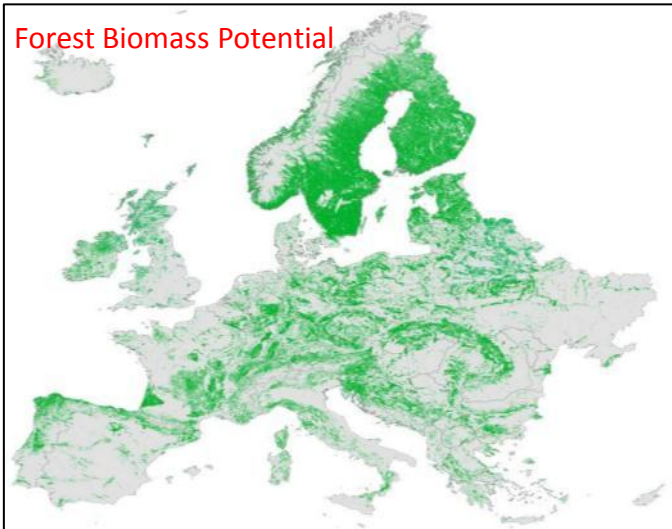
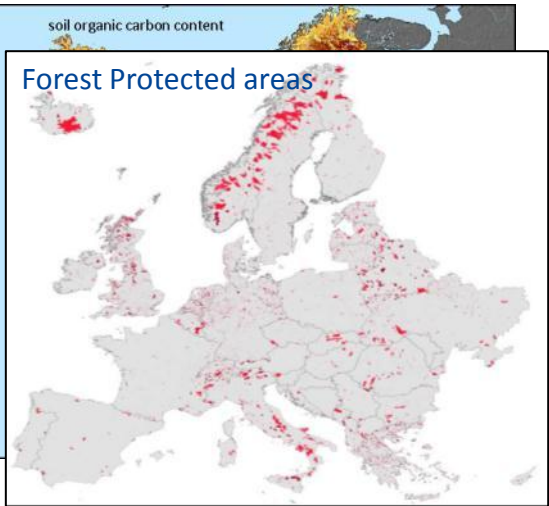
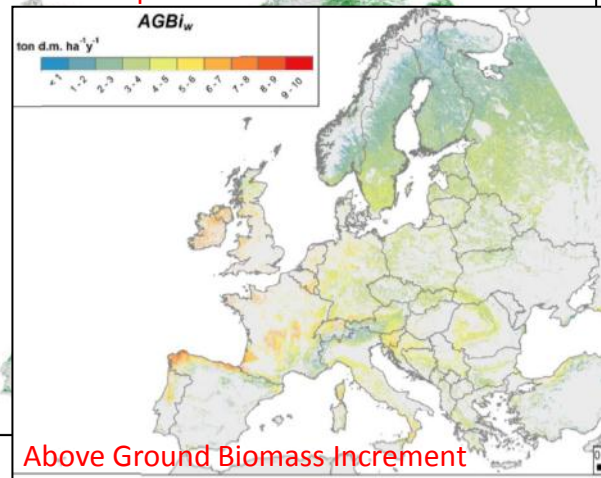
Joint Research Centre

# Forest biomass potential

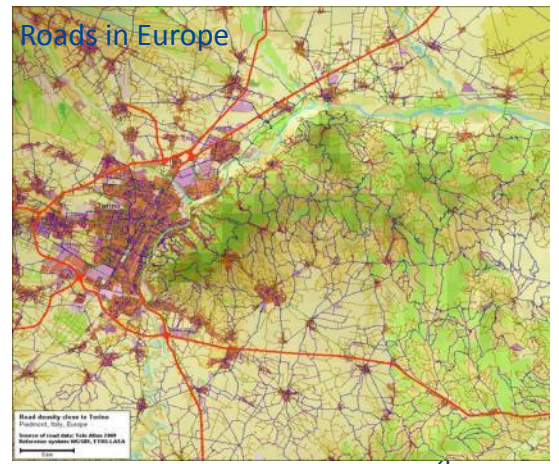
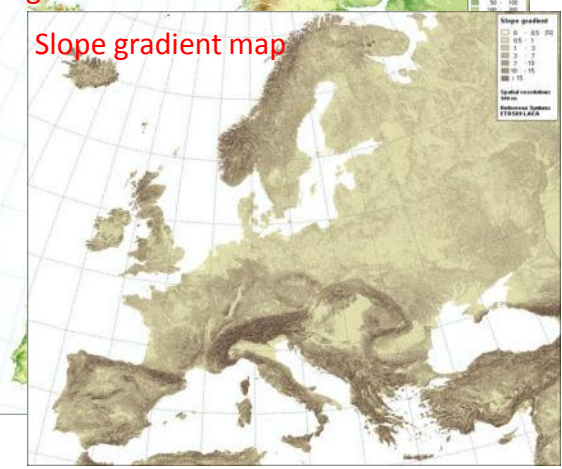


Integrate detailed ground information from National Forest Inventories with remote sensing data and modelling tools for a spatially explicit assessment of forest biomass potential.

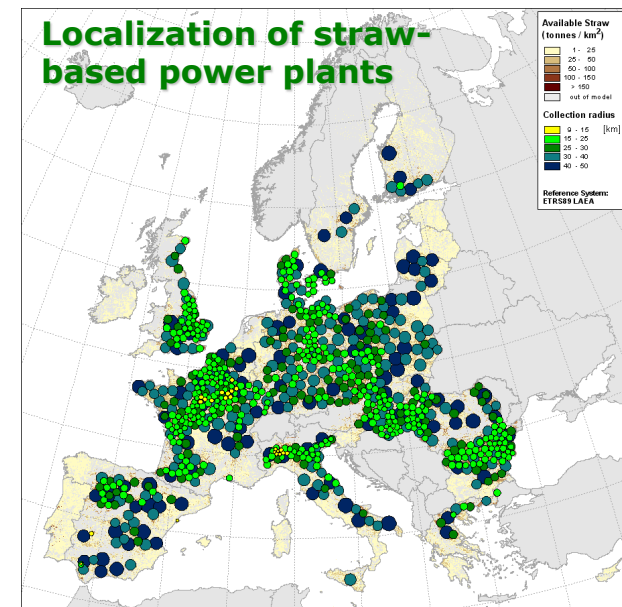
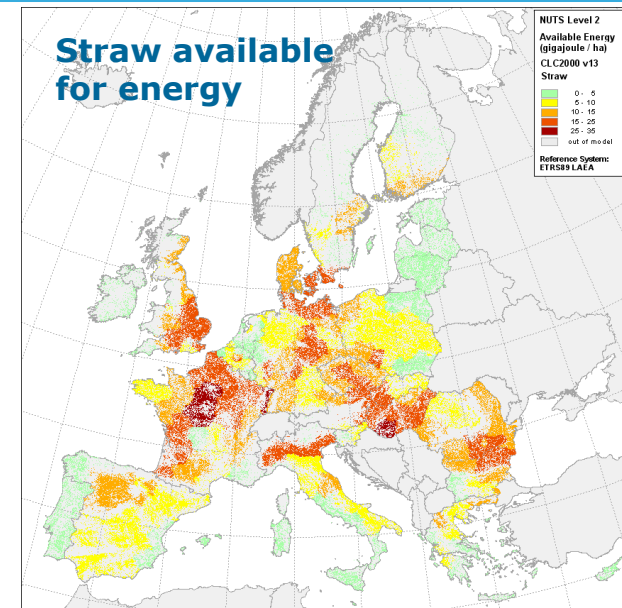
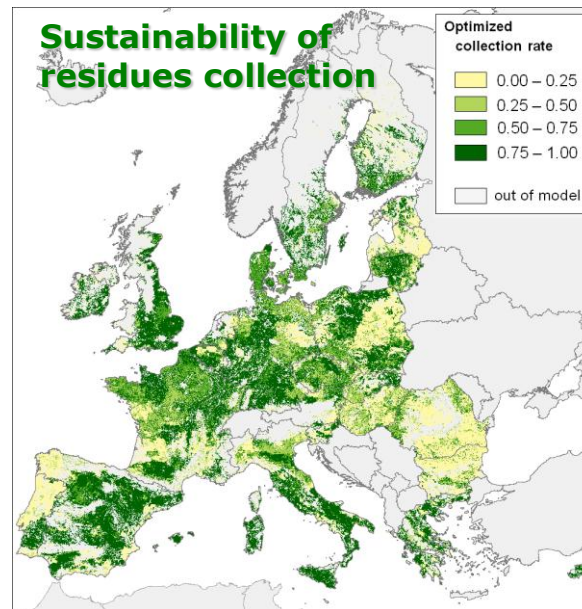
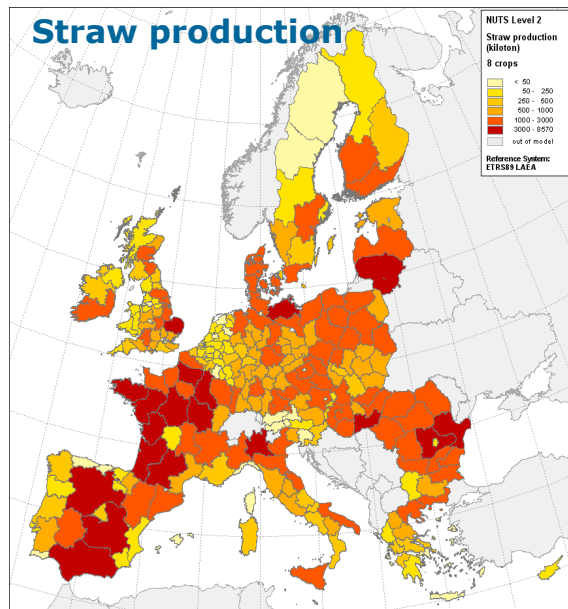
Forest Maps - LAEA



Digital Elevation Model



# GIS-based assessment of EU crop residues



## Actual production

- crop production, area and yields
- residue to yield ratios

## Environmental constraints

- soil organic matter content  
>> sustainable removal rates

## Straw available for energy production

## Suitability map of power plant location

# Cost of crop residue mobilisation



## Calculation model to estimate crop residues cost of supply

- cost of specific operations

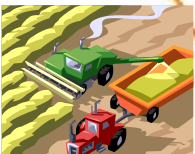
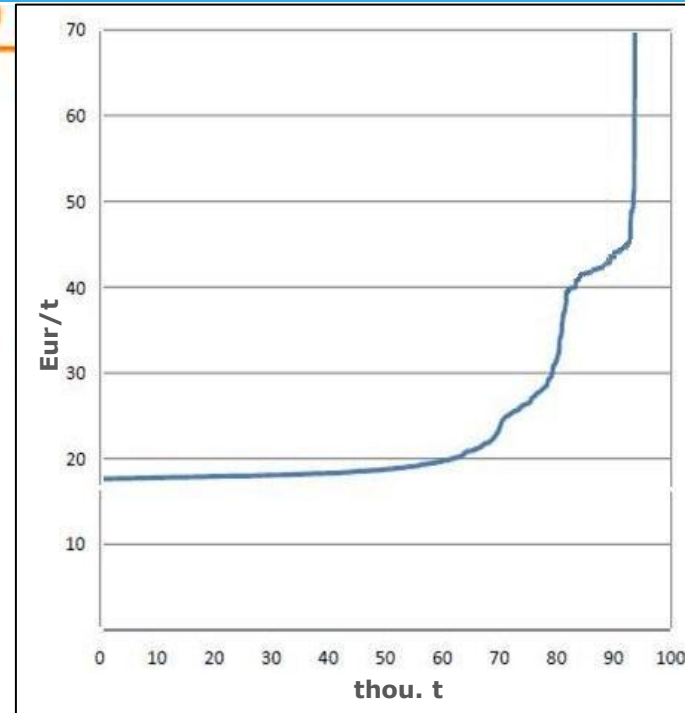
$$C = \sum_{m,p} t_{m,p} \cdot (c_{fix\ m,p} + c_{var\ m,p}) + \sum_{m,p} t_{st} \cdot c_{st} + t_{tr} \cdot c_{tr}$$

- spatial distribution of biomass

- crop distribution
- transport distance



- optimisation of plant size and plant location



# Biogas potential from manure



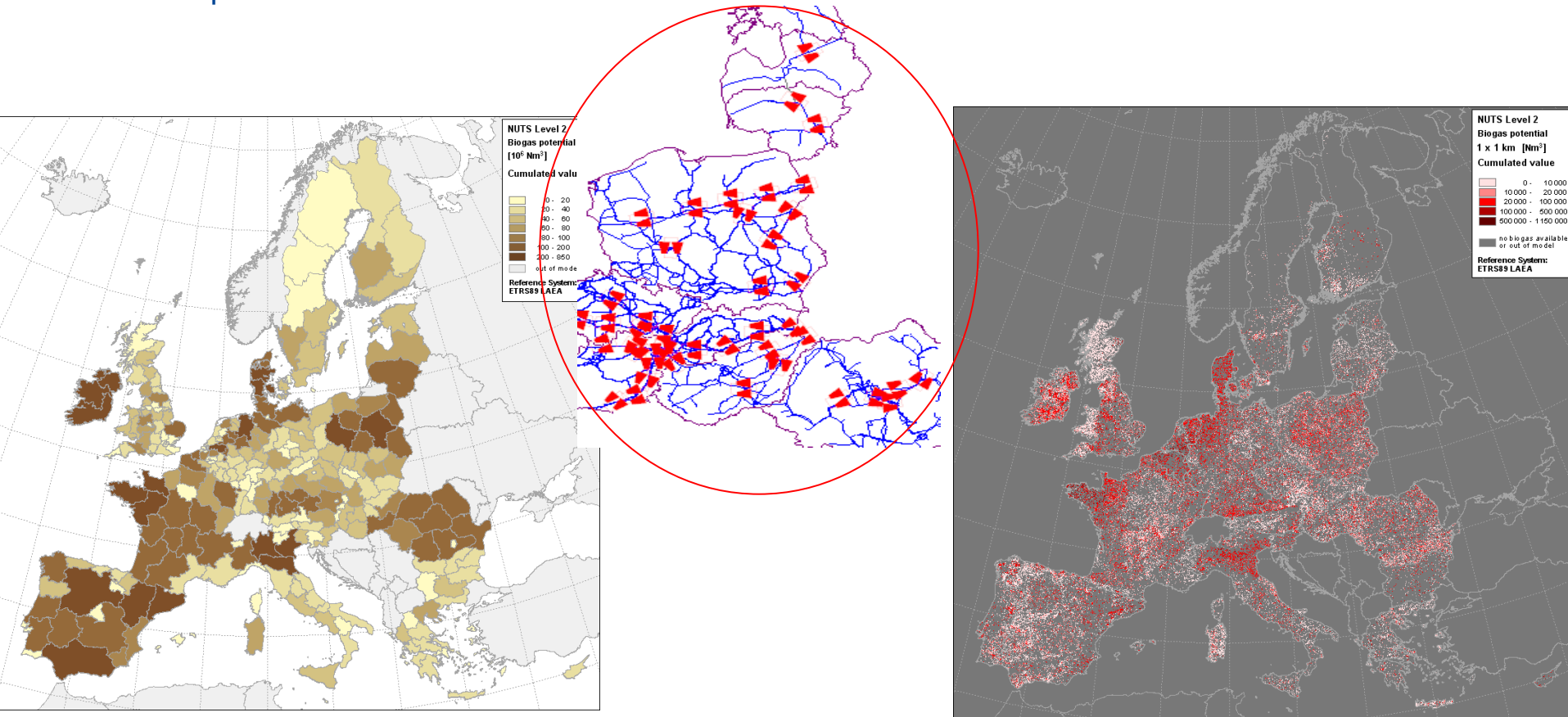
## Livestock Information

- type, number, production system

## Feedstock information

- feedstock composition (DM, OM), biogas yields

## Livestock spatial distribution



# Danube Bioenergy Nexus



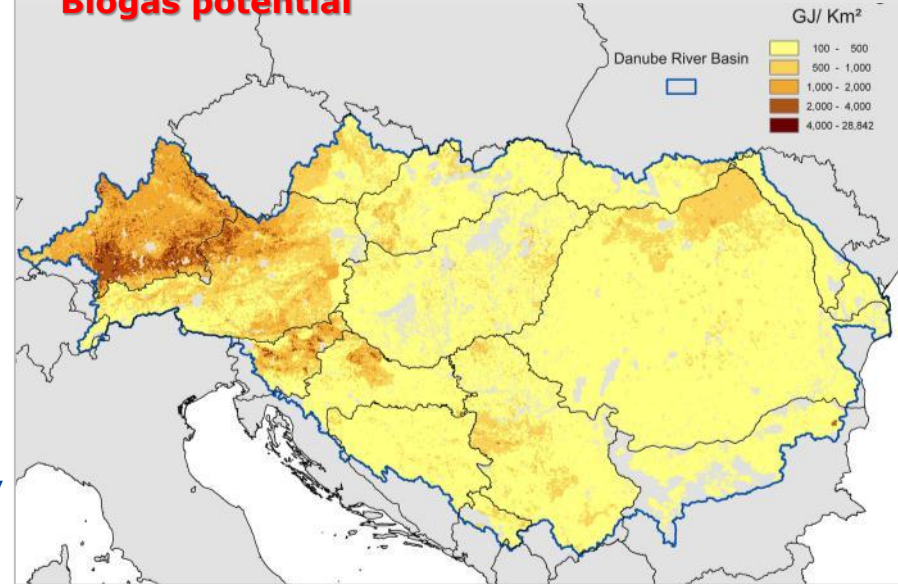
European  
Commission

**Aim:** to address the challenges and opportunities of bioenergy in the Danube Region

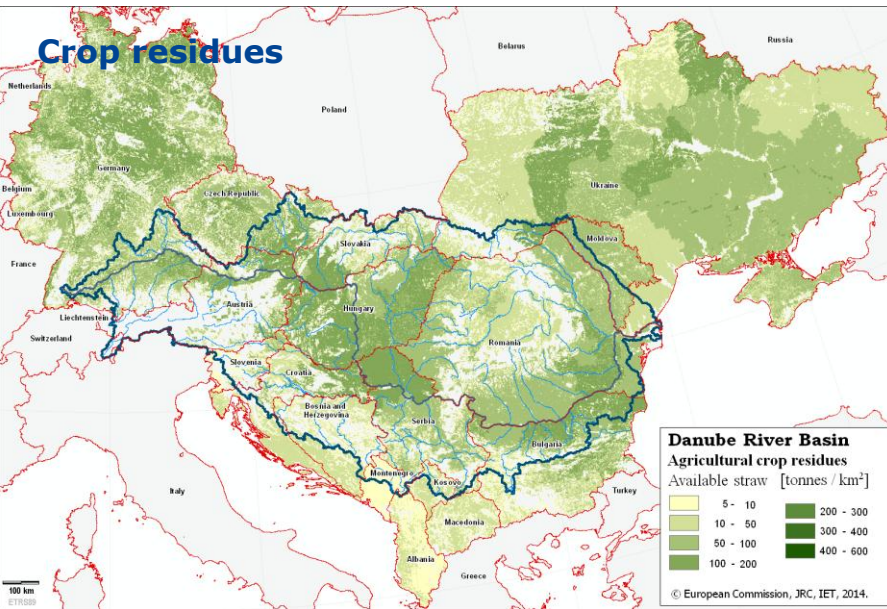
## Main activities

- Biomass mobilization: the role of the Danube River
- Assessment of bioenergy status & progress in Danube Countries
- Mapping biomass potential: forest, crop residues, biogas for energy

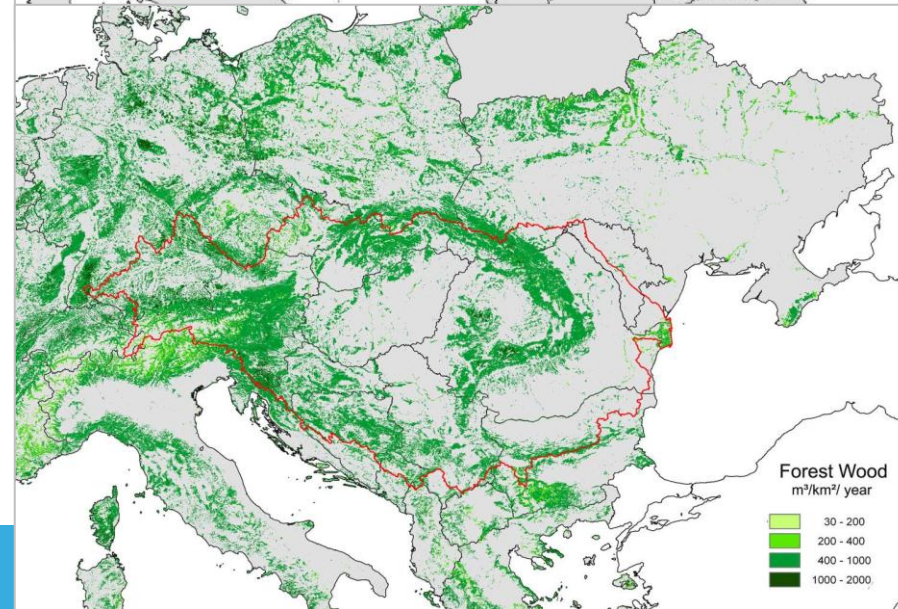
## Biogas potential



## Crop residues



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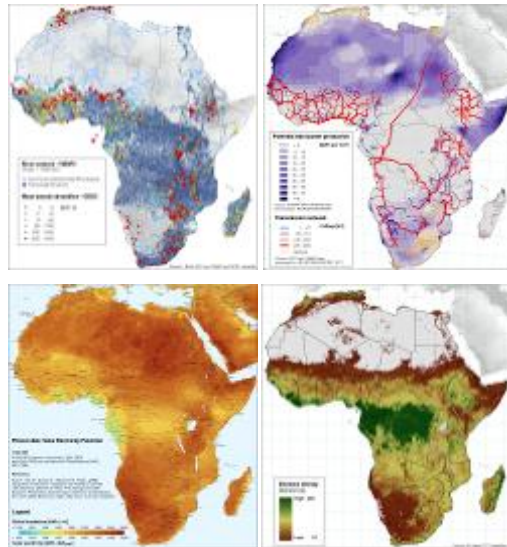
# Renewable energy in Africa



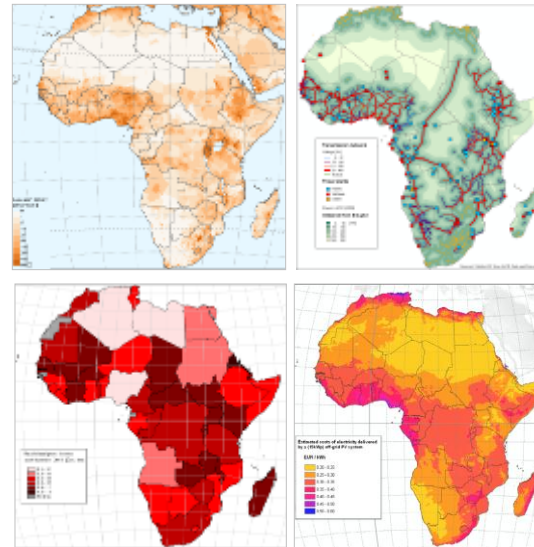
- Assessing potentials
- Understanding opportunities
- Guiding choices

How does climate change enter in this picture?

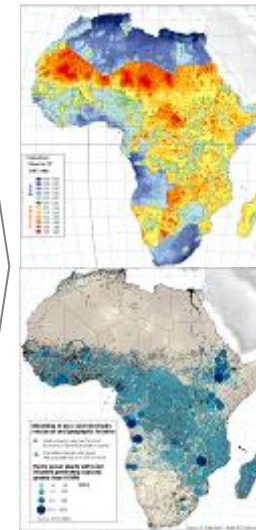
Assessing resources



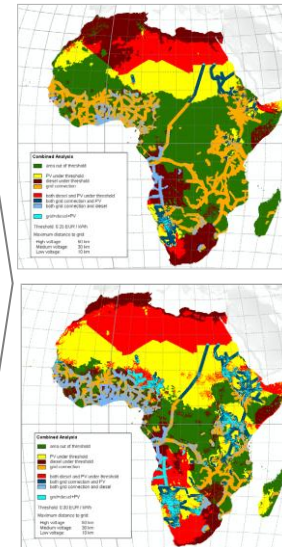
Social & economic data



Technology comparison



Ranking options



- 'Renewable energies in Africa'
- 'Renewable energies in the changing Africa. *Assessing climate and non-climate effects for next decades*'

# The Strategic Energy Technology Plan



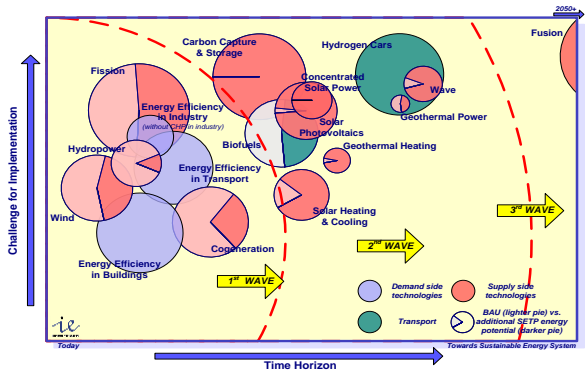
## SET Plan - the technology pillar of the EU's energy and climate change policy

### Role

- accelerate the development of low carbon energy technologies
- contributing to the worldwide transition to a low carbon economy by 2050

### Activities

- technology assessment, current state of the art, anticipated development and market potential
- monitor the progress of SET Plan activities
- assess performance and cost-effectiveness of SET Plan activities



**Techno-Economics Performance Potentials Priorities**

*'Technology Mapping'*

**Energy technology Innovation Characteristics & Capacities**

*'Capacity Mapping'*



**Monitoring & Review of SET-Plan progress**

**'Key Performance Indicators'**





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