



# **Responding to Climate Change: Biofuels, Sustainability & Europe's Global Responsibility**

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**Sustainable Development and Climate Change**

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## WCED 1997: **“Sustainable Development...**

is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

The **concept of “needs”**, in particular **the essential needs of the world’s poor**, to which overriding priority should be given, and

The **idea of limitations** imposed by the state of **technology and social organisation** on the environment’s ability to meet present and future needs.”



# The Case of Biofuels

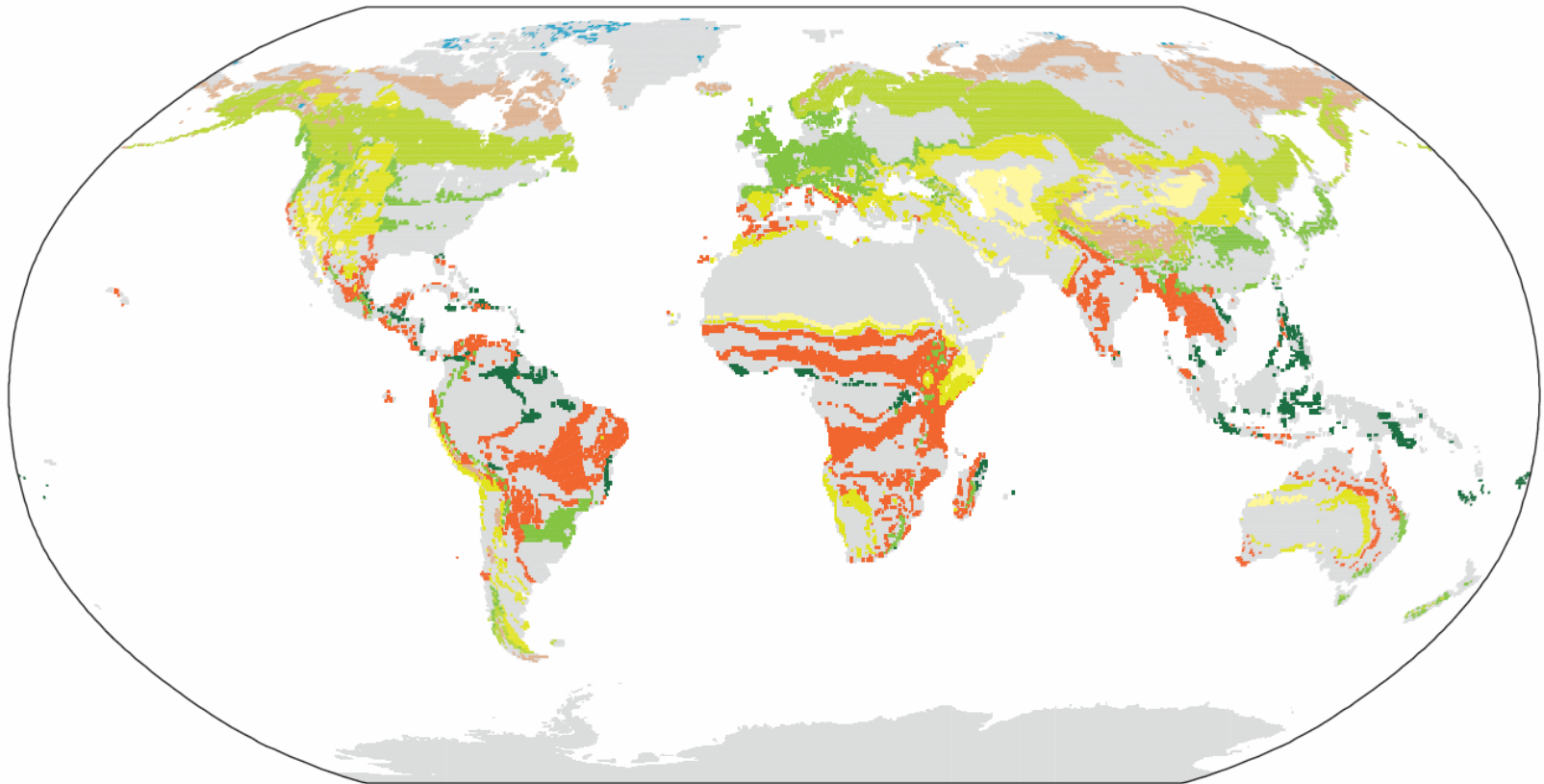
- Sustainable Development requires an **extended responsibility**, its globalisation, in space and time.
- **Climate Change** is an undeniable, upcoming catastrophe (e.g. collapse of monsoon or gulf stream, loss of biodiversity).
- **Biofuels** have been suggested as a means of mitigating climate change, and adapting to peak oil.
- Is biofuels a sustainable solution? **We will see...**





# Global Biodiversity Risks

Ecosystems affected by 3°C temperature increase



## **(Too) Simple Thoughts**

- Biofuels can substitute fossil fuels, helping energy security.
- Their carbon comes from the air; they are thus carbon-neutral, mitigating climate change.

**But are they?**

**And are they sustainable?**



## Energy balance: CO<sub>2</sub> free?

- In a life cycle analysis of biofuels from intensive agriculture, their energy gains are poor at best, if not negative.
- Fertilisers, pesticides, petrol and refining consume as much energy as the biofuels provide.
- For electricity generation, the balance is slightly better.
- 2<sup>nd</sup> generation bio-refineries do little to solve the problems





# Availability: Energy security?

- Global energy consumption: 11 BTOE, 9 BTOE fossil fuels & 1 BTOE biomass.
- **Substitution of fossil fuels by biomass would require tenfold increase in biomass,**
- equalling 10 kg dry wood per capita per day.
- **The 9 BTOE fossils is the result of a geological transformation of biomass containing  $4.4 \times 10^{19}$  g carbon – 400 times the net primary production of the Earth.**



# Biofuels, biofools



- **Ambitious targets** cannot be met by the EU or US without **imports**, and their life cycle wide environmental quality cannot be controlled (WTO).
- They **destroy biodiversity and livelihoods** in Brasil (ethanol) and South East Asia (deforestation diesel),
- thereby **emitting up to 10 times as much CO<sub>2</sub>** as saved by using the final products.
- **Other plants in the same cropping system will not help** – large scale biofuel is stuff for biofools (and for some private interests earning a fortune from the “bio bonanza”).

# ... and thus the "GDP of the Poor"

## ECOSYSTEM SERVICES

## CONSTITUENTS OF WELL-BEING

### Supporting

- NUTRIENT CYCLING
- SOIL FORMATION
- PRIMARY PRODUCTION
- ...

### Provisioning

- FOOD
- FRESHWATER
- WOOD AND FIBER
- FUEL
- ...

### Regulating

- CLIMATE REGULATION
- FLOOD REGULATION
- DISEASE REGULATION
- WATER PURIFICATION
- ...

### Cultural

- AESTHETIC
- SPIRITUAL
- EDUCATIONAL
- RECREATIONAL
- ...

### Security

- PERSONAL SAFETY
- SECURE RESOURCE ACCESS
- SECURITY FROM DISASTERS

### Basic material for good life

- ADEQUATE LIVELIHOODS
- SUFFICIENT FOOD
- SHELTER
- ACCESS TO GOODS

### Health

- STRENGTH
- FEELING WELL
- ACCESS TO CLEAN AIR AND WATER

### Social relations

- SOCIAL COHESION
- MUTUAL RESPECT
- ABILITY TO HELP OTHERS

### Freedom of choices and action

OPPORTUNITY TO BE ABLE TO ACHIEVE WHAT AN INDIVIDUAL VALUES DOING AND BEING"

ARROW'S COLOR

Potential for mediation by

ARROW'S WIDTH

Intensity of linkages between ecosystem





# Biofuels are unsustainable

if produced in large scale agriculture and forestry (that does not apply to small scale biogas production etc. by peasant farmers).

- They do not contribute to meet “**the essential needs of the world’s poor**, to which overriding priority should be given”, nor do they
- Respect the “**idea of limitations** imposed by the state of **technology and social organisation** on the **environment’s ability to meet present and future needs.**”



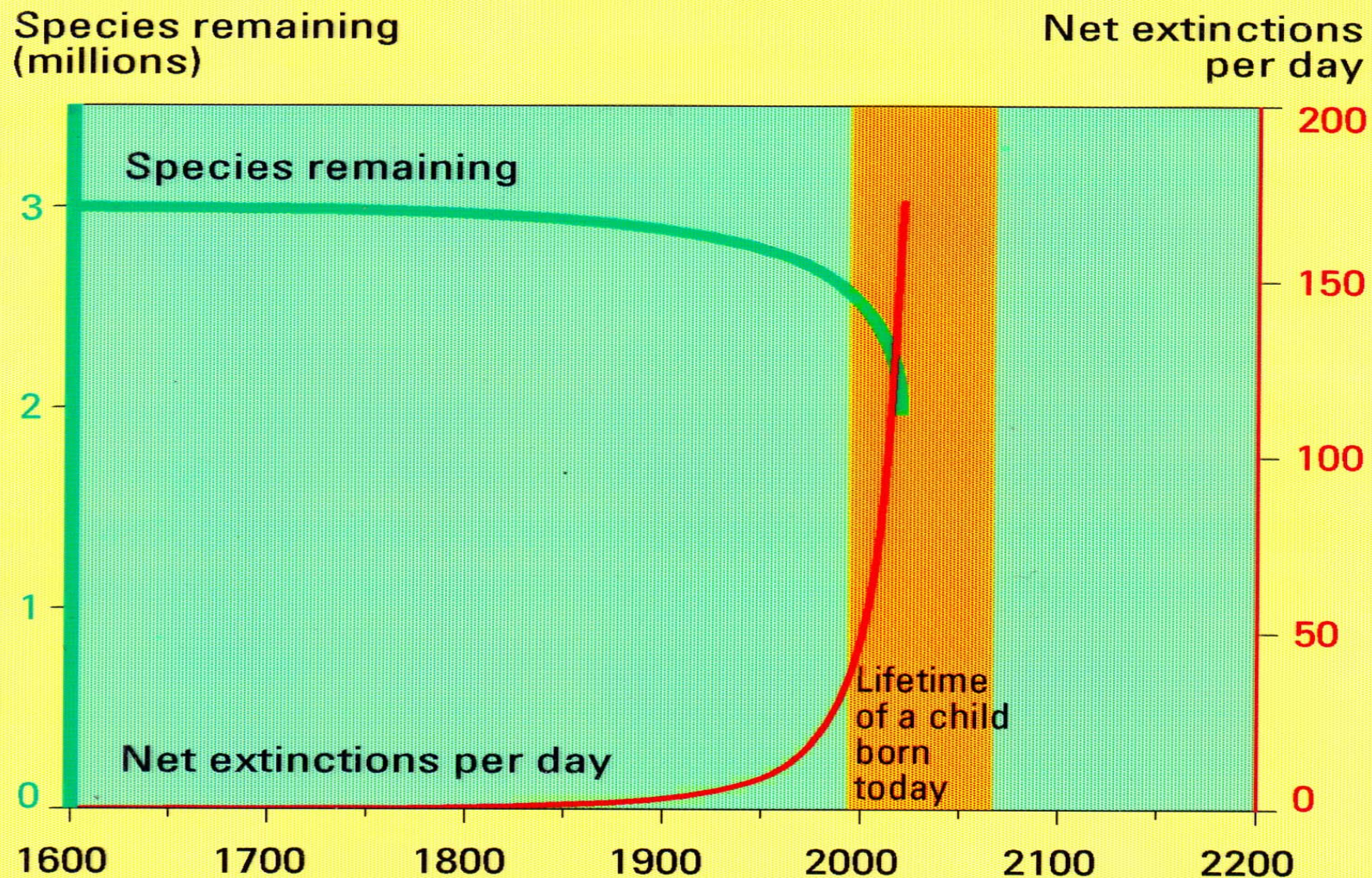


## Result

- **What looks like an environmental crisis (climate) and an economic one (peak oil) turn out to constitute a massive social crisis.**
- **What has been intended to mitigate the impacts of both crises turns out to be an environmental (biodiversity) and social (livelihoods) disaster.**

# Species remaining and net extinctions per day

Net extinction = extinctions less speciation





# Conclusion 1

- Simple concepts fail in a complex world. That is even more true for sustainable development issues as it is for the global financial markets.

This requires to rethink established concepts such as

- - **progress**: In Europe today, equality of distribution is more important than growth.





## Conclusion 2

This requires to rethink established concepts such as

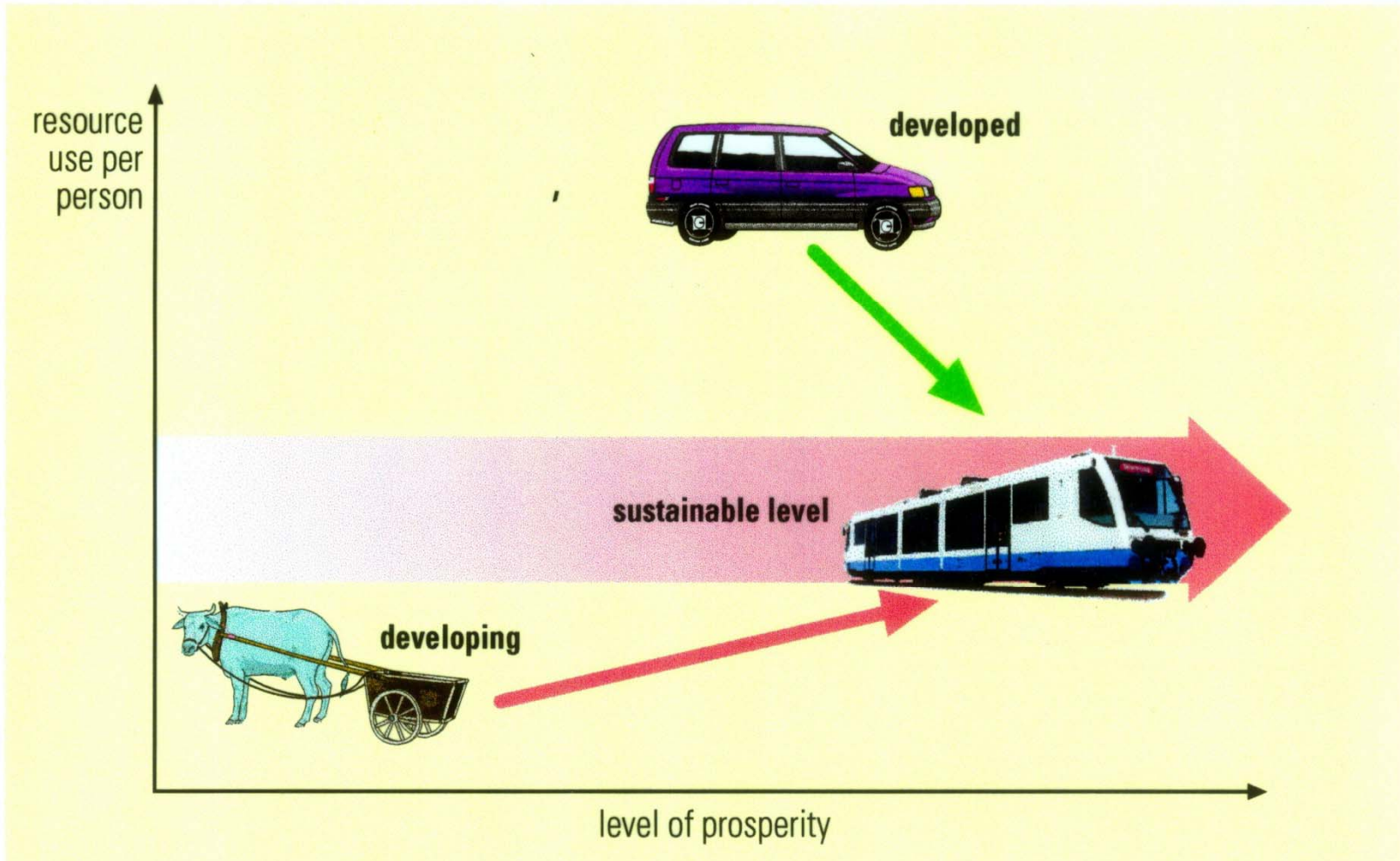
- - **responsibility**: Europe today is the world's largest economic power, with impacts all over the world.

European policies must undergo impact assessments and be bound by the „polluter pays principle“.

- **What does that mean for Climate Change?**



# Sustainable development model





# Conclusion 3

- Politics today is Crisis Management politics.
- Policy today must be Crisis Prevention policy.

**This requires to rethink established concepts such as**

- - **development:** focus on needs of the poor.
- - **growth:** limits to resource consumption must be respected, resource productivity increased.



*Thank you for your attention*

*The route is  
laid out, but  
surprising  
obstacles may  
emerge...*

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