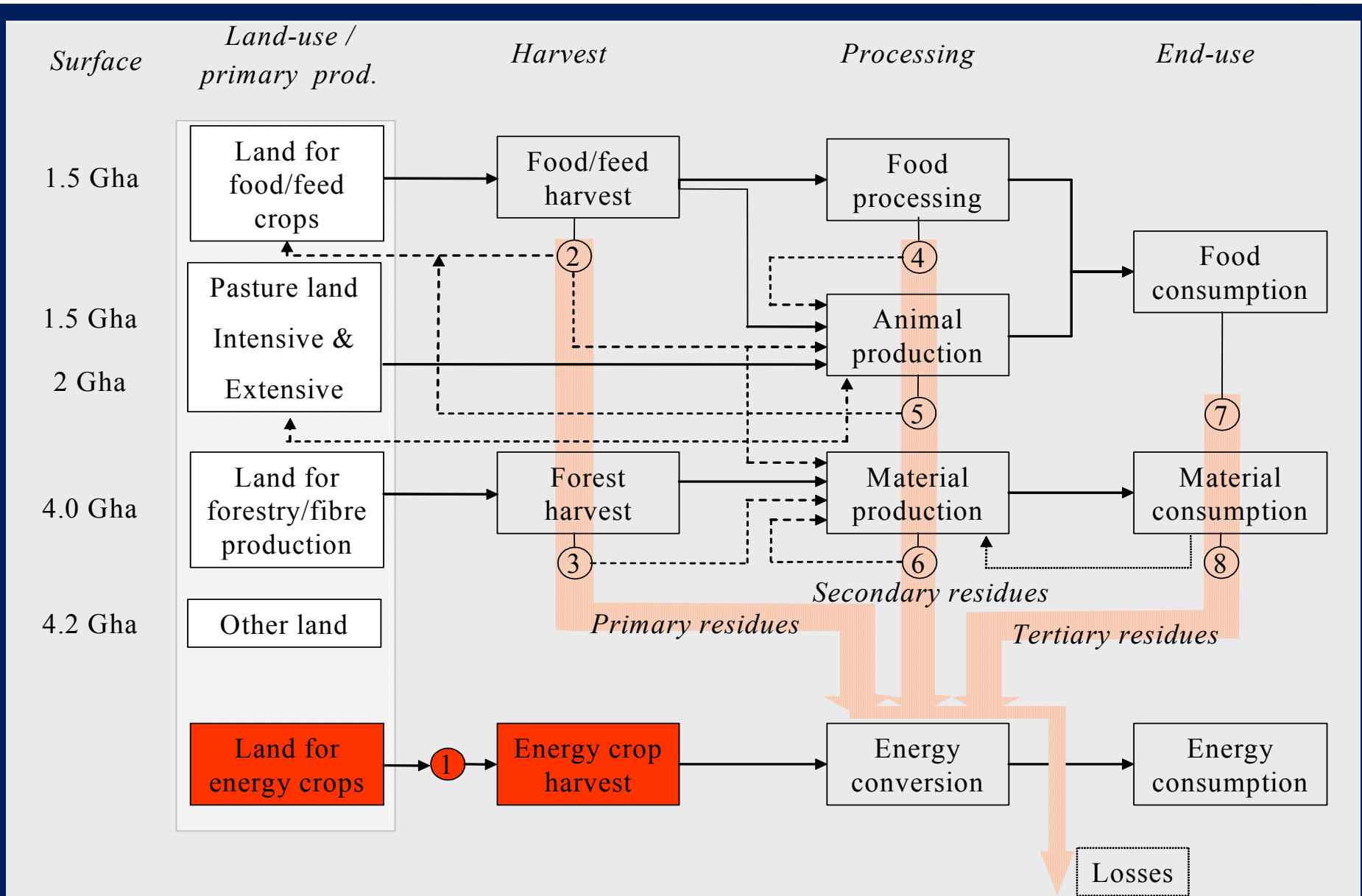


Global Biomass Availability: Assumptions and Conditions

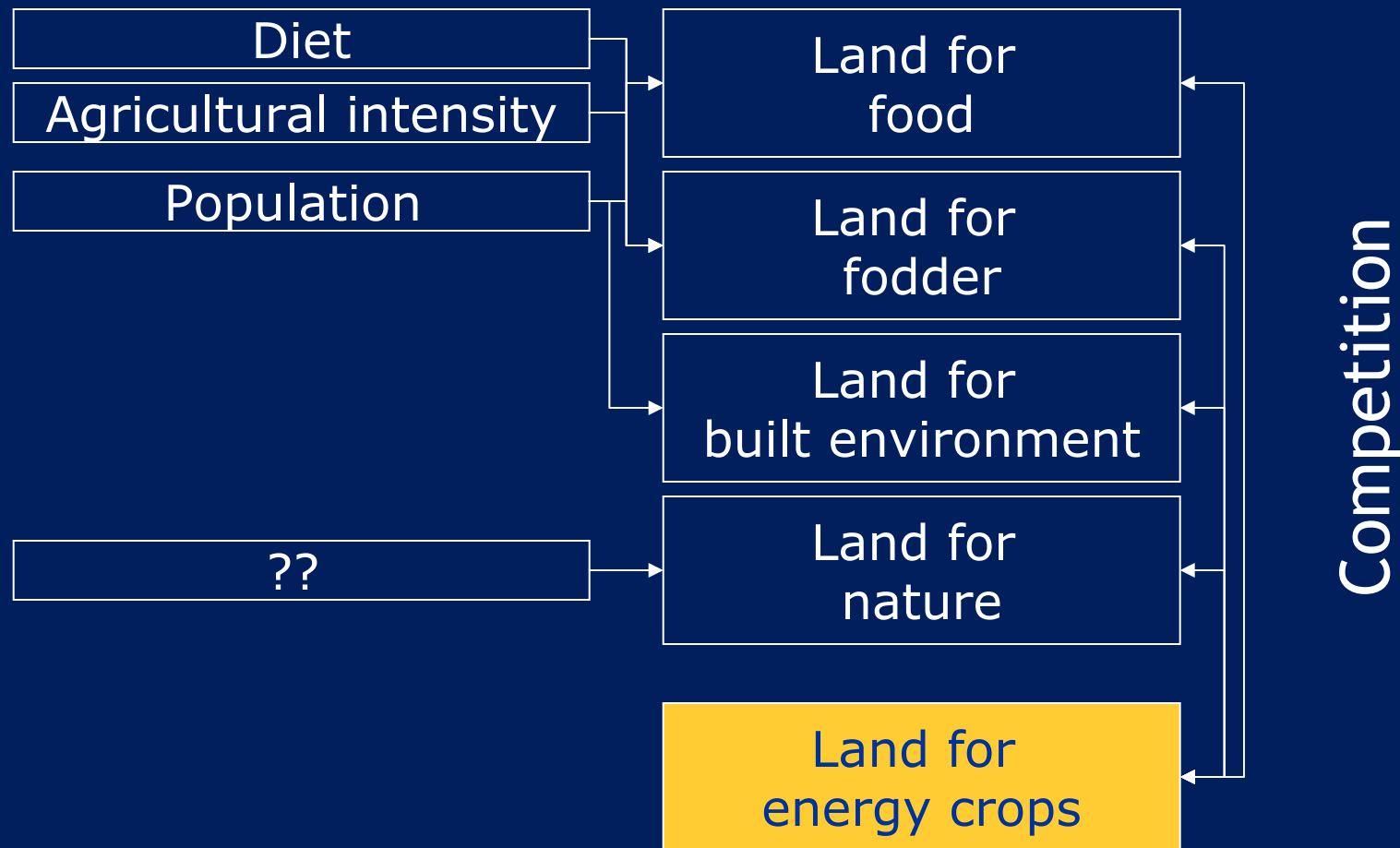
The background of the slide is a dark blue gradient. It features silhouettes of a person climbing a large rock formation. The person is positioned in the upper right quadrant, reaching up towards the top of the frame. The rock formation is a large, dark silhouette that dominates the right side of the image. The overall scene is set against a lighter blue background, suggesting a sky or a misty atmosphere.

Monique Hoogwijk
Ecofys the Netherlands BV

IEA Bioenergy ExCo58, 4 October 2006



Land availability: main assumptions



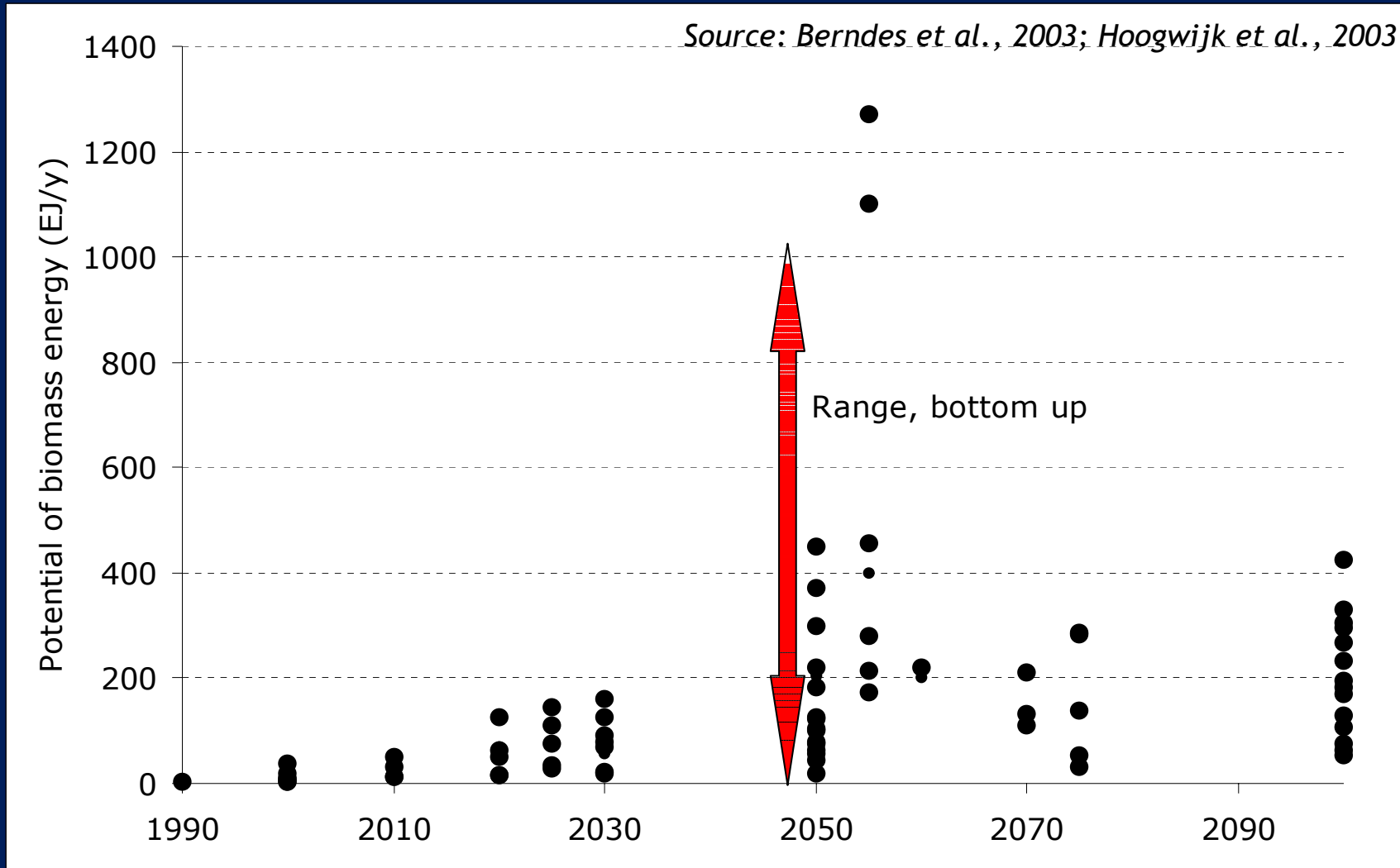
Exploration of the ranges

- Present agricultural area
 - **High** population growth
 - Meat **intensive** diet
 - **Low** agricultural intensity
 - **High** demand for competing options (e.g. bio-materials, sinks).
 - High demand for agricultural land
 - High supply of residues
- Present agricultural area
 - **Low** population growth
 - Meat **extensive** diet
 - **High** agricultural intensity
 - **Low** demand for competing options (e.g. bio-materials, sinks)
 - Low demand for agricultural land
 - Low supply of residues

Barely any potential
(0)

Very high potential
(1100 EJ per year)

Range of biomass energy potential



Scenario approach

Material/economic

A1

A2

Food trade: maximal

Food trade: low

Technology development: high

Technology development: low

Population 2100: 7.1 Billion

Population 2100: 15.1 Billion

GDP world 2100: 86.2 Billion \$₉₅ y⁻¹

GDP world 2100: 17.9 Billion \$₉₅ y⁻¹

Global

Regional

B1

B2

Food trade: high

Food trade: very low

Technology development: high

Technology development: low

Population: 2100: 7.1 Billion

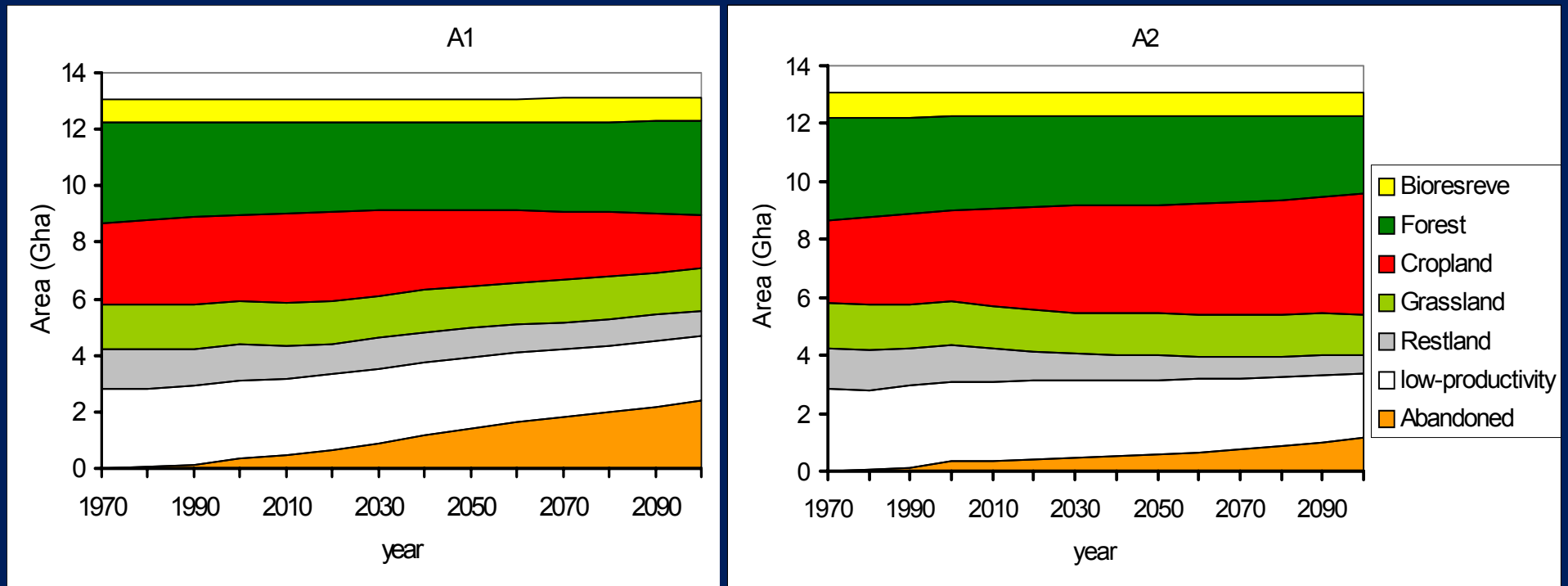
Population: 2100: 10.4 Billion

GDP world 2100: 53.9 Billion \$₉₅ y⁻¹

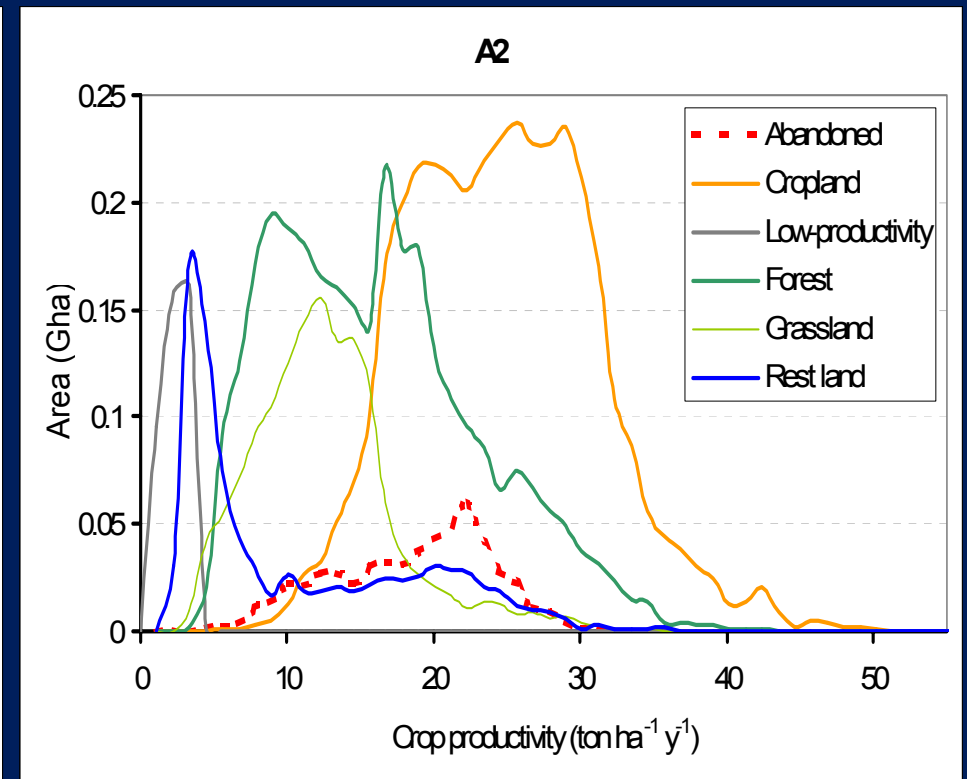
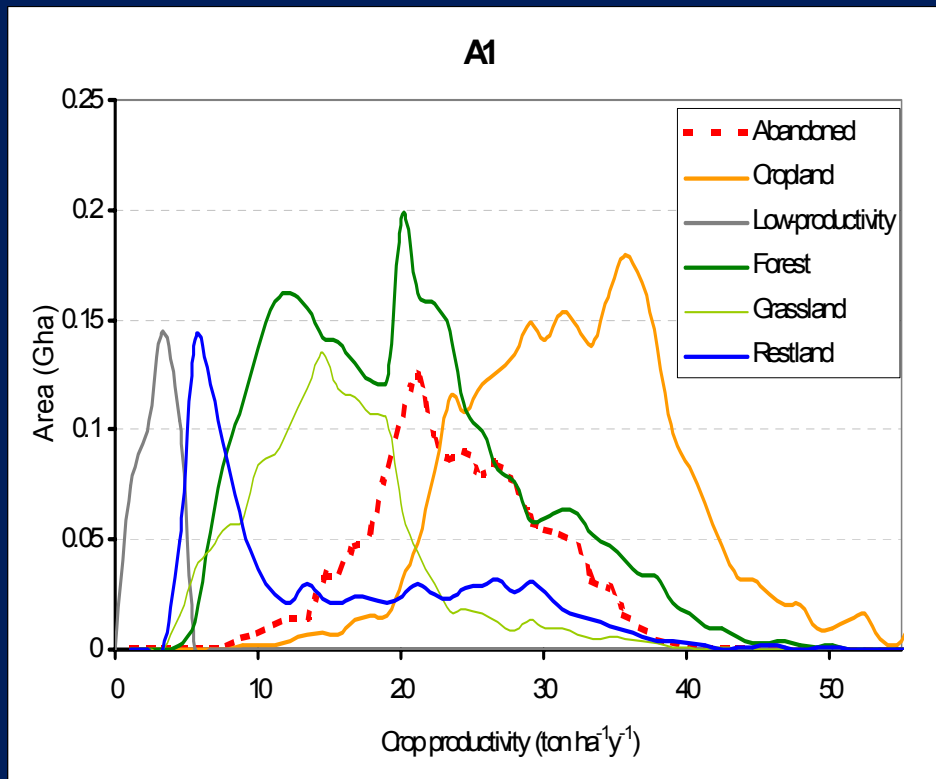
GDP world 2100: 27.7 Billion \$₉₅ y⁻¹

Social/Environment

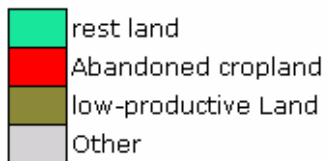
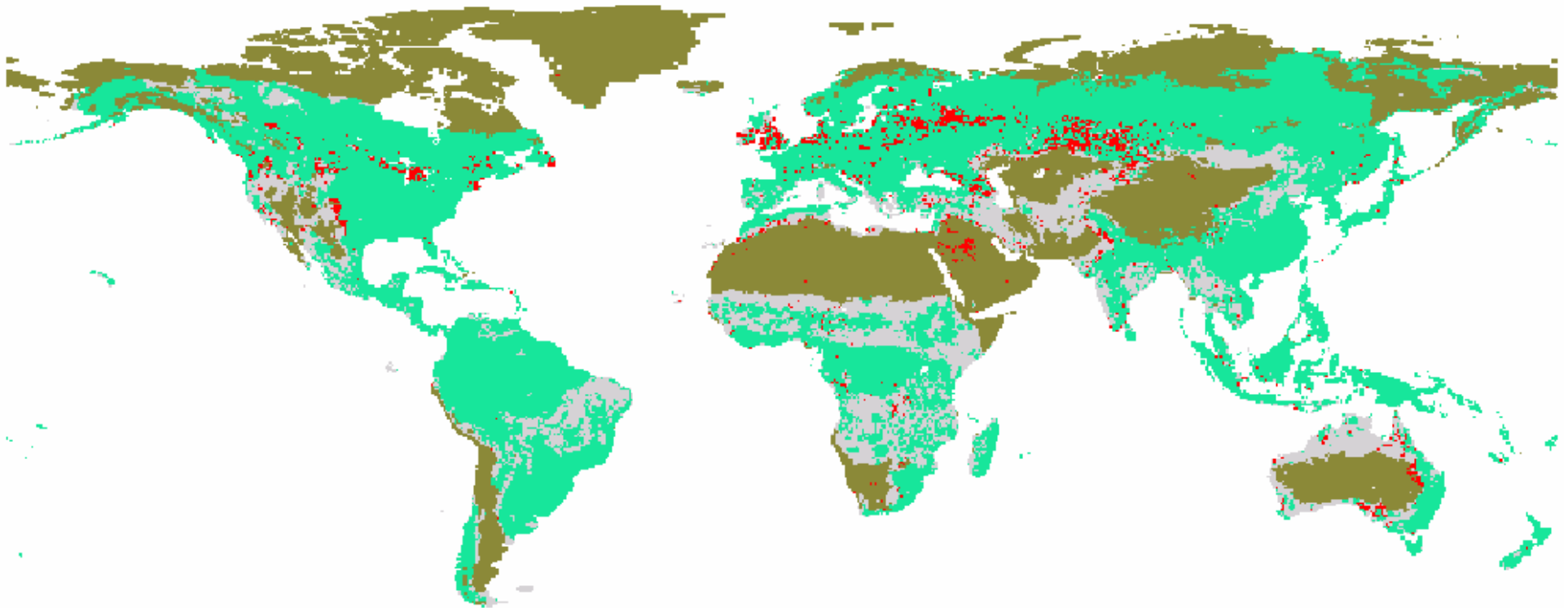
Land-use pattern changes



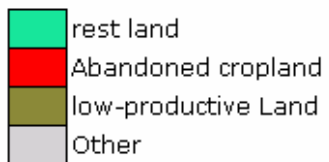
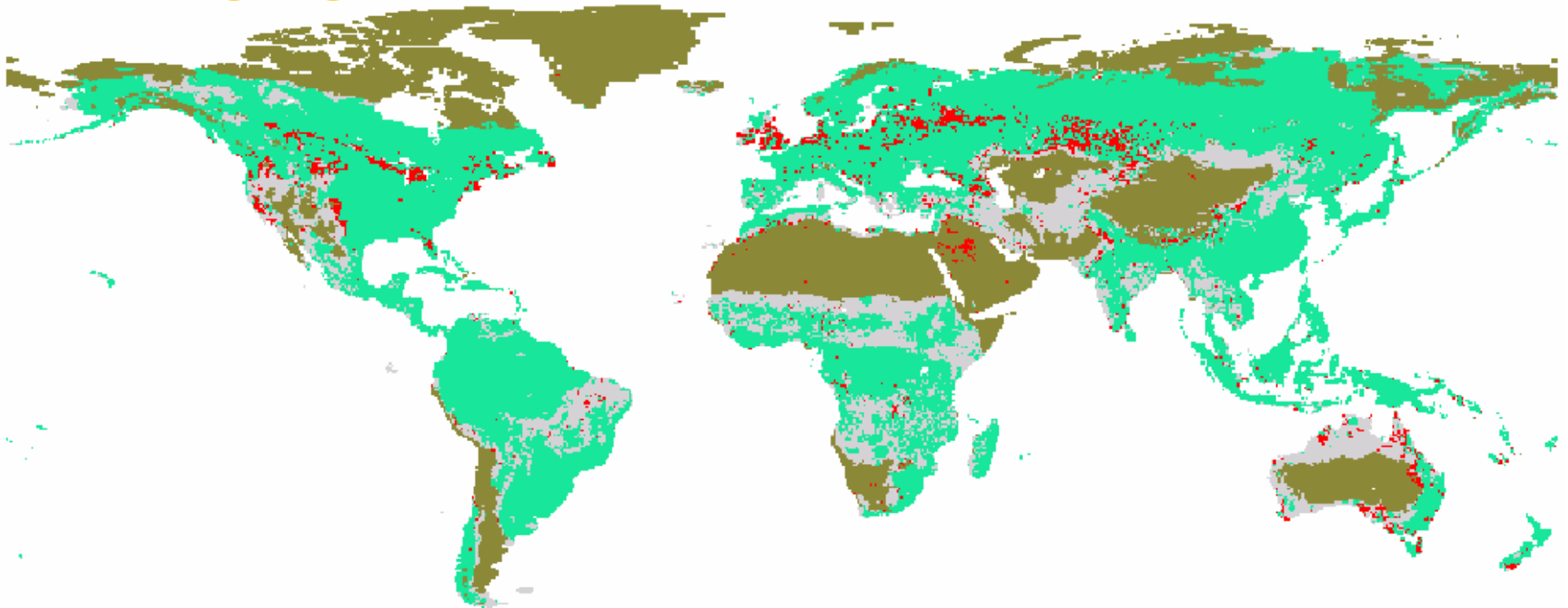
Energy crop productivity distribution



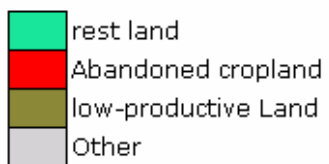
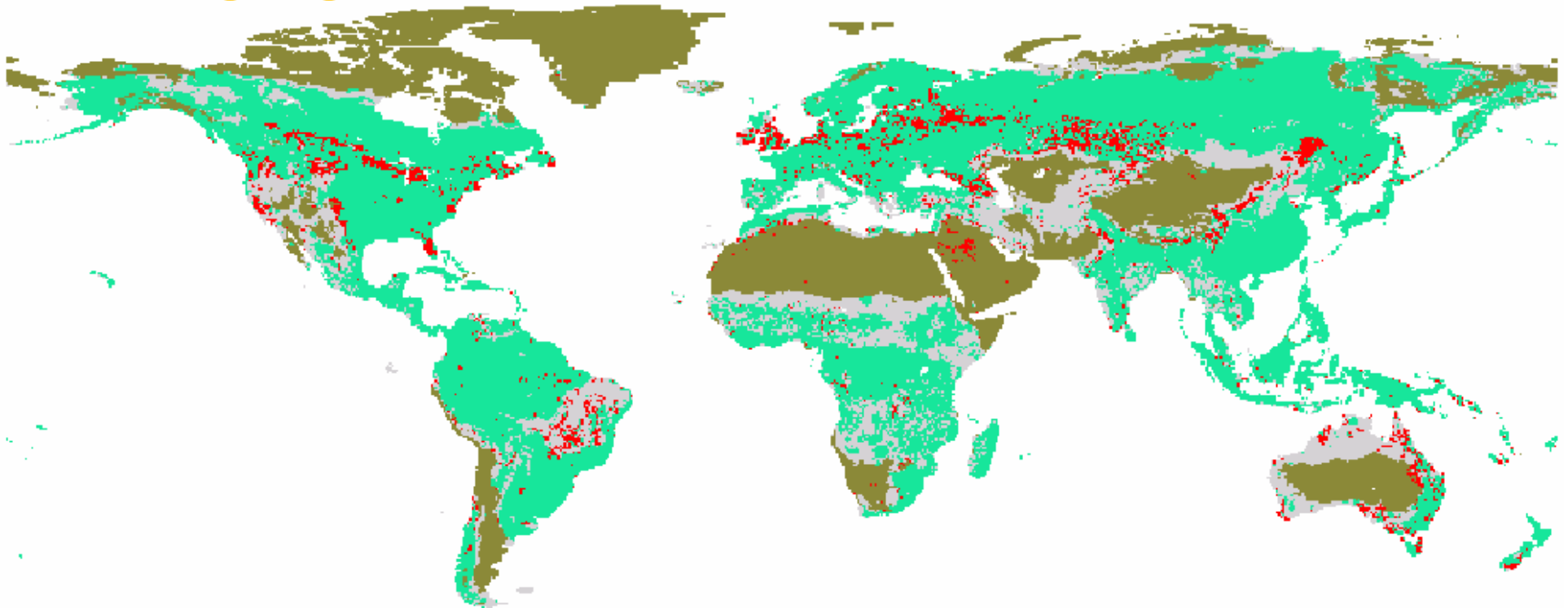
A1 2000



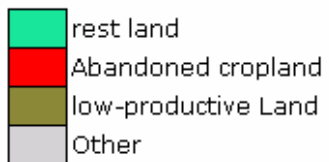
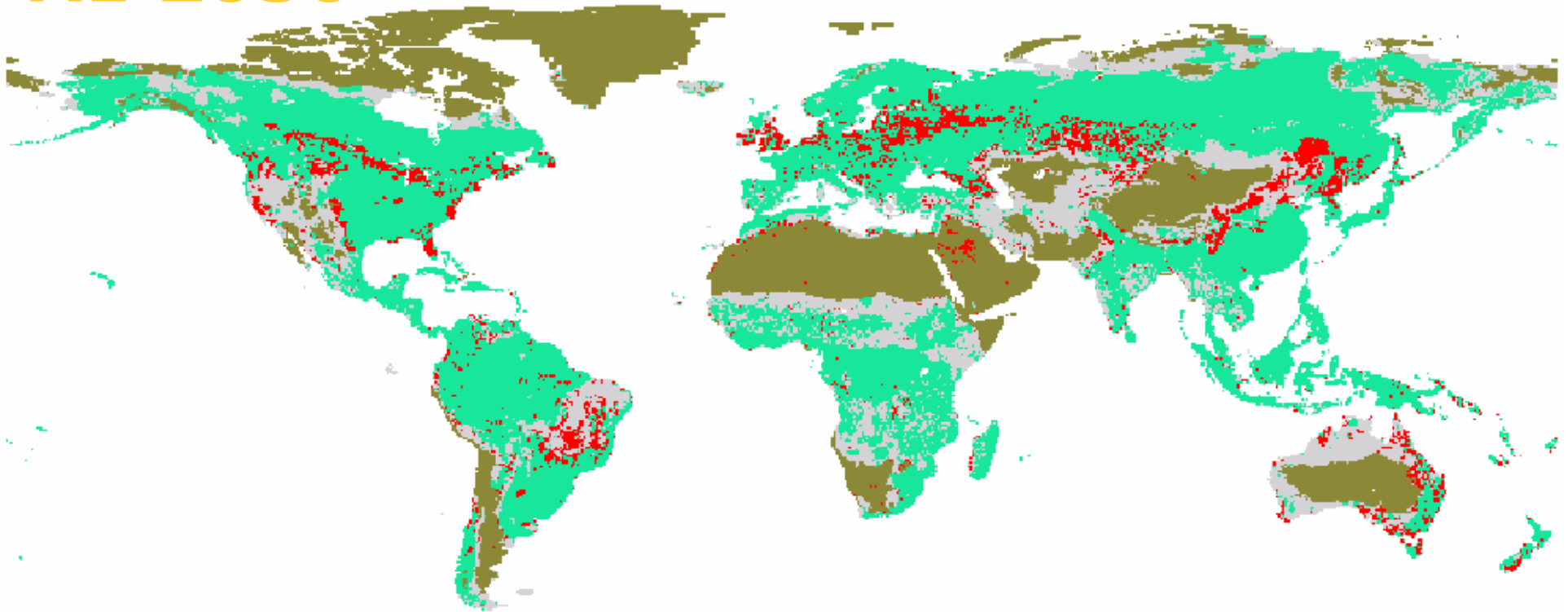
A1 2010



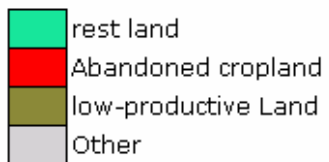
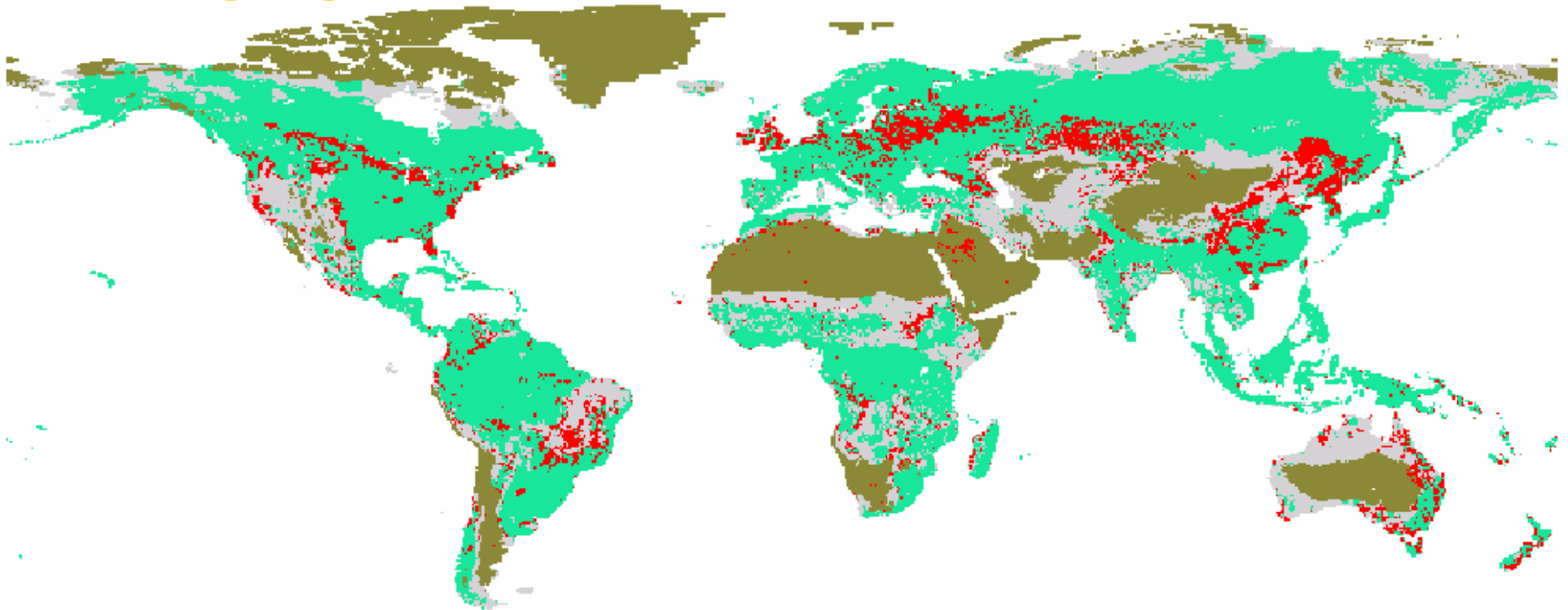
A1 2020



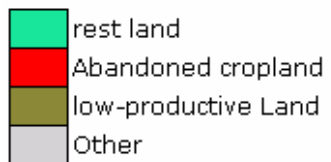
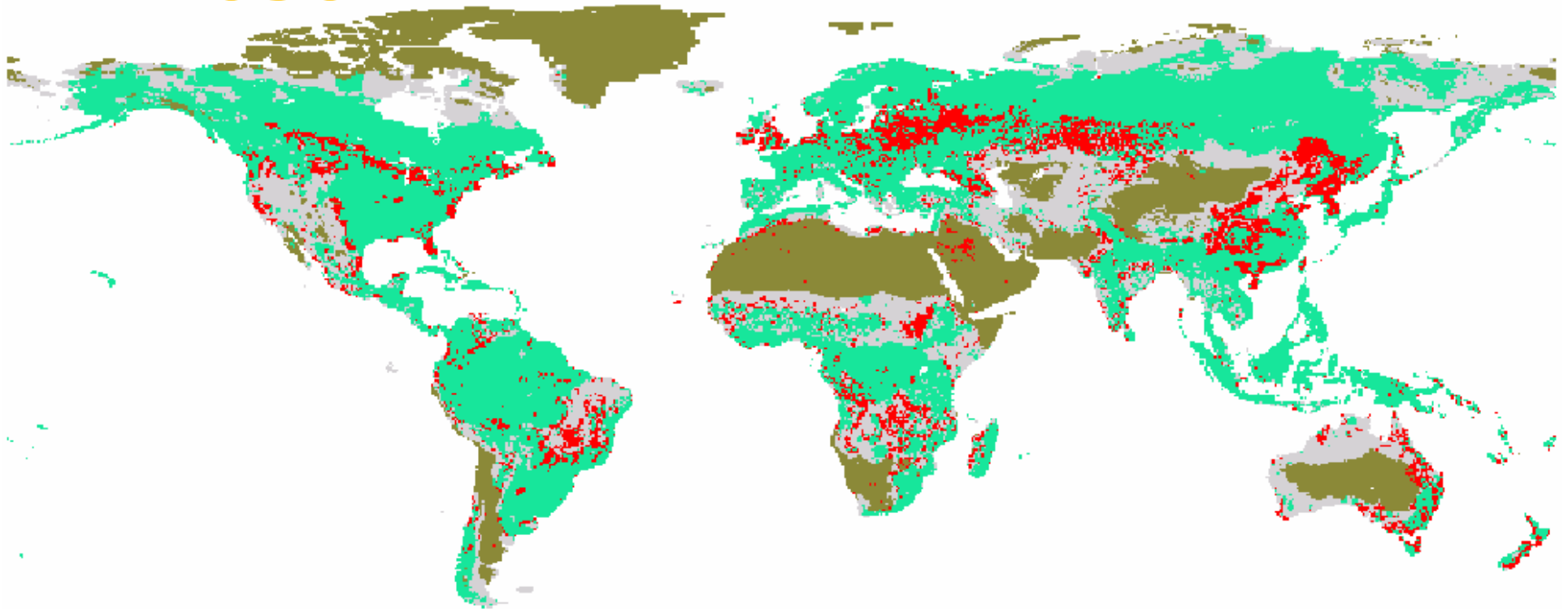
A1 2030



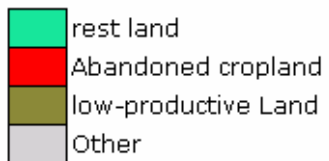
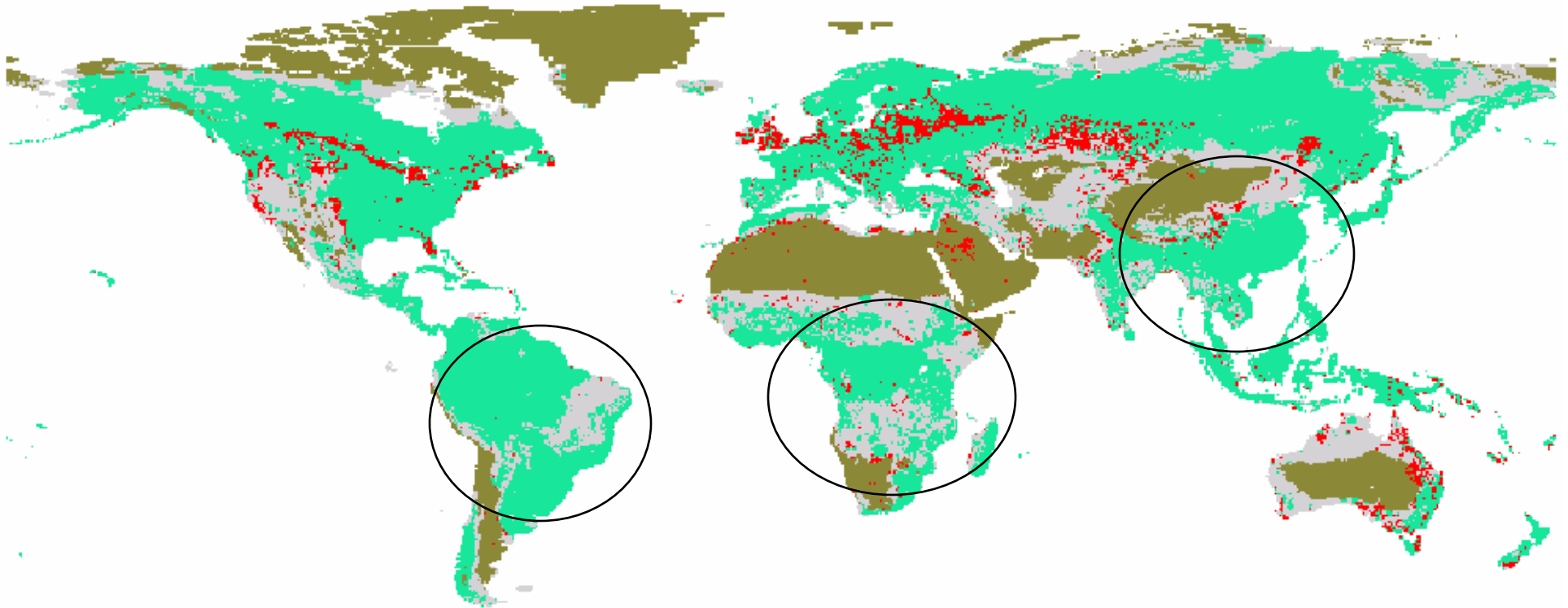
A1 2040



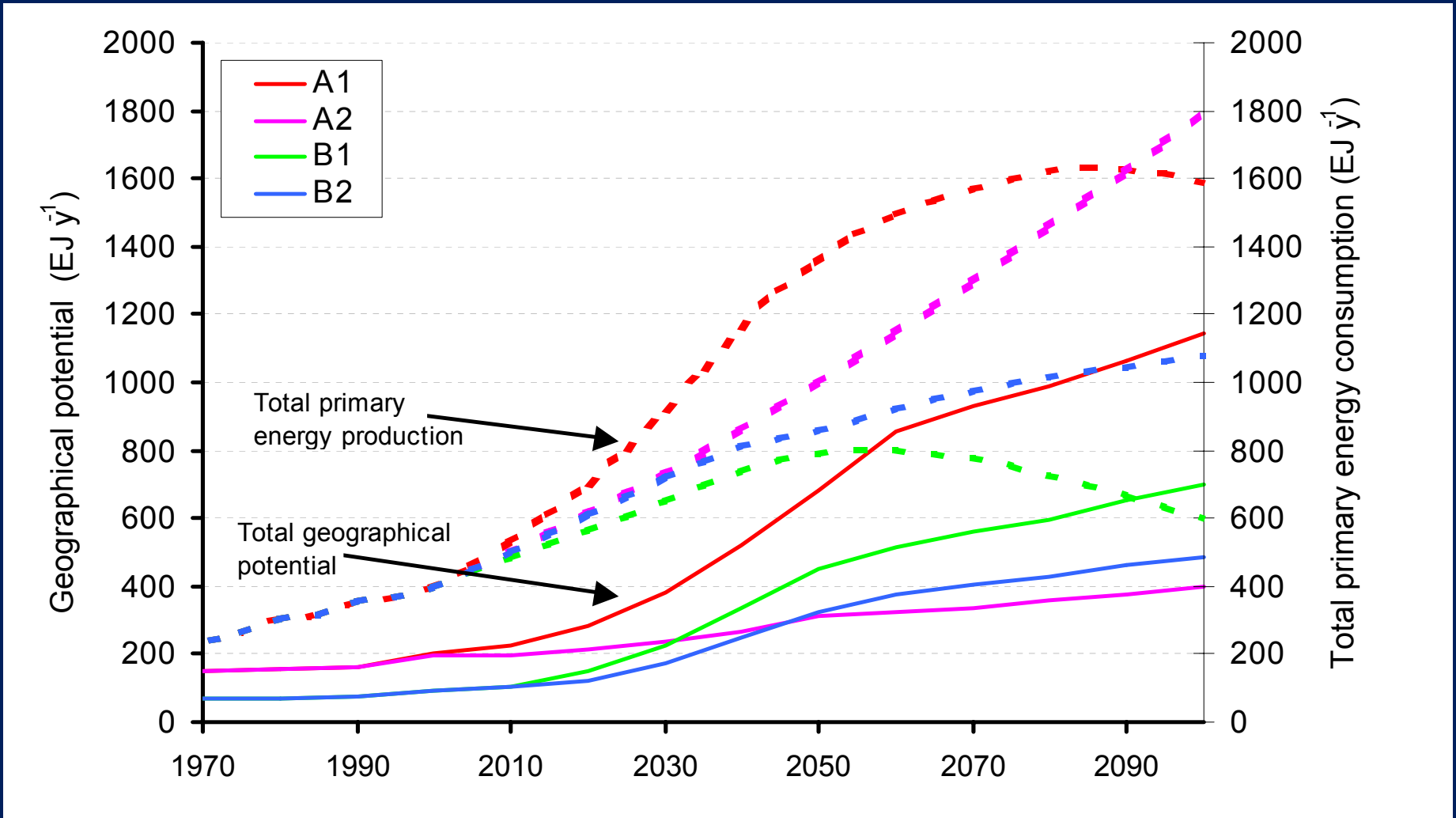
A1 2050



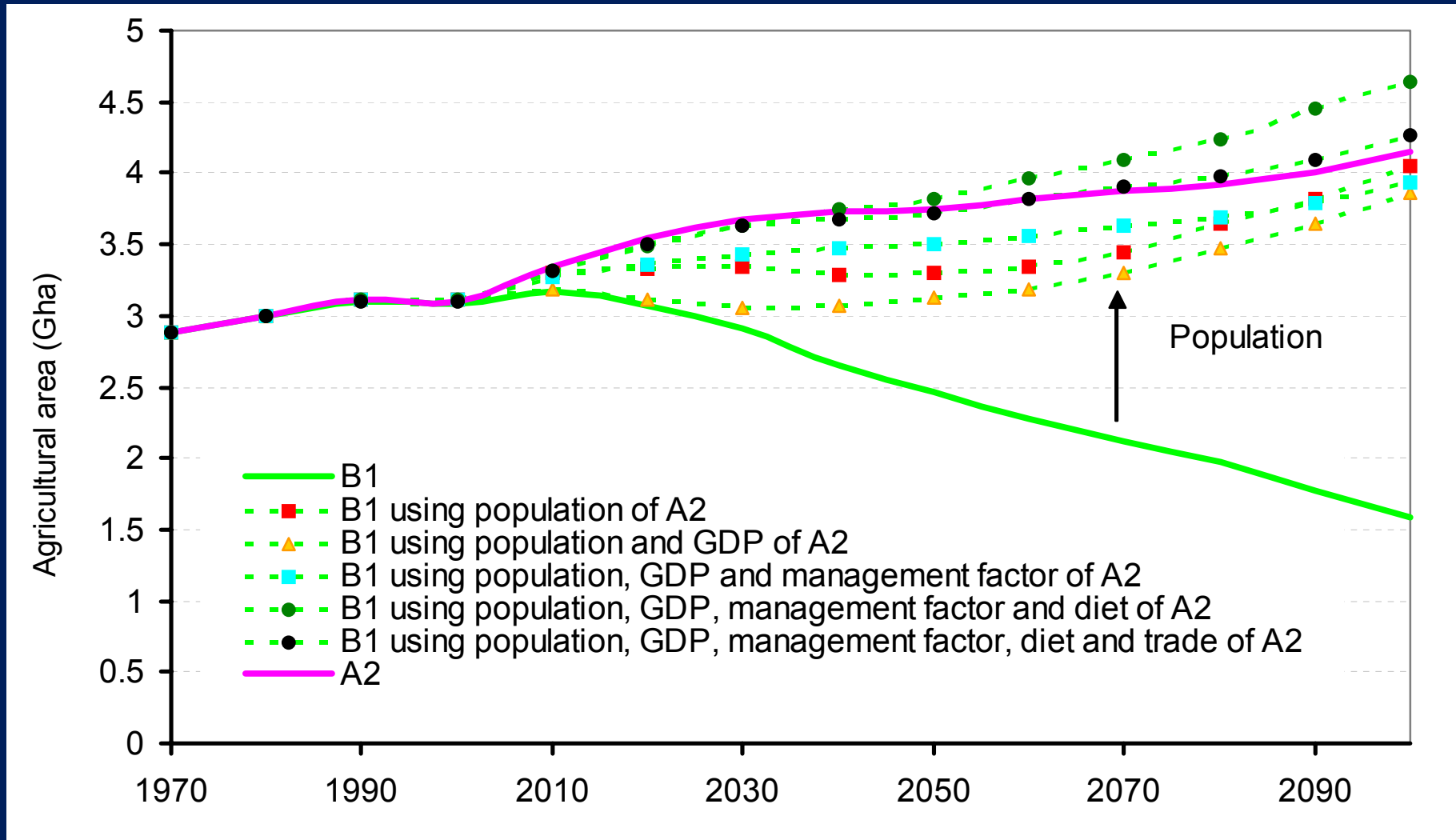
A2 2050



Geographical potential



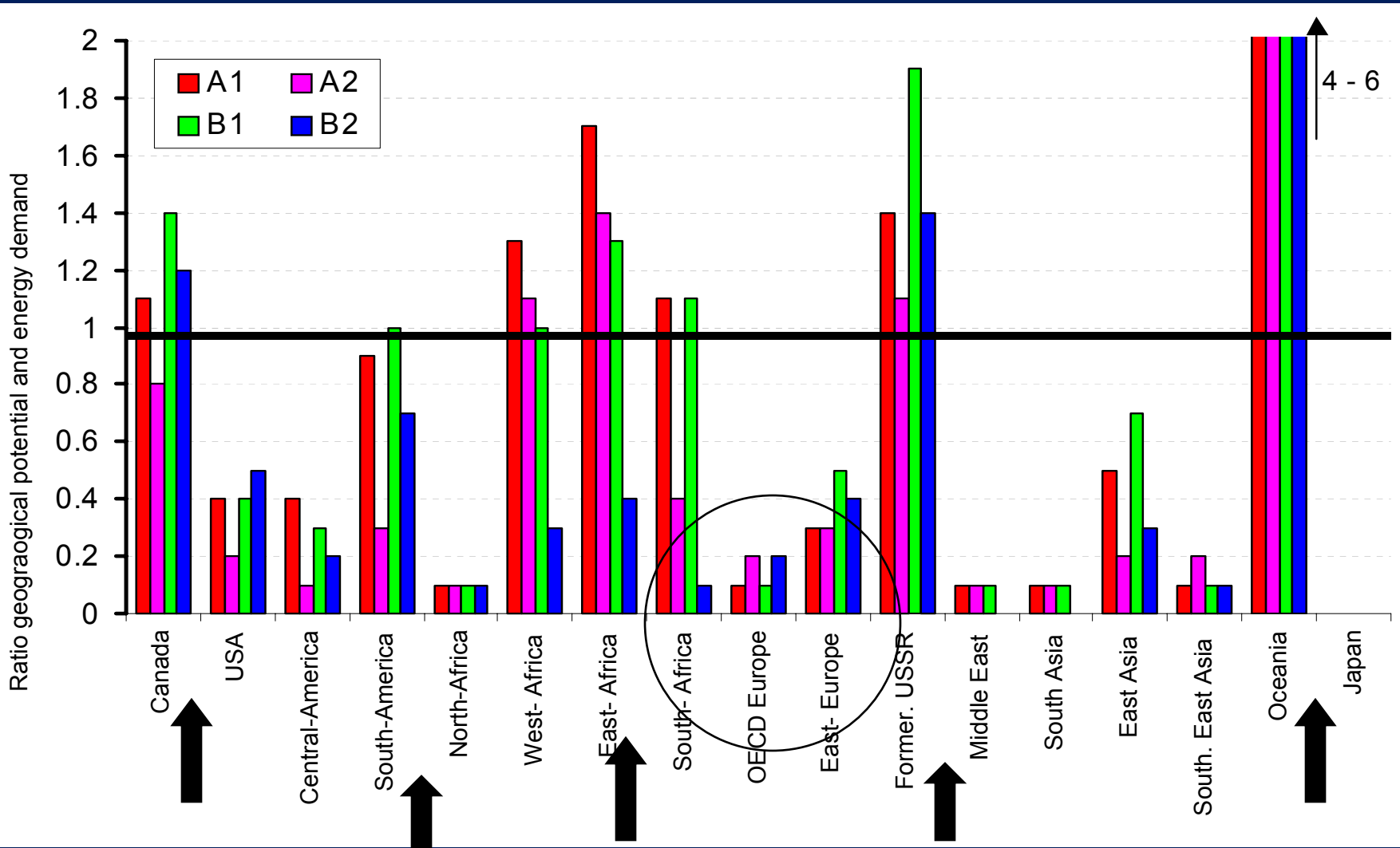
Sensitivity analysis







Self-sufficiency; regional interdependence



Conclusions

- The long term biomass energy potential can be significant, but depends highly on:
 - population dynamics;
 - agricultural intensity;
 - diet consumed.
- Food trade influences the regional distribution.
- For high shares of biomass energy, trade is required.
- Tradeoffs with sustainable forms of agriculture exists.

Thanks

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