



**Project Number 017841**

**NitroEurope IP**

**The nitrogen cycle and its influence on the European greenhouse gas balance.**

**Sixth Framework Programme**

**Priority 6.3**

**Global Change and Ecosystems**

**D5.2.6 Production of land-use in Europe (EU27+3) between 2000 and 2030 in response to six scenarios**

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**Wageningen University**

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<b>Dissemination Level</b>		
<b>PU</b>	Public	<input type="checkbox"/>
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	<input type="checkbox"/>
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	<input checked="" type="checkbox"/>
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	<input type="checkbox"/>

## 1. Executive Summary

For two contrasting future scenarios (“Global Markets” and “Regional Cooperation”), each subdivided into three different policy settings concerning CAP reform, bio-energy production and Less Favoured Areas, land use maps for the period 2000-2030 have been created. This has been a joint activity with the EURURALIS project (xxx) and the final outcomes are the product of a combined effort of WU, MNP and LEI.

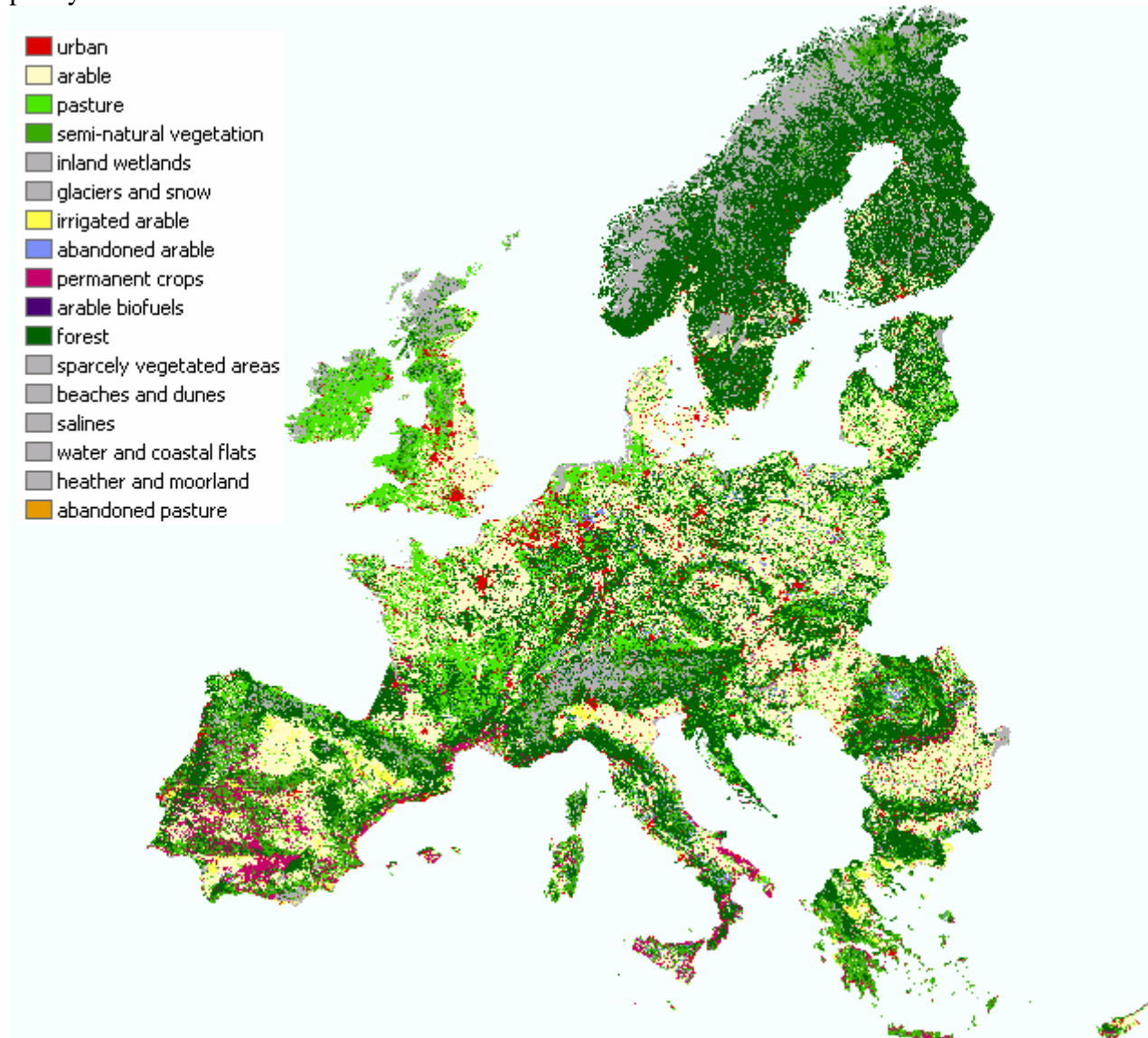
Demands at national level for commodity-producing land use (i.e. arable land and grassland) were predicted by the LEITAP model, which is an adapted version of the GTAP model. This model was linked to the IMAGE model, in order to take into account biophysical circumstances such as soils and climate (and climate change, for that matter). The demand for urban area was derived from demographical projections. A distinction between inhabitants of large urban agglomerations and smaller built-up areas was made based on simple assumptions on age and origin. Trends in urban density were extrapolated from the past, whereby the higher quintile was projected in the A1 scenario, and the lower quintile was projected in the B2 scenario. Furthermore, arable land was split into permanent crops and rotational arable land, also based on past trends.

The hence-derived demands for grassland, permanent crops, rotation arable land and urban area were downscaled to grid level ( $1 \times 1\text{km}$ ) using the CLUE model. The primary location selection was driven by so-called suitability characteristics obtained from regressions between the different land use types (CORINE2000) and a wide range of potentially explanatory variables, such as topography, climate, soil, and accessibility data. Furthermore, suitability was influenced by surrounding land use, and by spatial policies such as Natura2000 and the Less Favoured Areas schemes. The weight and extent of these latter suitability-determining factors differs per scenario.

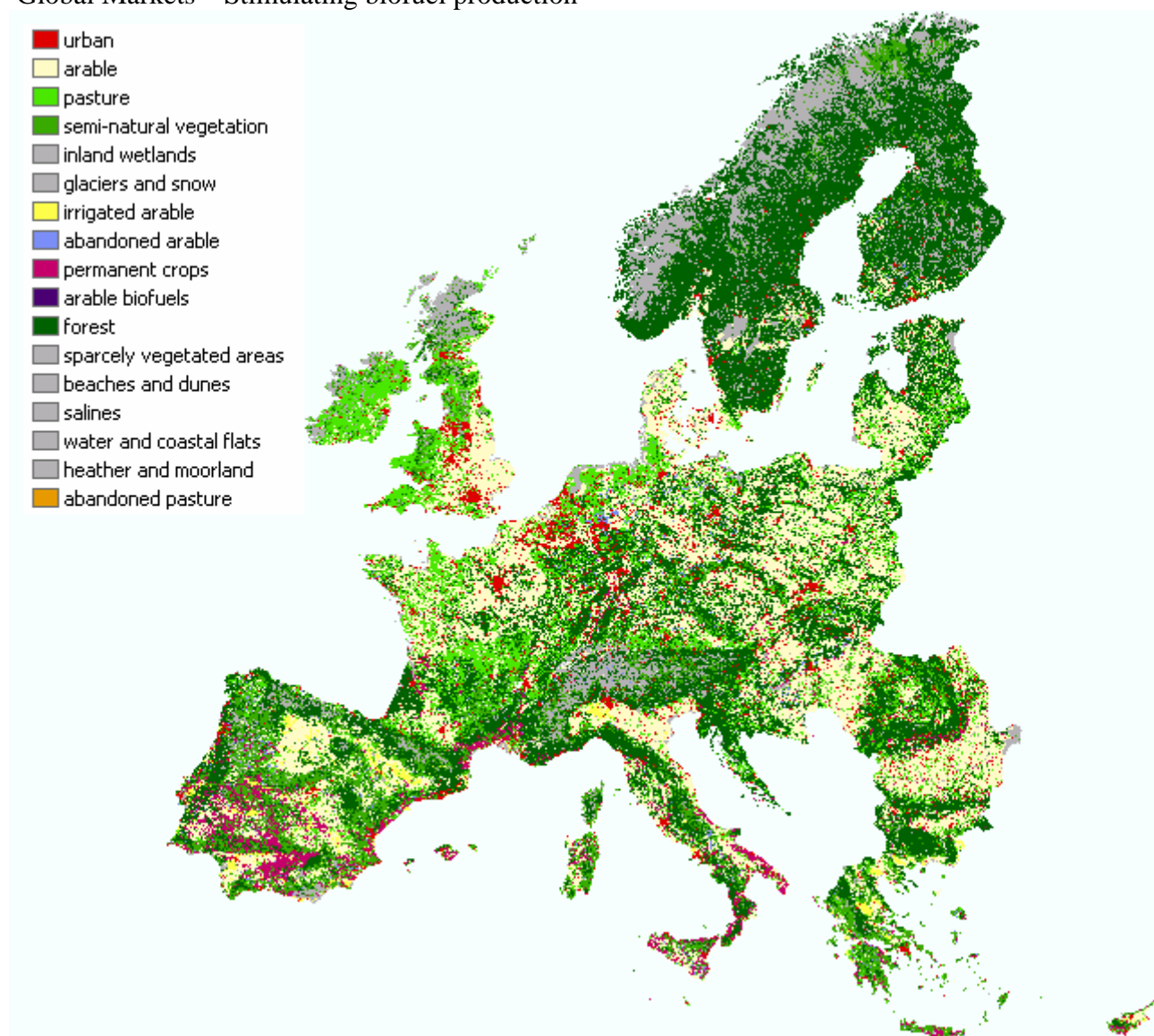
The results consist of a time series of yearly land use maps for each scenario ( $6 \times 30$  maps), of which in this document only the 2030 maps are shown.

## 2. Results:

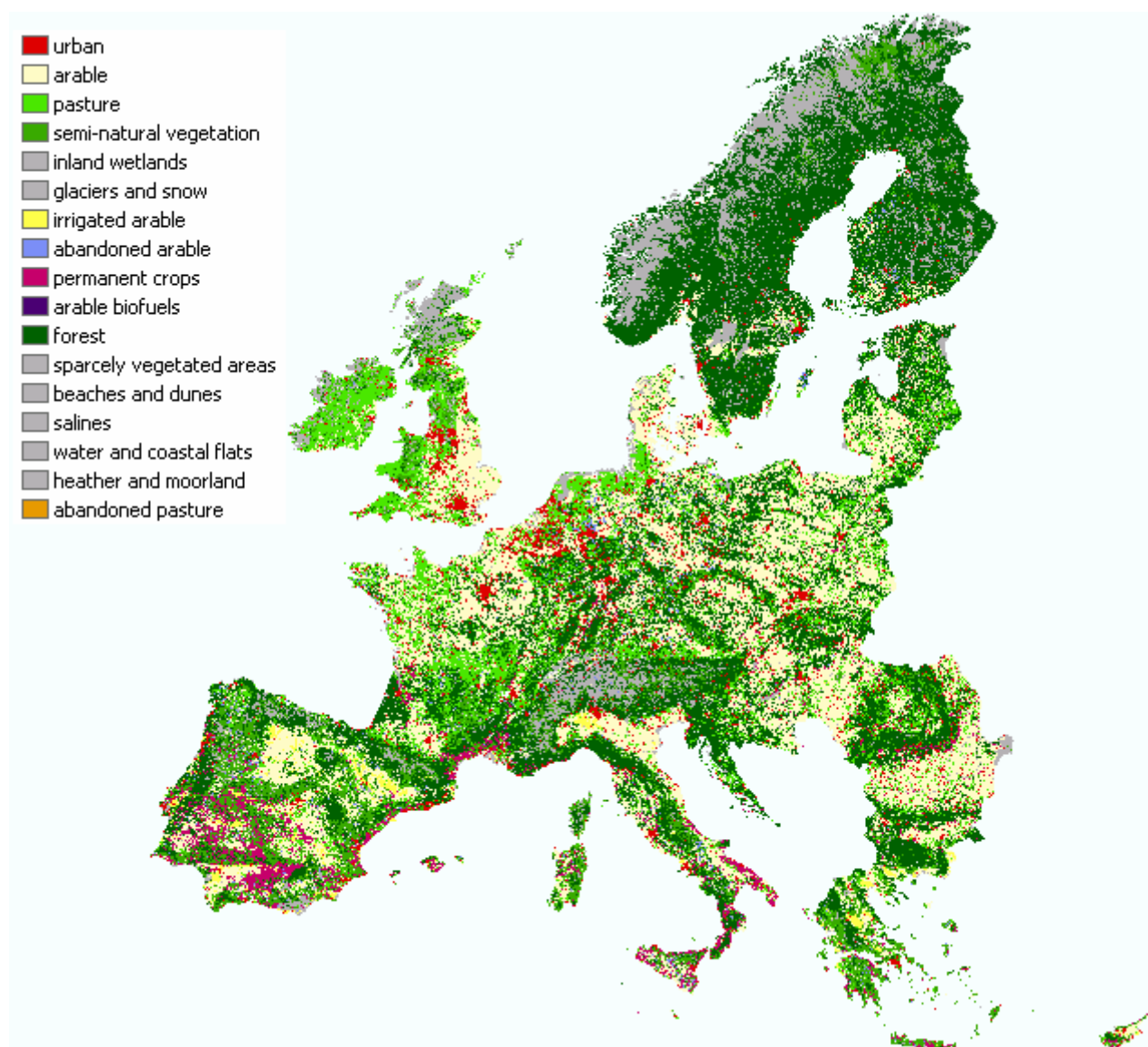
Global Markets – no particular policy



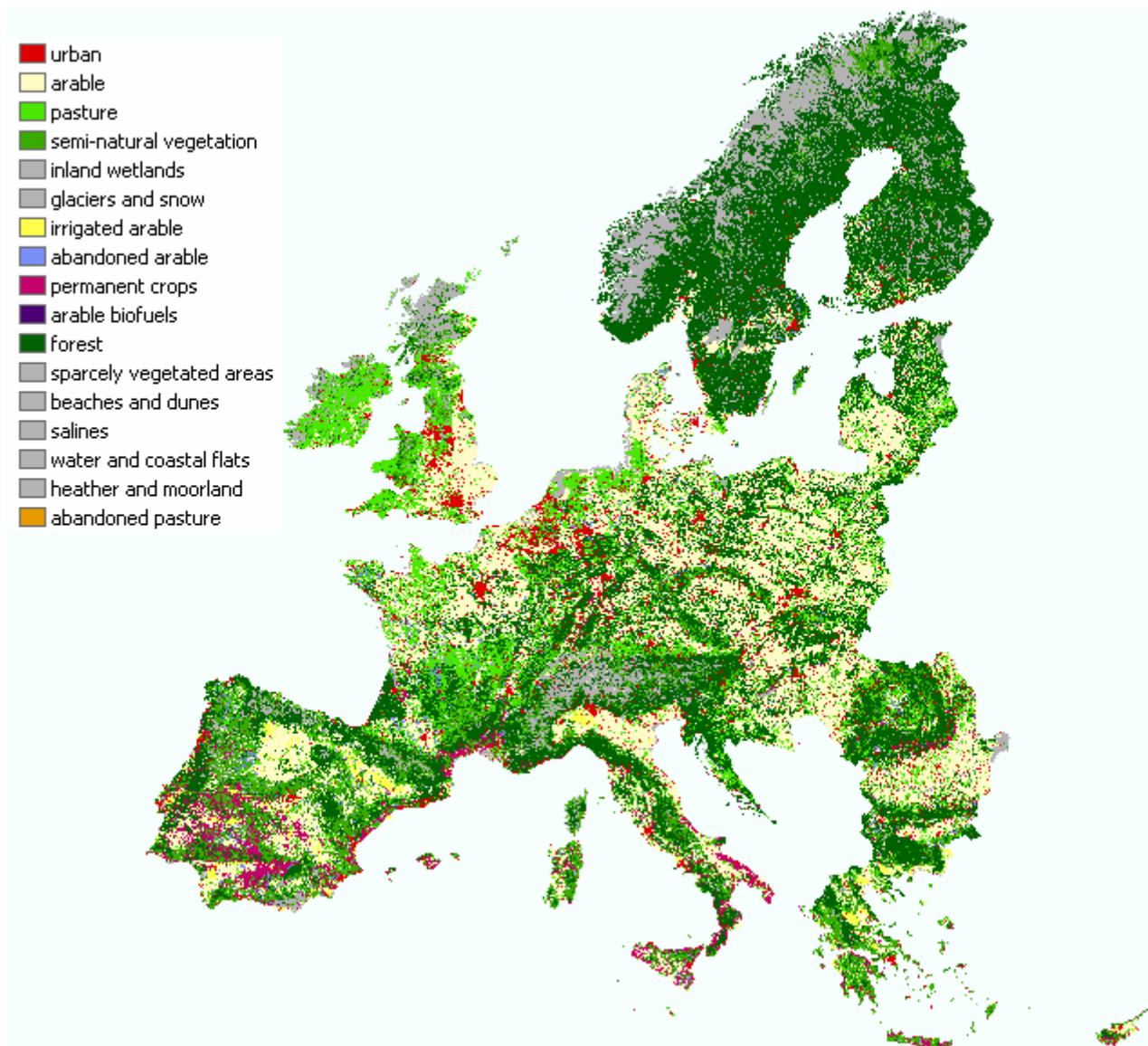
## Global Markets – Stimulating biofuel production



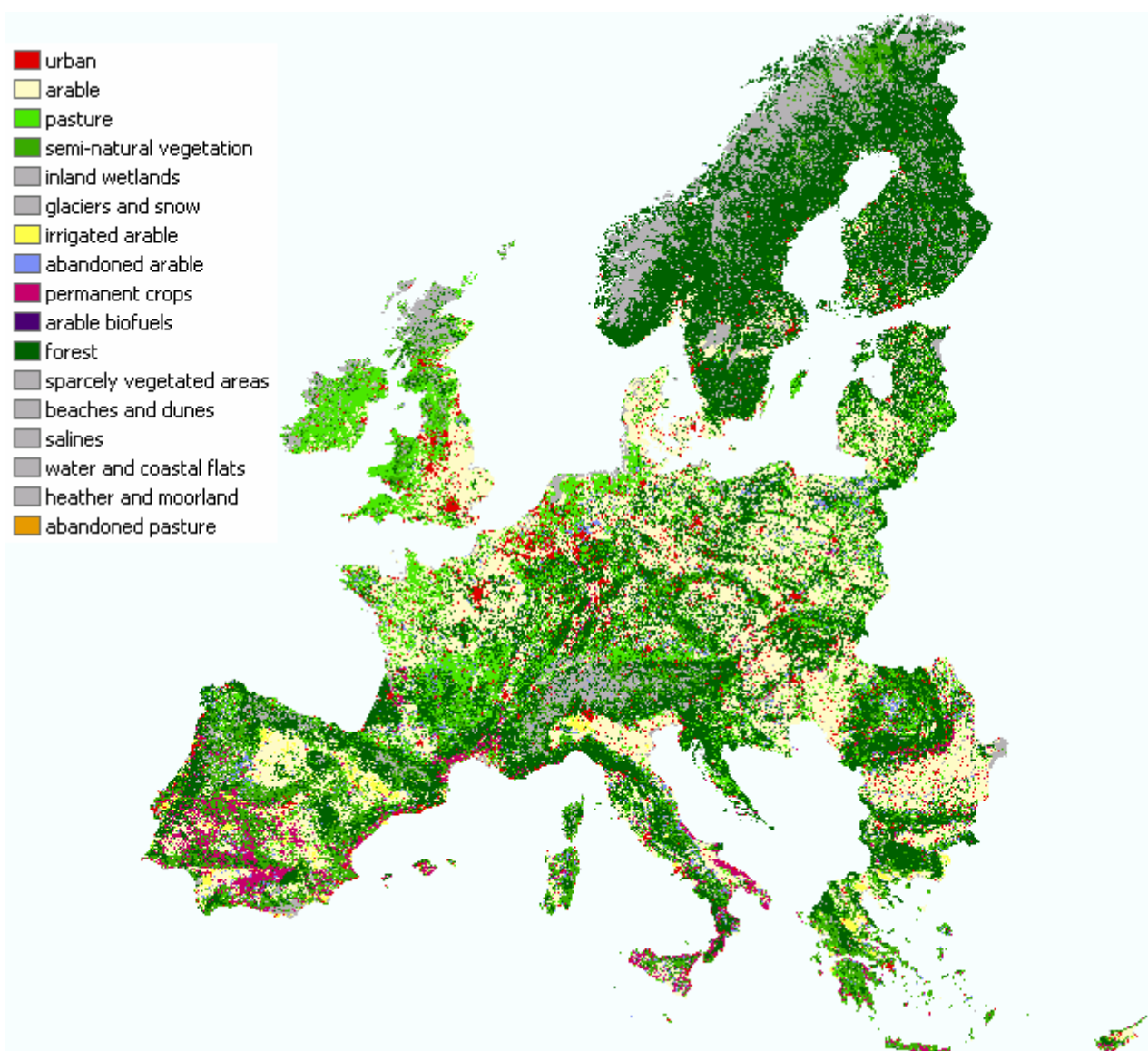
## Global Markets – Maintaining CAP to some degree



## Regional communities – no particular policy



## Regional communities – stimulating biofuel production



## Regional communities – reducing Less Favoured Area support

