



Land availability for non-food crops in the EU today and in the future

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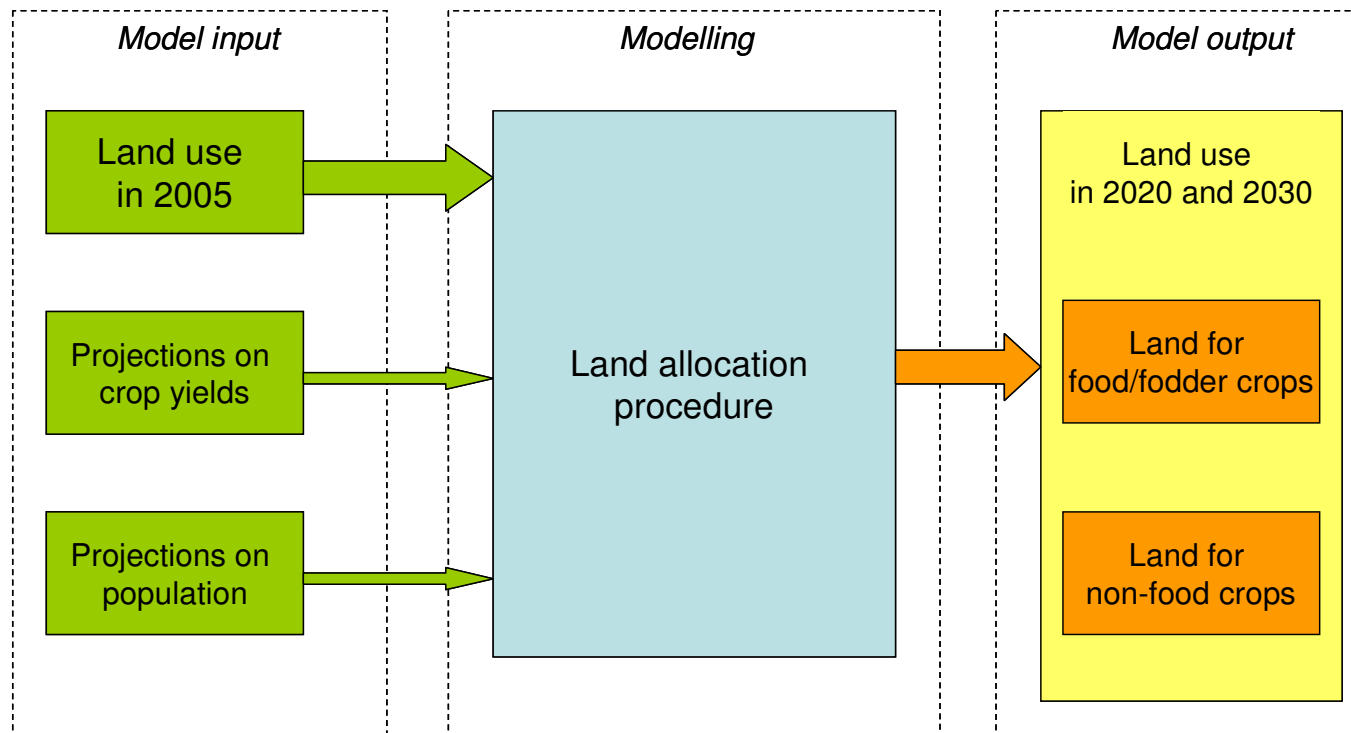
Institute of Fuels and Renewable Energy



Methodology

Core assumption:	EU domestic food security not affected
Approach:	estimating surplus land
Time:	Base case (2003-2007) Scenario 2020 and 2030
Geographical scope:	EU-25
Level of assessment:	NUTS-2 regions
Method:	land allocation model
Results:	teoretical-technical potential in hectares
Data:	EUROSTAT, AEBIOM, UN

Land allocation model



Land categories

Base Case:

- fallow land
- area cultivated with energy crops (approx. 3 million ha)

Scenario 2020 and 2030:

- fallow land (base case)
- additional land released from food and fodder crops

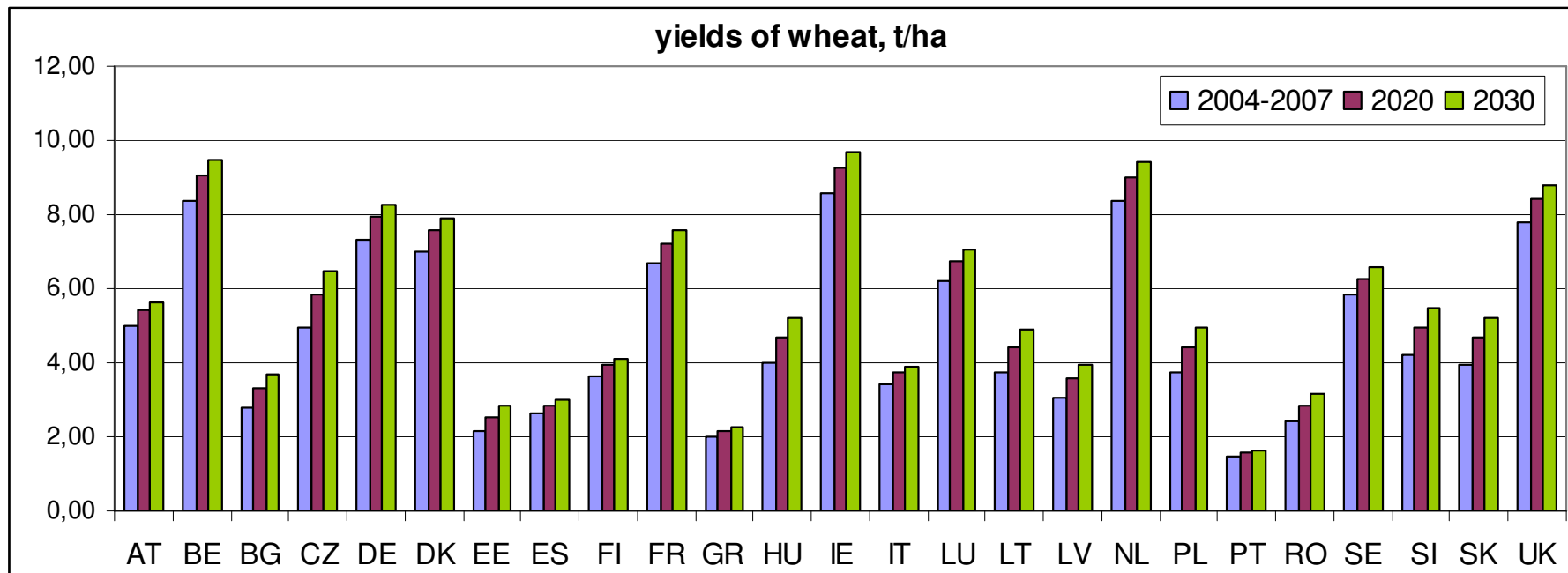
Main parameters for the assessment:

- Future productivity increase
- Changes in population
- Food import/export balances

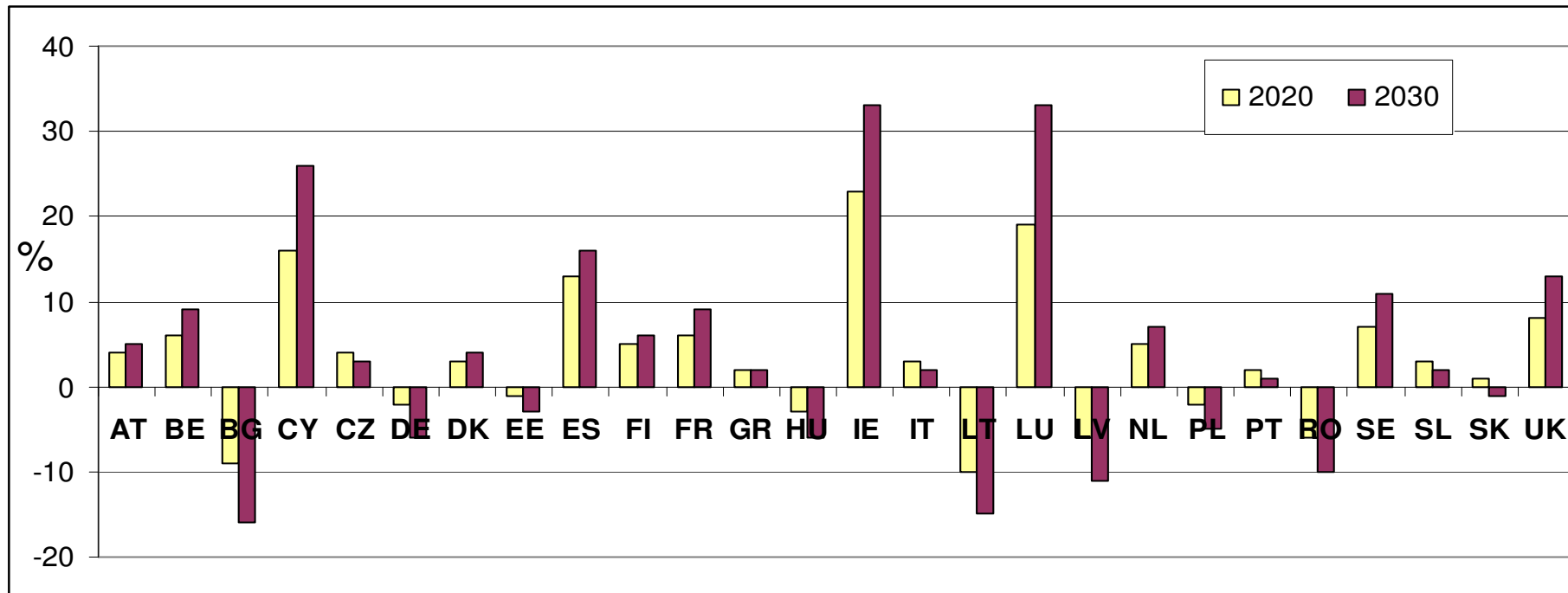
Assumptions on future yields

Annual yield growth rates in per cent

	Average for EU-27	Average for EU-15	Average for EU-12	Source
Cereals	0,80	0,50	1,10	DG Agriculture (2007)
Maize grain	0,40	0,25	0,55	DG Agriculture (2007)
Rapeseed	0,80	0,50	1,10	Own estimation
Other crops	0,80	0,50	1,10	Own estimation



Population change in 2020 and 2030 in reference to 2005

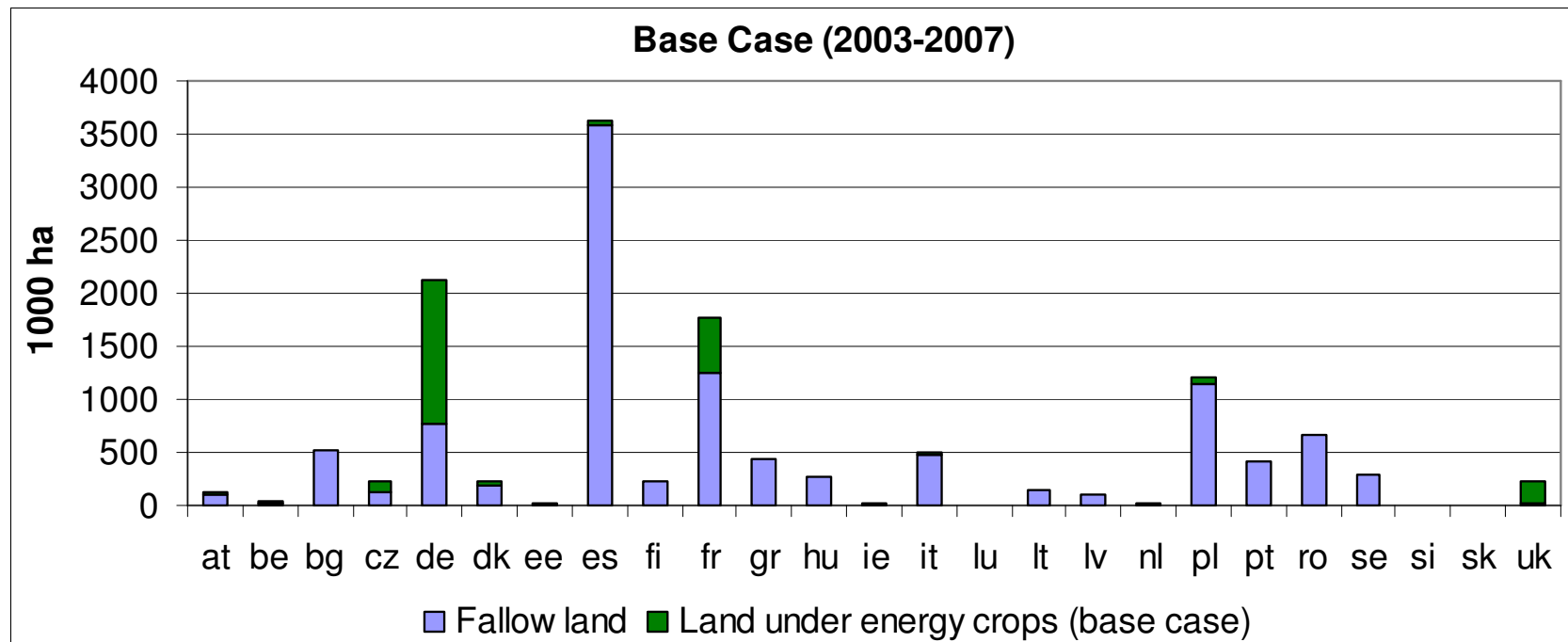


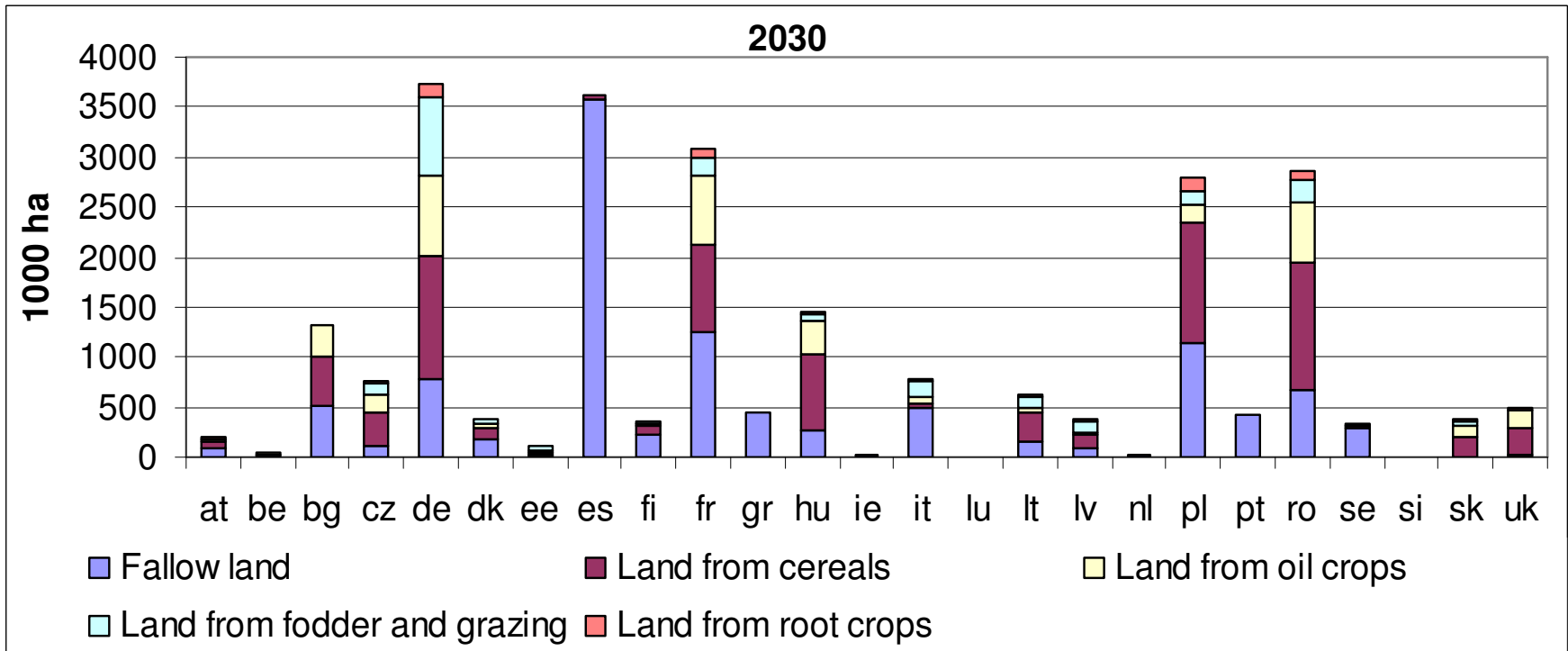
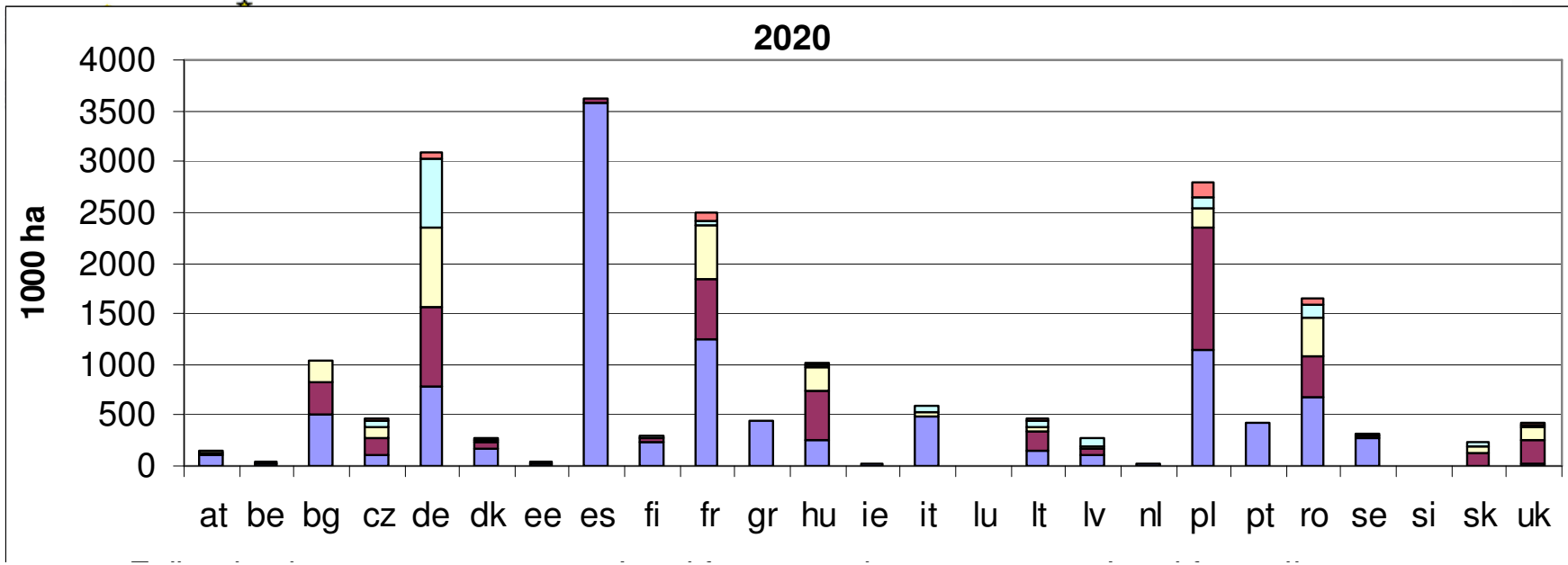


Land allocation procedure

- Land allocation for food and fodder crops in 2020 and 2030 is based on current land use and projected crop productivity increase and food demands.
- Strict allocation rules
- Surplus land would be released only if the effect of productivity increase overweights the raise in food demands.
- In countries which are net-importers of grain, any released land would be first allocated to compensate the needs of domestic consumption
- The surplus land is outcome of the land balancing procedure between the future land allocation in 2020 and 2030 for food production and the base case land use

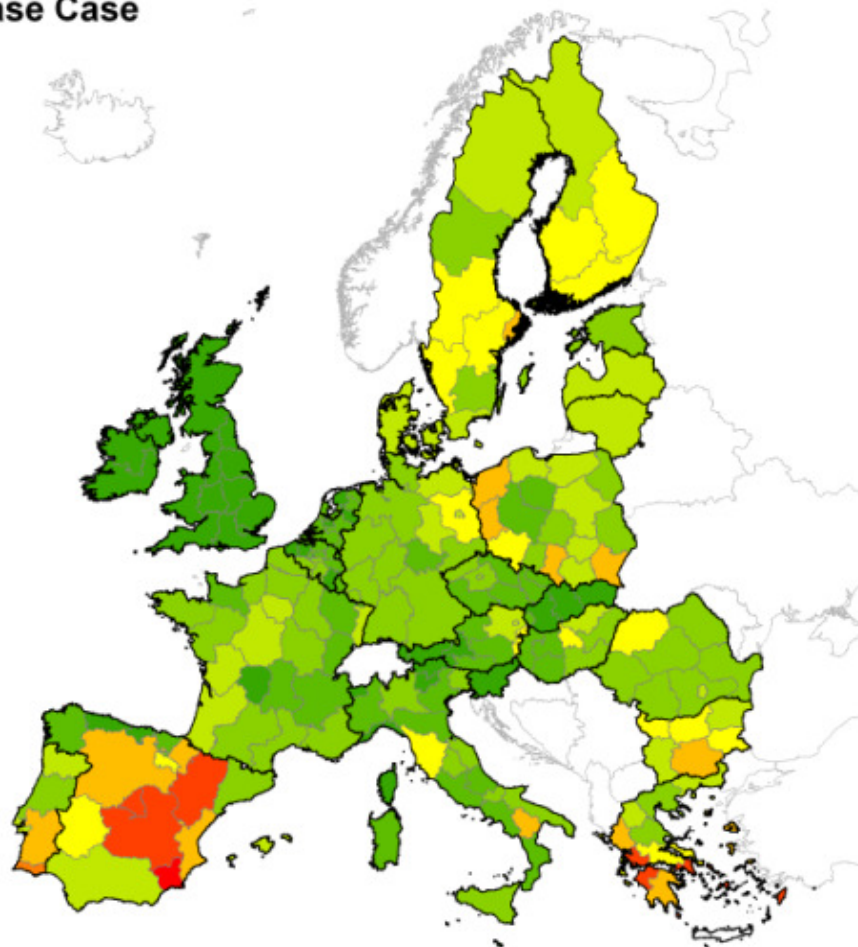
Results: Land available in the Base Case



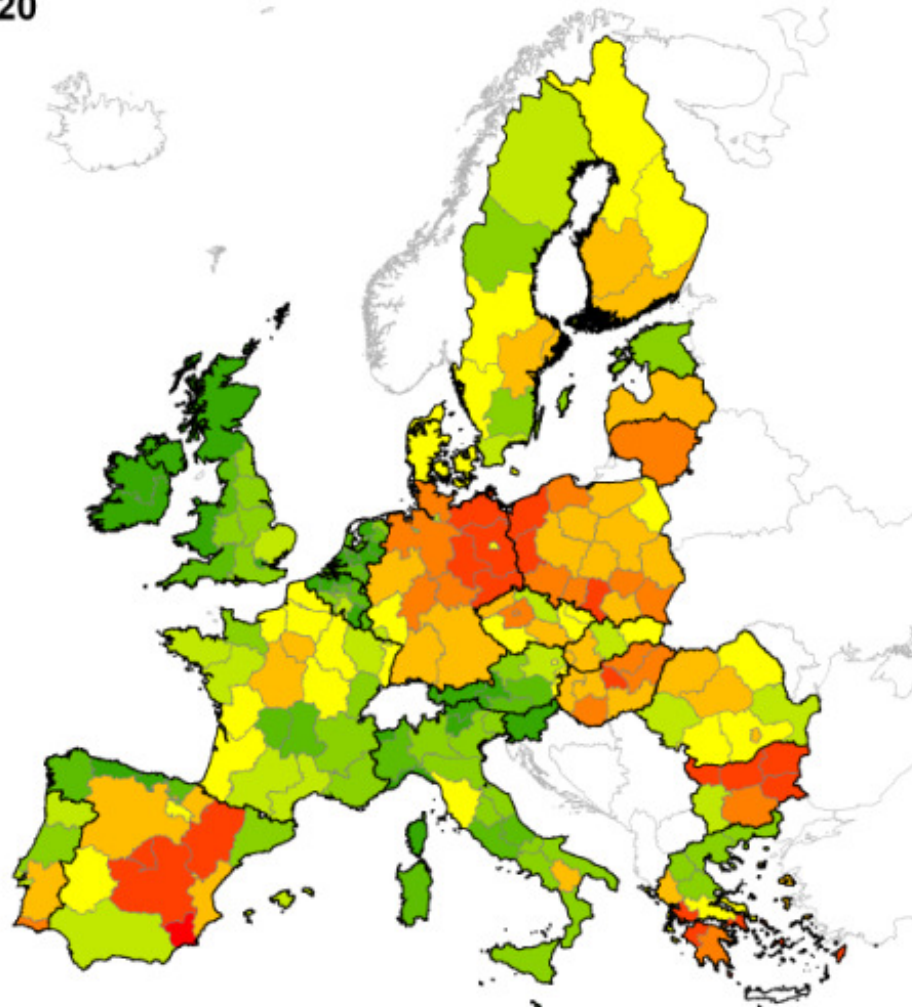


■ Fallow land ■ Land from cereals ■ Land from oil crops
■ Land from fodder and grazing ■ Land from root crops

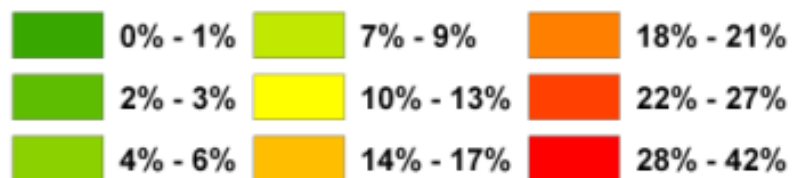
Base Case



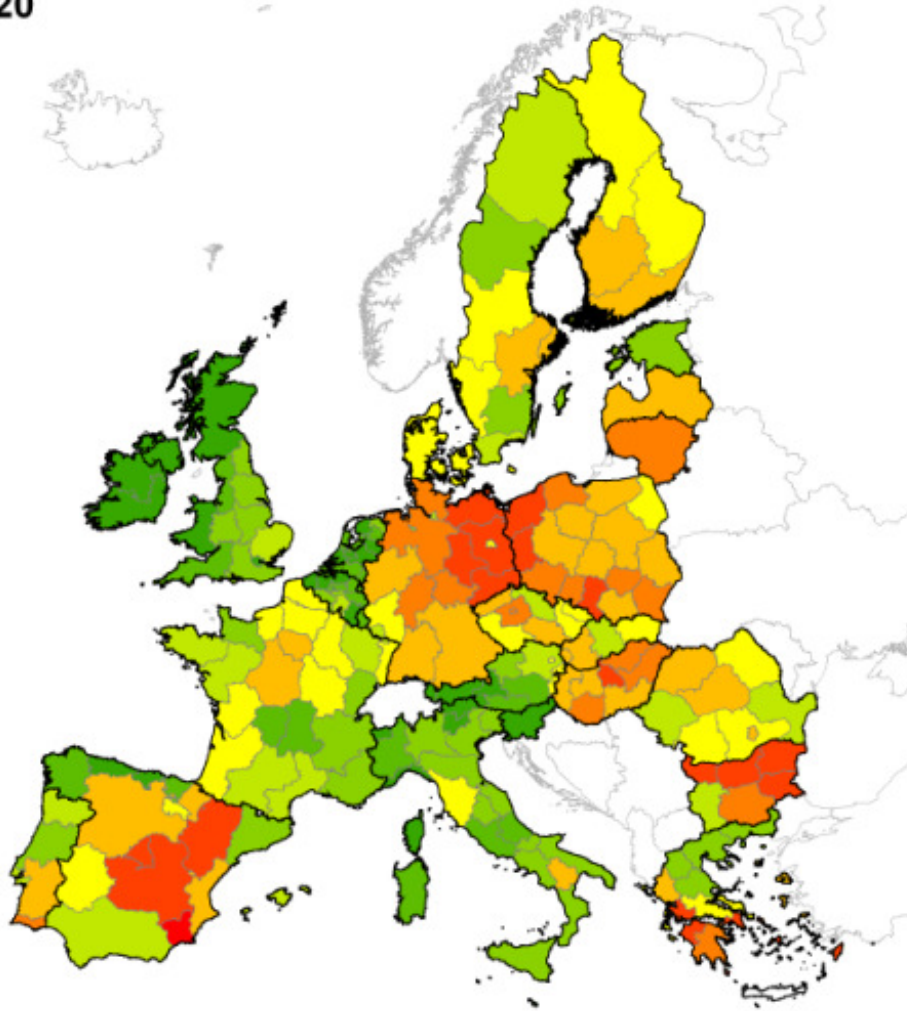
2020



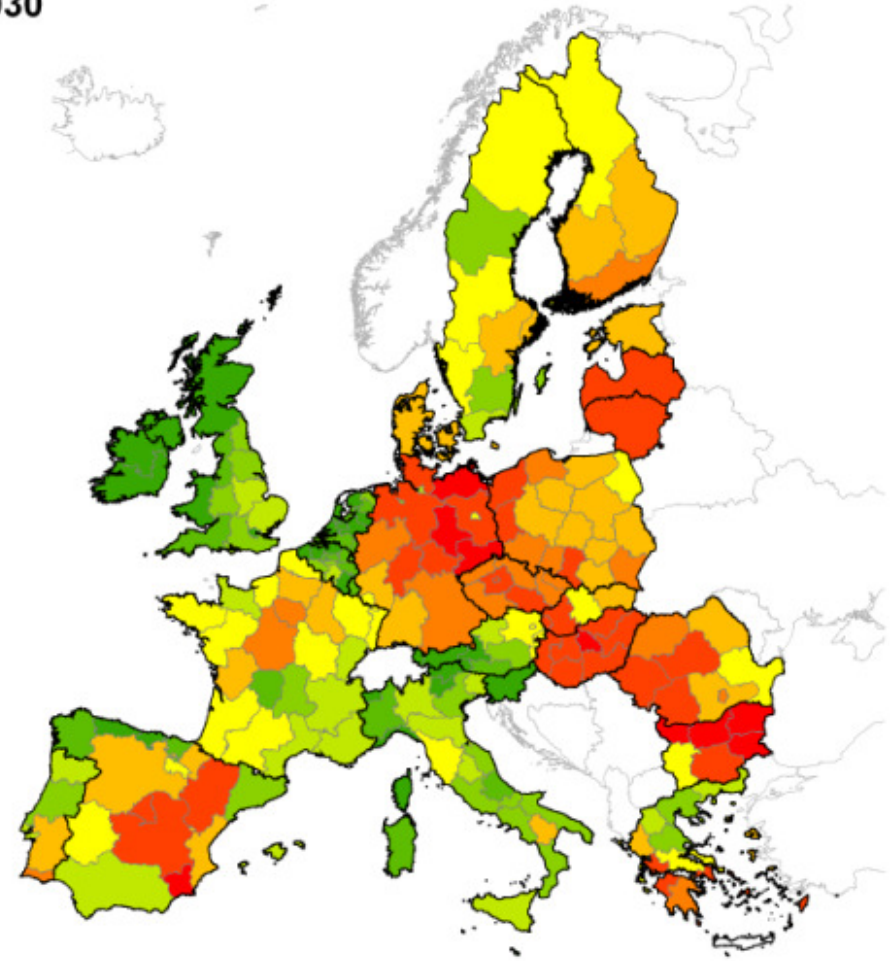
Share of surplus land in total agricultural land



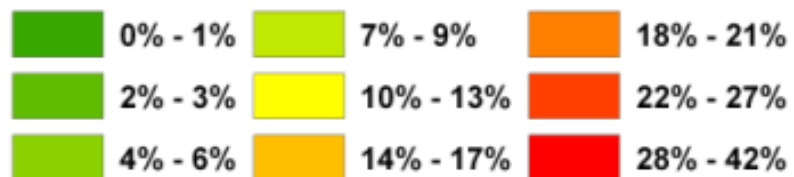
2020



2030



Share of surplus land in total agricultural land



Summary and conclusions 1

- Base Case: total area for non-food crops (2003-2007) estimated at 13.2 million ha, which includes fallow land (80%) and land cultivated with bioenergy crops (20%).
- Scenario 2020 and 2030: the total land available would amount 20.2 and 24.6 million ha, respectively
- Future productivity of crops strongly affect the results, with cereal growth rates having the strongest impact as cereals dominate in all countries
- EU-12 countries are characterized with higher future yield growth rates (with 120%) compared to the EU-15, which is reflected in the results

Summary and conclusions 2

- ❑ The largest area is found in Spain amounting 3.6 million ha, which is over 14% of total agricultural utilized area. Fallow land in Spain is commonly a part of the crop rotation
- ❑ In Poland fallow land (1.1 million ha) comprise mainly land withdrawn from crop production with regard to insufficient productivity. Still it might be brought back to production
- ❑ Fallow land is commonly land of below the average quality, also including areas of marginal land.
- ❑ If additional land is released from food production, the same as it is for set-aside land, farmers will resign first from the less productive plots keeping production on the best available land.

Summary and conclusions 3

- The results available on regional basis show potential locatiion for biomass transformation plants with rehgard to land availability for energy crops and corresponding biomass potentials
- GIS-based analysis would be of a great value to indicate areas suitable for various energy crops
- Economic profitability of biomass production and associated risks will strongly determine tha land competition versus food and non-food crops

Summary and conclusions 2

Comparison with other studies, results for 2020

