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ASA TOOL FOR SUSTAINABILITY ANALYSIS

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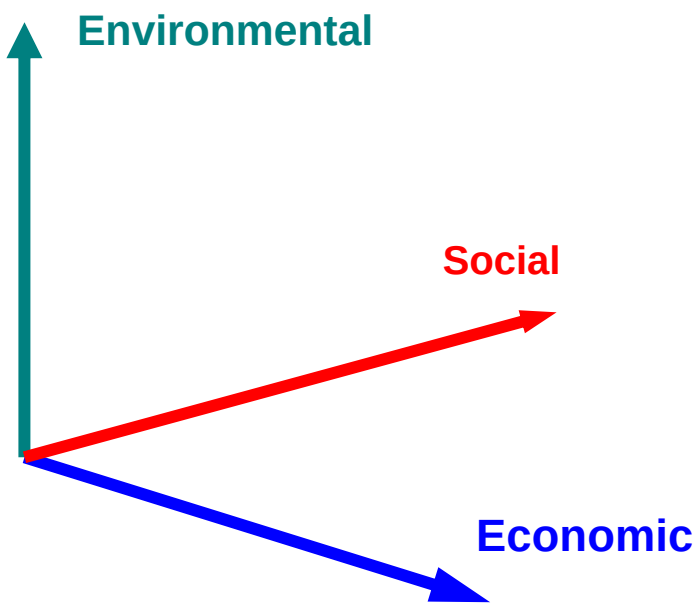
What is Advanced Sustainability Analysis (ASA)

- The **ADVANCED SUSTAINABILITY ANALYSIS** (ASA) approach offers decision-makers a tool for policy analyses and policy formulations regarding different dimensions of sustainable development



What is Advanced Sustainability Analysis (ASA)

- The **ASA** tool is a mathematical information system for analyzing macro- and micro-level data from different sustainability points of view

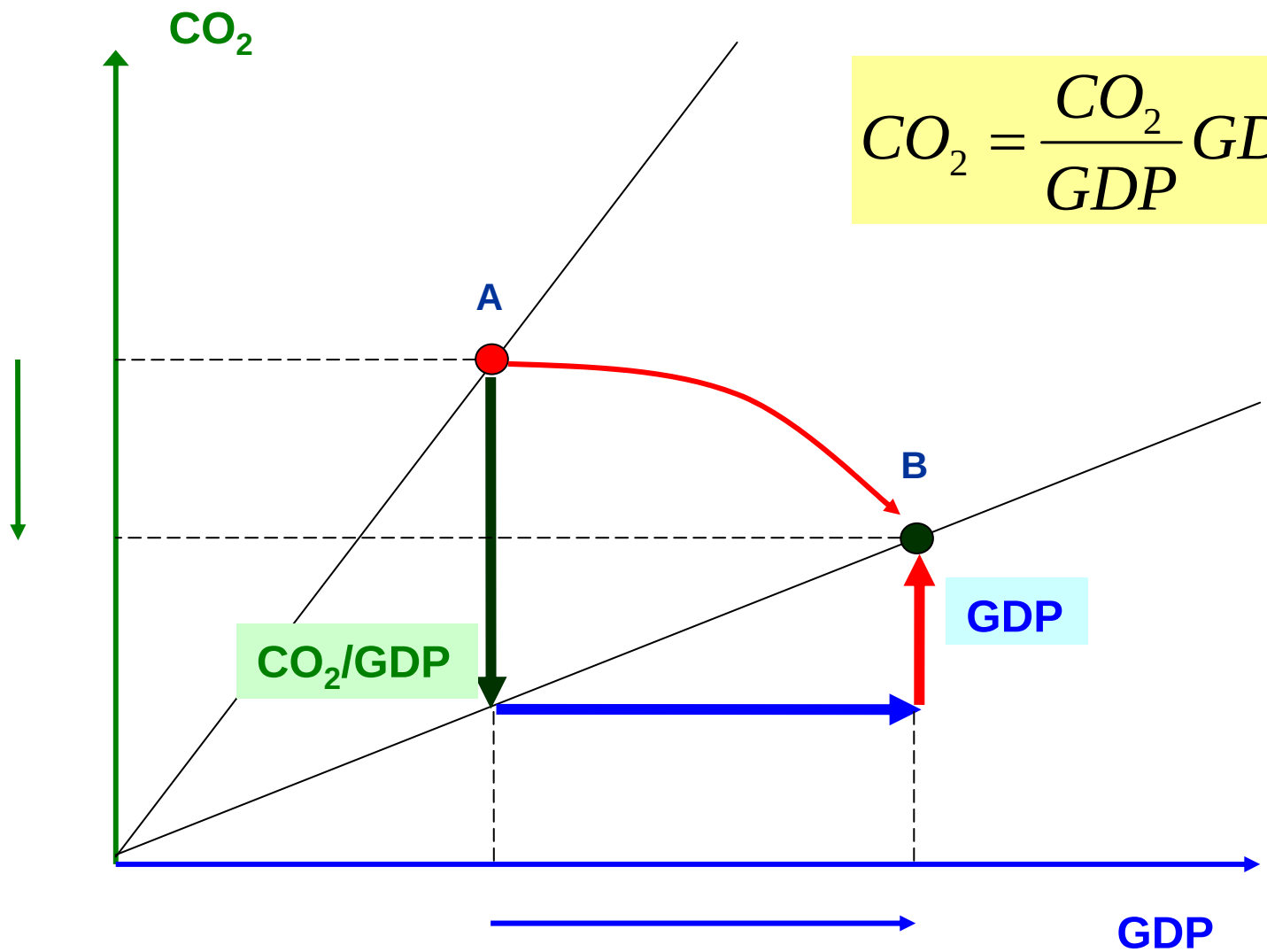
- ASA analysis **decomposes** the factors affecting changes e.g. in environmental stress into meaningful components

What is Advanced Sustainability Analysis (ASA)

$$CO_2 = \frac{CO_2}{GDP} GDP$$

- CO_2 emissions are determined by
  - CO_2 intensity of the economy (CO_2/GDP)
  - economic activity (GDP)

ASA decomposition of production

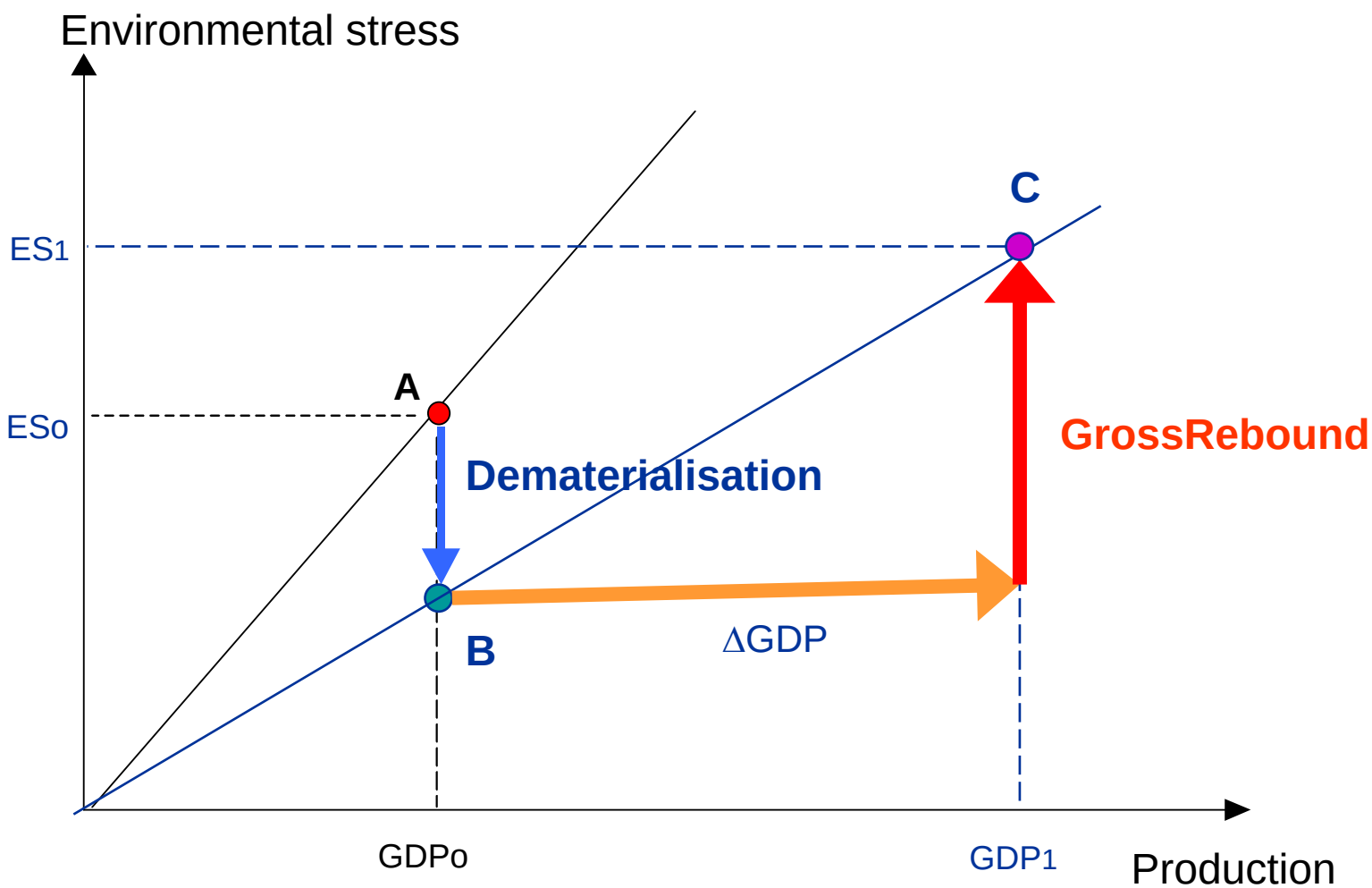


$$CO_2 = \frac{CO_2}{GDP} GDP$$

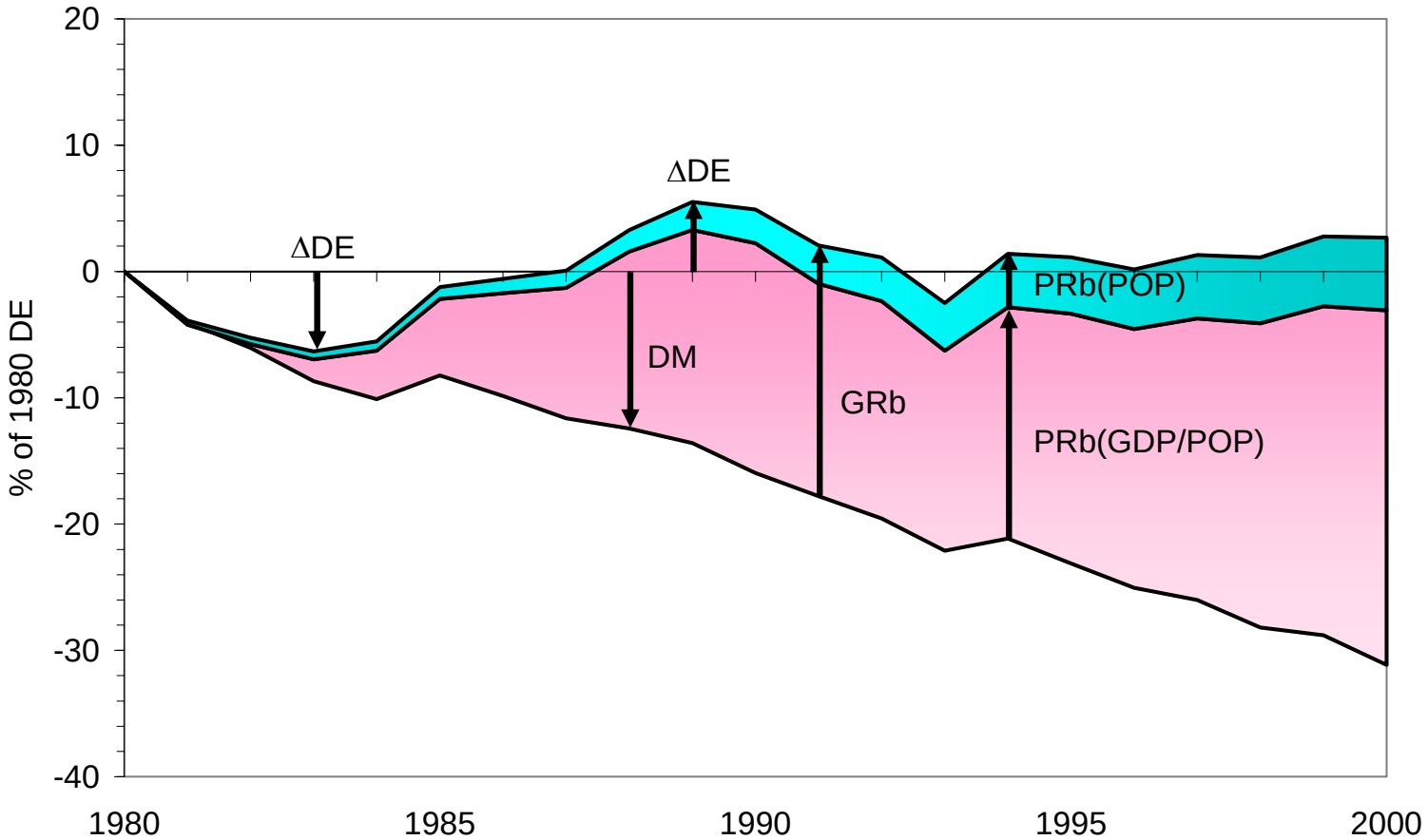
ASA decomposition

- Provides new information of the causes of changes that take place in environment, economy and society
- Provides new **indicators** e.g.
  - Dematerialisation of production
  - Rebound effect
  - Immaterialisation of consumption
  - Sustainable economic growth
  - Sustainable technological development
  - Welfare productivity
- **Sustainability in relation to the direction of change**

ASA framework
Dematerialisation of production

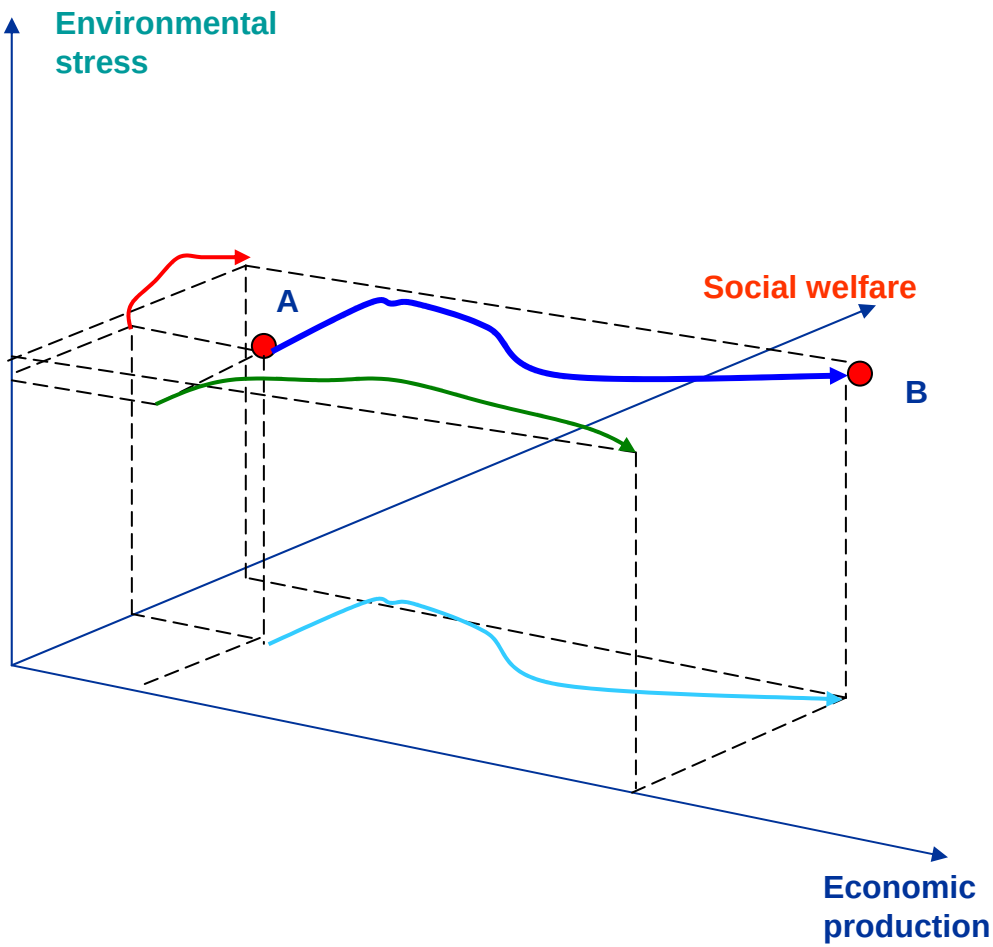


Dematerialisation and Rebound as ASA concepts

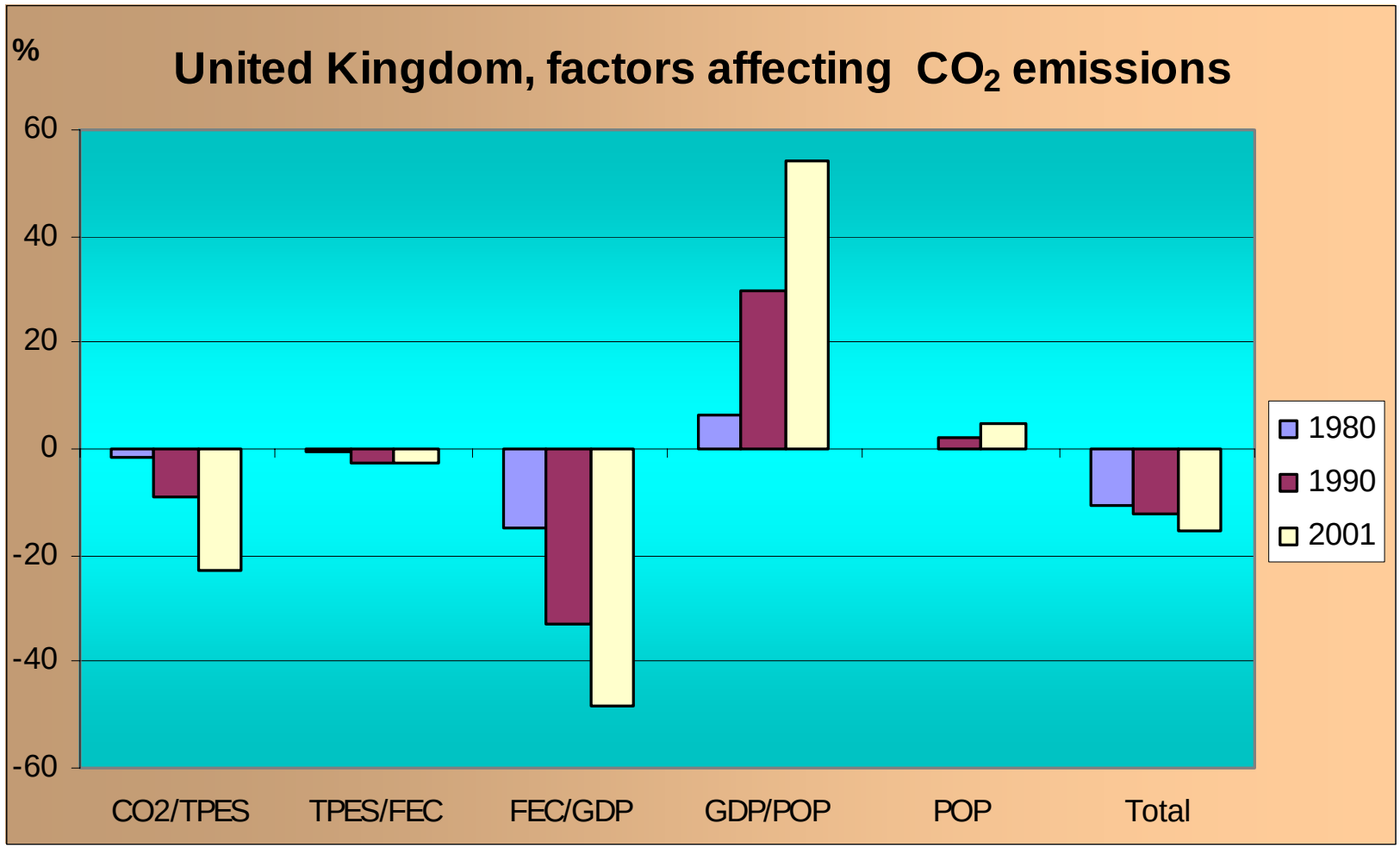


The dematerialization effect and rebound effects of material flows in the European Union, measured by domestic material extraction (DE).

Environmental stress – Economic production – Social welfare decomposition

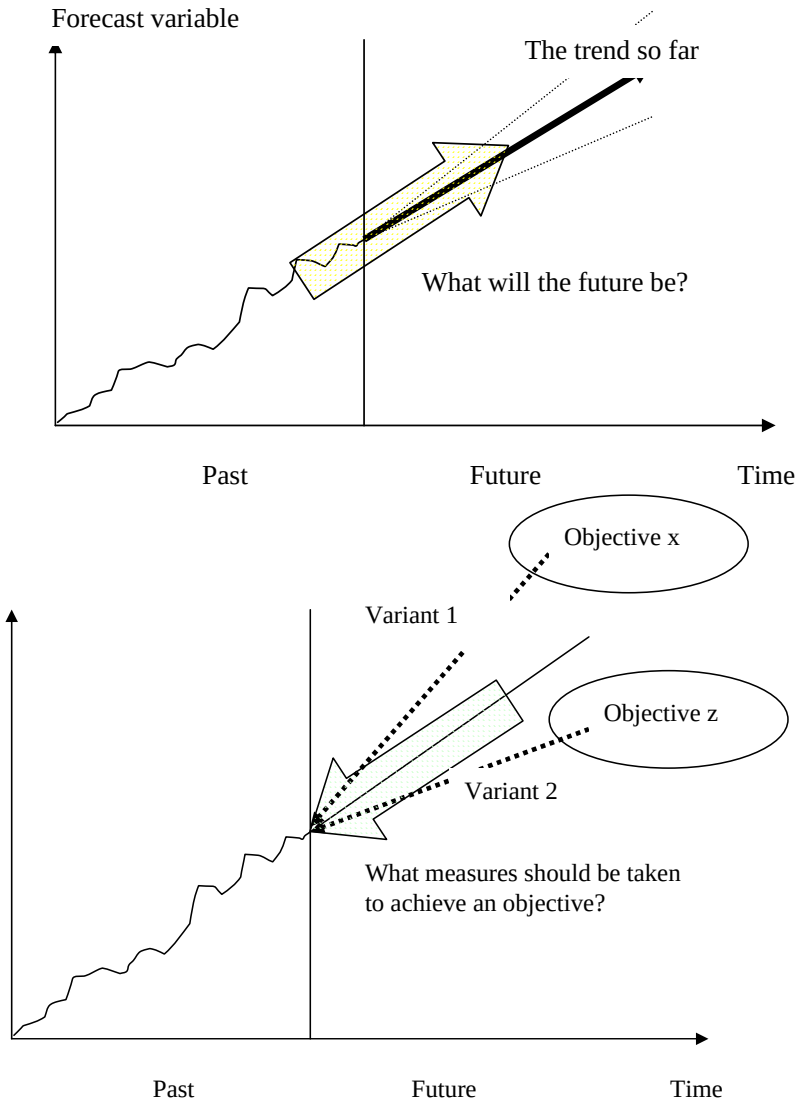


ASA decomposition

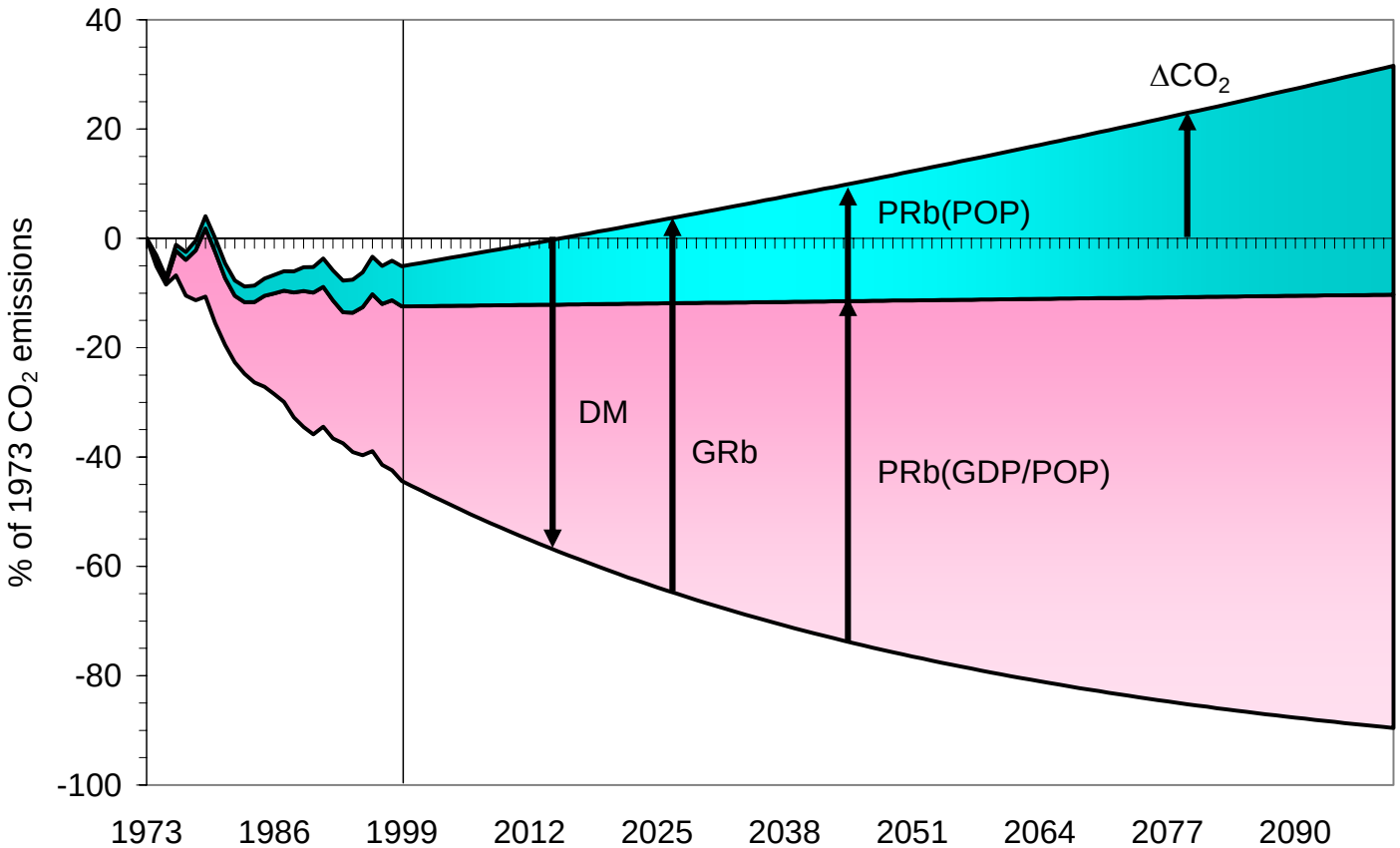


ASA and future

- ASA approach can be used for scenario building
- Forecasting and backcasting (landing place) scenario approach can be utilized

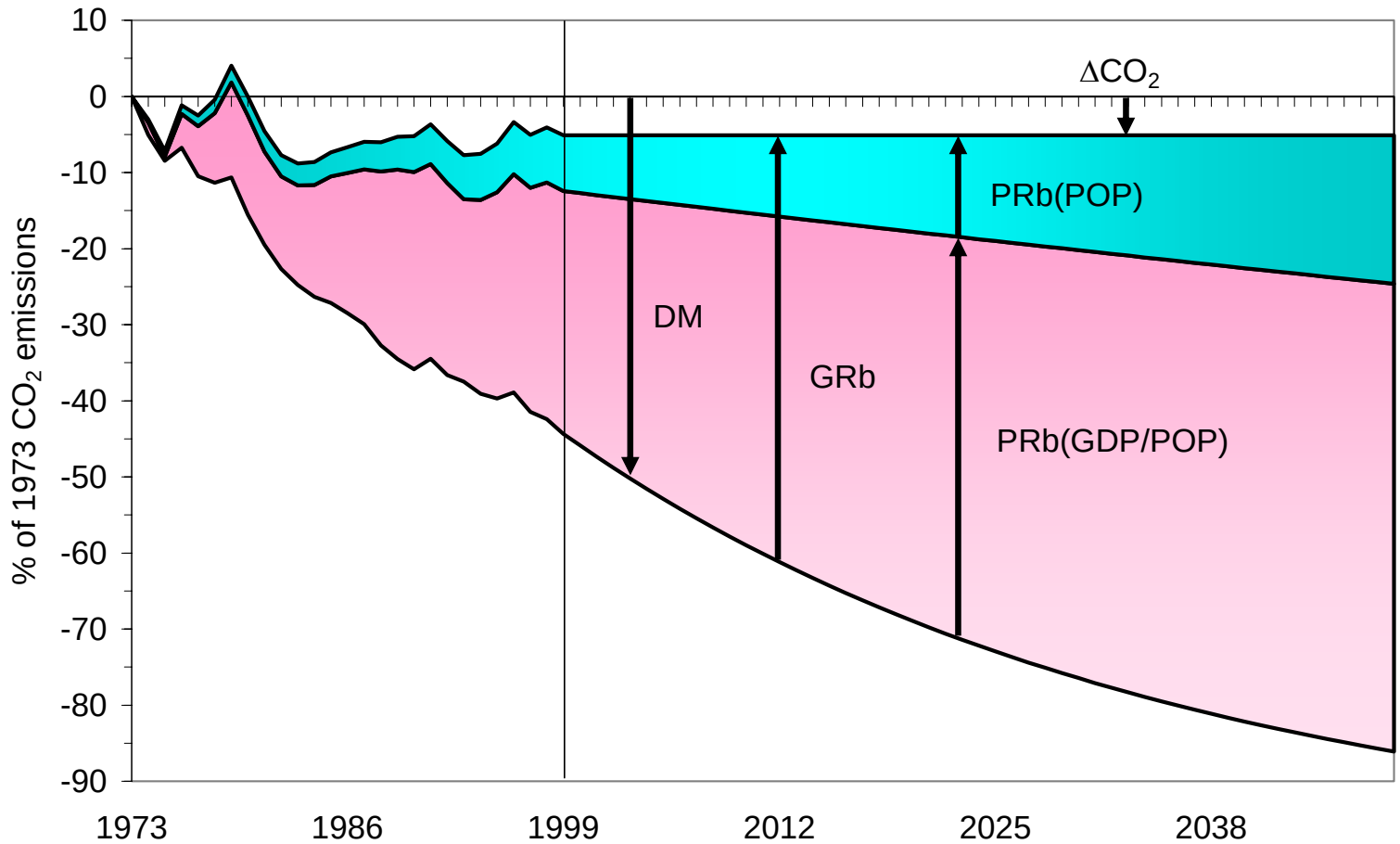


ASA forward scenario



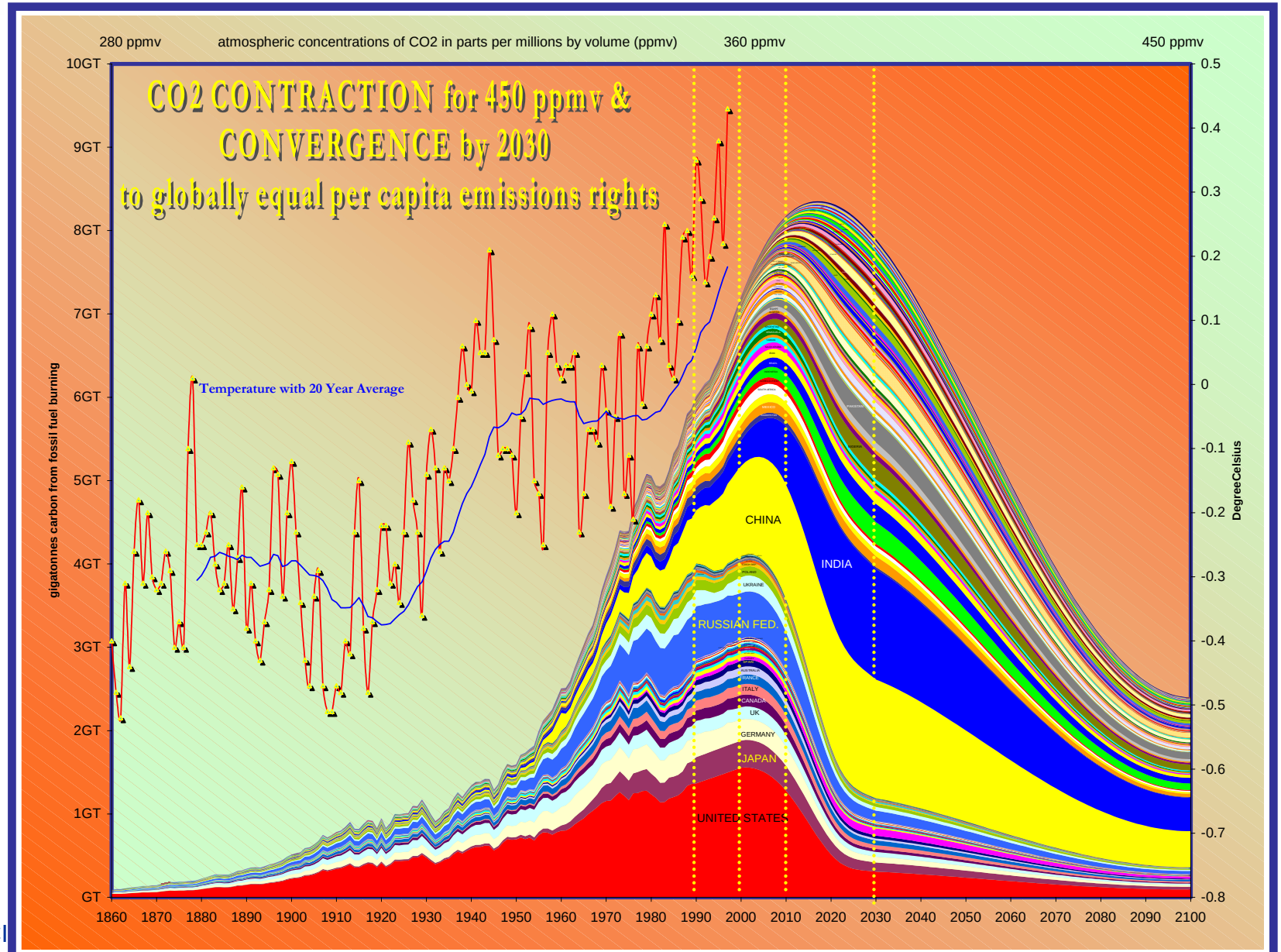
The ASA variables as a percentage of the 1973 environmental stress (CO2) value in the Business as usual scenario (BAU) for CO2 emissions in the EU

ASA backward Factor 4 scenario



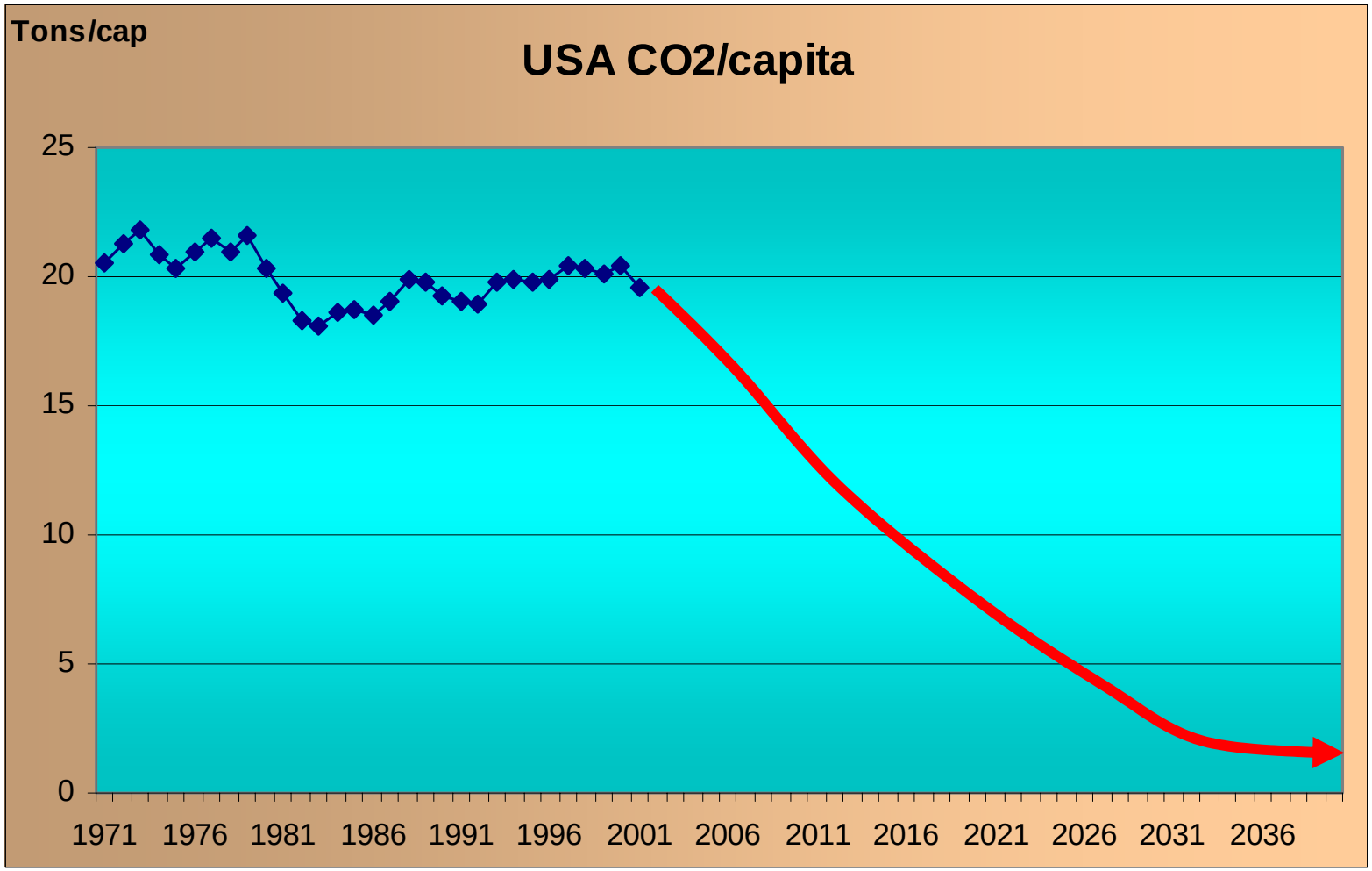
Cumulative change of CO_2 emissions in the ASA Factor 4 scenario for the EU.

Example of intensity analysis with ASA

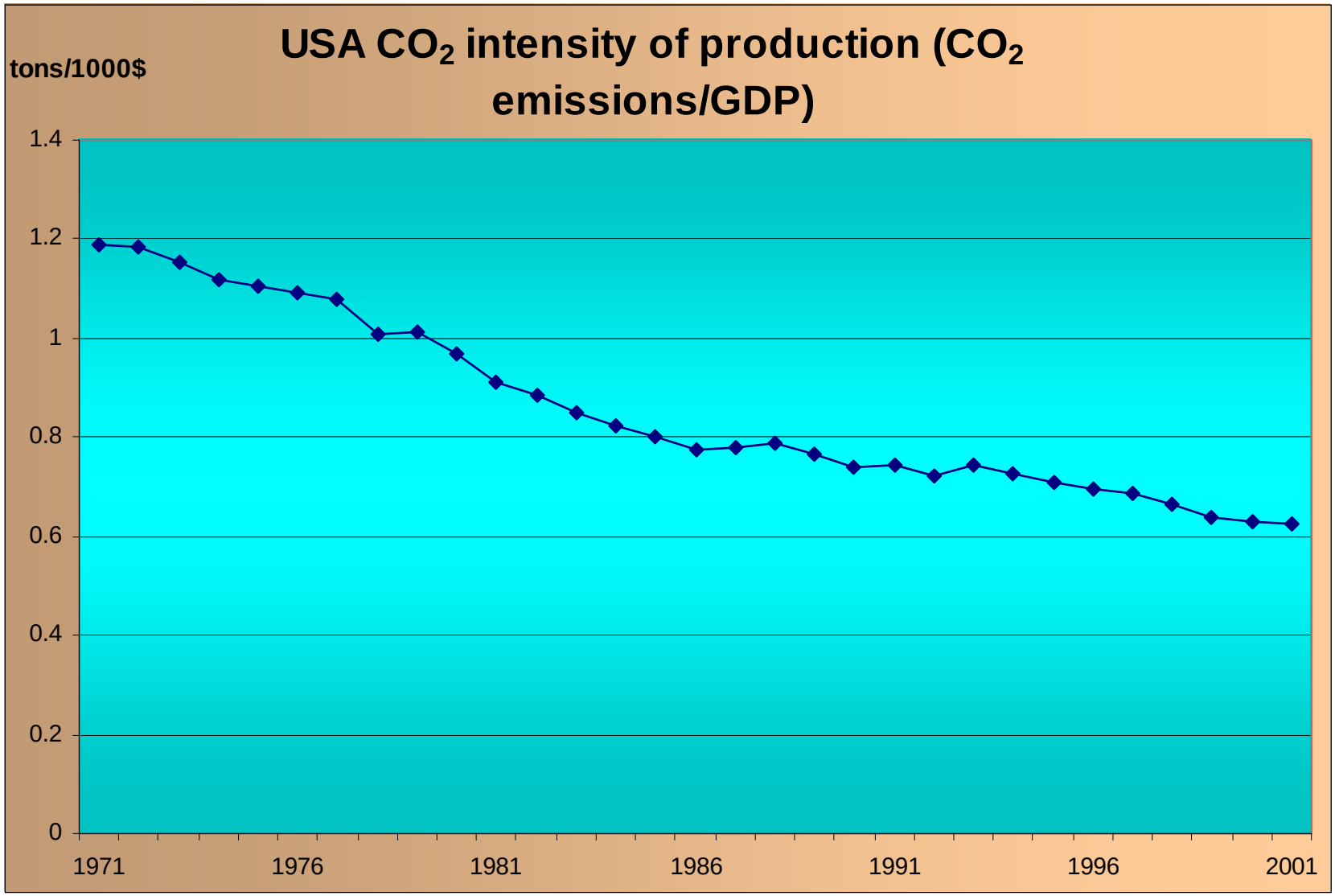


Data source: GCI

USA CO2 emissions per capita

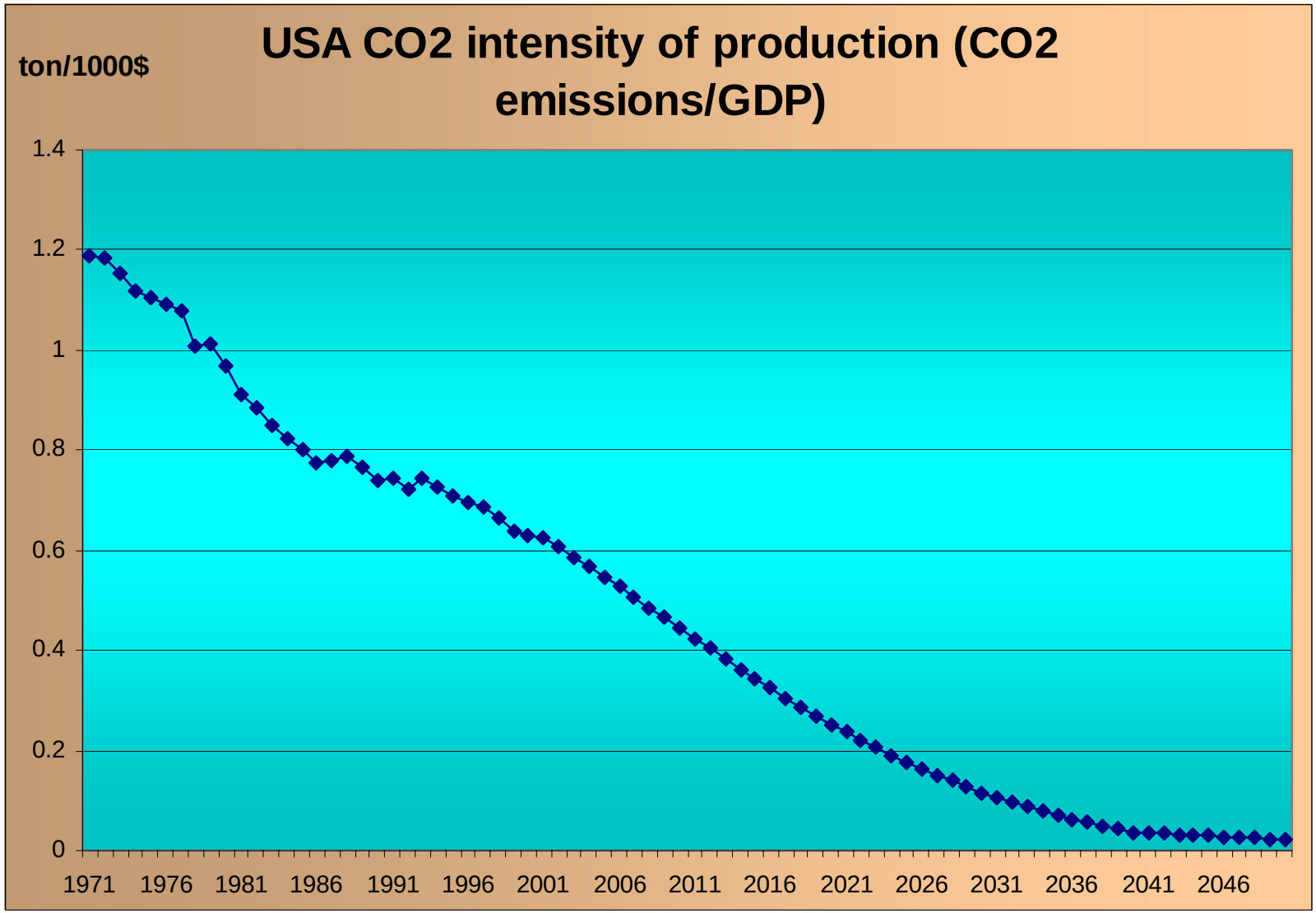


Historical CO_2 intensity development



Data source: IEA

Future development needed in USA to reach C&C target



Thank you

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