ECOMODERNISM AND DE-GROWTH APPROACH: TWO APPROACHES FOR A WORLD UNDER PRESSURE – A COMPARATIVE WELFARE ECONOMIC ANALYSIS

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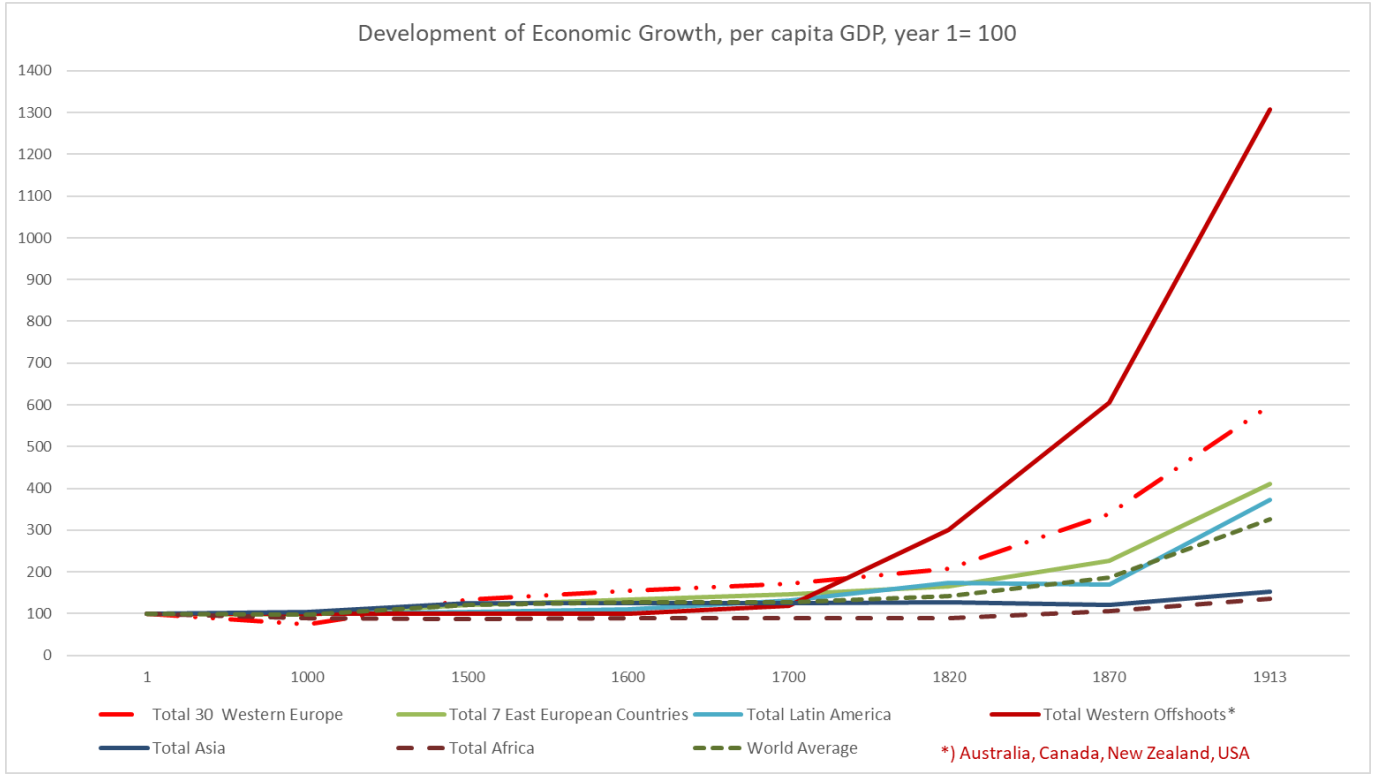
FACTS ABOUT GROWTH

- For 300,000 years of human life there was no economic growth, Susskind 2024.
- Economic growth began just two hundred years ago, when living standard started in first industrial countries to increase, Susskind, 2024.
- Since then, the economic grow sustained and make “modern economic growth entirely unlike anything that come before, Susskind, 2024.”
- Paul Samuelson and William Nordhaus noted that “the GDP and the national income accounts are among the great inventions of the twentieth century, Samuelson, Nordhaus, 2010.”
- GDP is the most powerful indicator in human history. Lepenies, 2016.



Schlör, H., S. Schubert, and S. Venghaus, Reflections About the Food–Energy–Water Nexus in a World Without Economic Growth—A Dynamic Multinational CGE Model-Based Thought Experiment, in The Water–Energy–Food Nexus : Concept and Assessments, S.S. Muthu, Editor. 2021, Springer Singapore: Singapore. p. 1-34.

DANIEL SUSSKIND'S GROWTH DILEMMA

1. Economic growth has created:
   - The end of subsistence economy for most of the global population
   - A longer and healthier life
   - Unparalleled technological progress
2. The price of the achievements
   - Climate change
   - Loss of biodiversity
   - Increasing economic inequalities in and between societies (Oxfam report)
     - The five richest men in the world have doubled their wealth since 2020, while almost five billion people have become poorer
   - Will AI disrupt our work and politics

THE WORLD UNDER PRESSURE

- In 2024, the World Economic Forum stressed that the economic and political order established after the Second World War is under threat from populism, protectionism, trade wars [5], and the wars in Ukraine, Gaza, Lebanon, and Sudan, and that it is not yet clear whether it will be "replaced by something fundamentally different [5]."
- These uncertainties are accompanied by an earth climate getting increasingly out of control, as stressed by UN Secretary-General Antonio Guterres:
  - "In the case of climate, we are not the dinosaurs. We are the meteor. We are not only in danger, we are the danger. But, we are also the solution (https://news.un.org/en/story/2024/06/1150661)."
- The UN demands that the world community has to change the current unsustainable consumption and production patterns and develop a new economic model with significantly lower CO2 emissions to meet the Paris Agreement [7, 8].

TWO ECONOMIC MODELS FOR THE ANTHROPOCENE

- Ecomodernism (https://www.ecomodernism.org/manifesto-English)

https://www.thegreenage.co.uk/what-is-ecomodernism/

Ecomodernism

https://www.youtube.com/watch?v=RToG-5bgwo0

De-growth

Fossil-fuel-based Economy

- De-growth approach (https://degrowth.info/en/degrowth)

ECOMODERNISM

- Ecological-economic decoupling [11] and the general view that industrialisation, globalisation and modernisation are inextricably linked with climate and nature conservation are the key points of ecomodernism.
- The ideas of ecomodernism were first published in the Ecomodernism Manifesto in 2015 [12, 13] with the goal to shape the Anthropocene – the age of humans [12].
- The authors are convinced that “a good Anthropocene demands that humans use their growing social, economic, and technological powers to make life better for people, stabilize the climate, and protect the natural world [12].”
- A central element is the assumption of a decoupling of economic growth and nature consumption in both relative and absolute terms [12].
- The decoupling of economic growth and nature use can be the result of new technical developments or because of aging societies which need less resources.

DE-GROWTH

- On the other hand, the de-growth approach [14] question the ability of the current linear economic system to decouple GHG emissions and resource consumption from economic growth to meet the SDGs and the Paris agreement goals [15].
  - "You have stolen my dreams and my childhood with your empty words. And yet I'm one of the lucky ones. People are suffering. People are dying. Entire ecosystems are collapsing. We are in the beginning of a mass extinction, and all you can talk about is money and fairy tales of eternal economic growth. How dare you!"

    (https://www.npr.org/2019/09/23/763452863/transcript-greta-thunbergs-speech-at-the-u-n-climate-action-summit)
- De-growth approaches [16-18] are trying to decrease both GDP and GHG emissions, minimize reliance on emission technologies and "aims to generate progress toward achieving the SDGs by prioritizing redistribution rather than GDP growth.
- The de-growth include as economic measures universal basic income, work-sharing, shifting taxation burdens from income to resource and energy extraction [9]."

DYNAMIC MULTINATIONAL COMPUTABLE GENERAL EQUILIBRIUM MODEL

- The new economic approaches of ecomodernism and de-growth scenarios will have an impact on all economic sectors especially on the Food-Energy-Water Nexus (FEW-Nexus) sector - the key sectors for a sustainable development.
- We analyse the two approaches based on a General Equilibrium Model.
- A General Equilibrium Model is used to analyze the two green economy approaches consisting of two countries:
  - An Ecomodernist country A and a De-growth country B

- We present the method here in a stylised economy to illustrate the effects of the two approaches in the absence of disturbances such as the Corona pandemic and the war in Ukraine.

A TWO COUNTRY DYNAMIC MULTINATIONAL CGE MODEL

- We use a dynamic multinational Computable General Equilibrium (CGE) model [Ecomod, 2003].
  - The consumption sector is represented by one consumer per country c=A,B.
  - The consumer maximizes its utility (neoclassical consumption model [Chiang, 1984]).
  - The budget Y is spent on consumption C and savings S.
  - Savings are assumed to finance investment.
  - The production sector of each country consists of three sectors (FEW, Industry, Service).
    - Each sector is represented by a firm, which operates under perfect competition, based on a Cobb-Douglas [Martin, 1997] production function using capital and labor (linear homogeneous).

SOCIAL ACCOUNTING MATRIX (SAM)

- The SAM summarizes all economic transactions in an economy.
- The SAM represents the stylized status quo data set of each country of our model economy.
- The fictitious data sets of the two SAMs were compiled to illustrate and stress the effects of different growth scenarios in a model economy world unbiased (Lehman crash, Euro crises, Corona pandemic, war on Ukraine).

SAM ECOMODERNIST A + DE-GROWTH B

Social Accounting Matrix Country A - in currency units

	FEW	Industry	Service	Consumption	Investment	Exports	Total
FEW	0	0	0	68	6	16	90
Industry	0	0	0	122	39	19	180
Service	0	0	0	184	99	52	335
Capital (K) payments	49	59	99				
Labour (L) payments	20	91	200				
Gross Output (XD)	69	150	299				
Imports	21	30	36				
Total	90	180	335				

Source: Authors, 2021 based on Ecomod, 2003

Social Accounting Matrix Country B - in currency units

	FEW	Industry	Service	Consumption	Investment	Exports	Total
FEW	0	0	0	123	11	21	155
Industry	0	0	0	218	82	30	330
Service	0	0	0	407	207	36	650
Capital (K) payments	99	130	199				
Labour (L) payments	40	181	399				
Gross Output (XD)	139	311	598				
Imports	16	19	52				
Total	155	330	650				

Source: Authors, 2021 based on Ecomod, 2003.

MODEL CALIBRATION

- Our CGE model needs to be calibrated in order to reproduce the data set of the status quo as determined by the Social Accounting Matrix correctly.
- This requires the determination of exogenous parameter values

	Exogenous parameters	
	Ecomodernist country A	Degrowth country B
Interest rate	5.0%	4.0%
Time preference rate	5.0%	4.0%
Steady state growth rate	2.5%	-1.0%
Labor development rate	0.0%	0.0%
Source: Authors, 2022		IEK-STE/SRH 2022

- Ecomodernist country A will grow by 2.5%
- De-growth country B will shrink by 1.0%

TECHNOLOGICAL EFFICIENCY OF THE TWO COUNTRIES

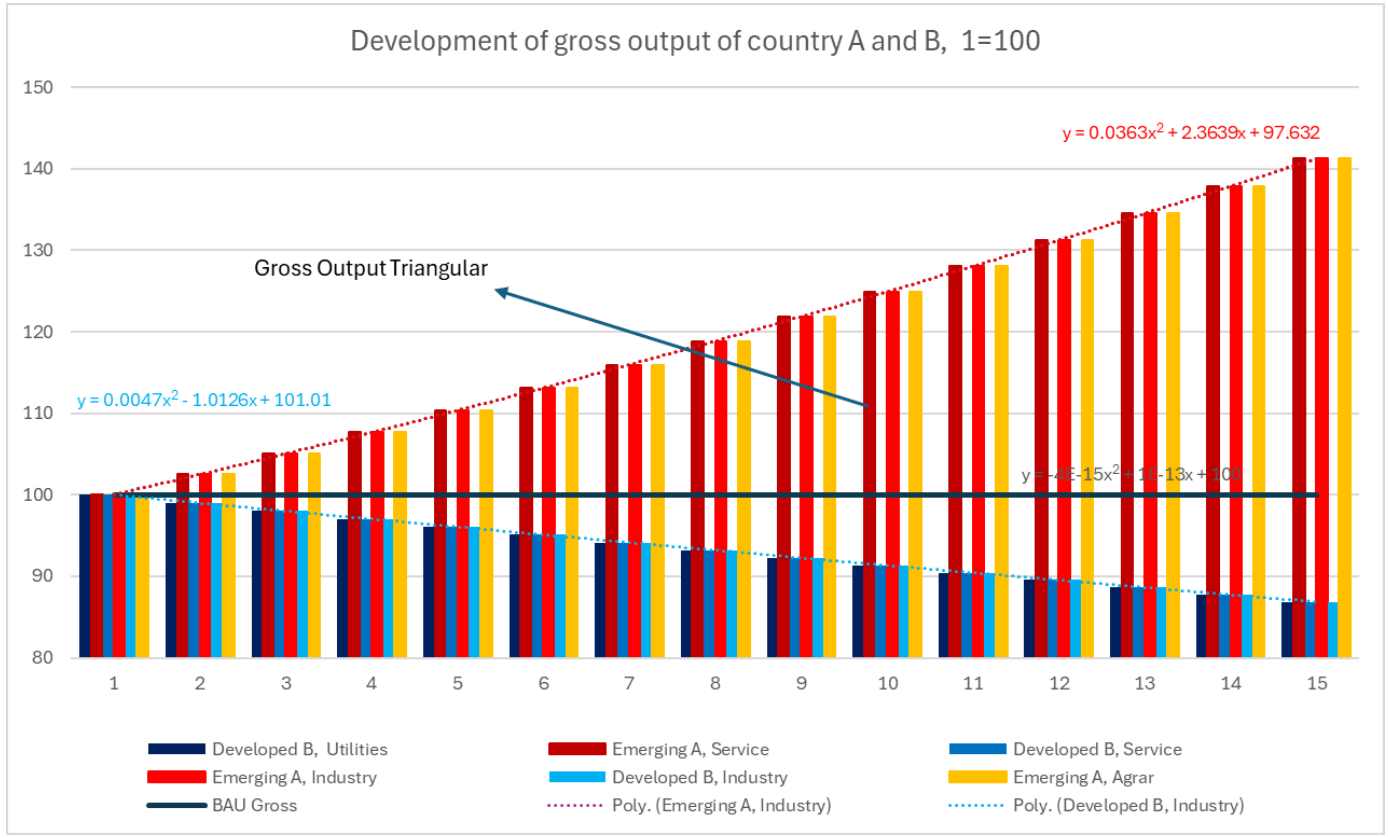
- The three economic sectors of each country includes also a cross-country Food-Energy-Water-Nexus, where the agricultural sector is located in country A, the utility sectors (energy, water) are located in country B.
- Each country has a service and an industry sector.
- The sectors therefore have different states of technology aF_i: the higher the level of output that can be produced by any particular combination of the inputs.

Technological efficiency parameter, aF

Ecomodernist country A		Degrowth country B	
Agriculture	0.411	Utilities	0.675
Service	0.853	Service	1.125
Industry	0.944	Industry	1.190

Source: Own calculations, 2022 IEK-STE/SRH 2022

THE GROSS OUTPUT TRIANGULAR

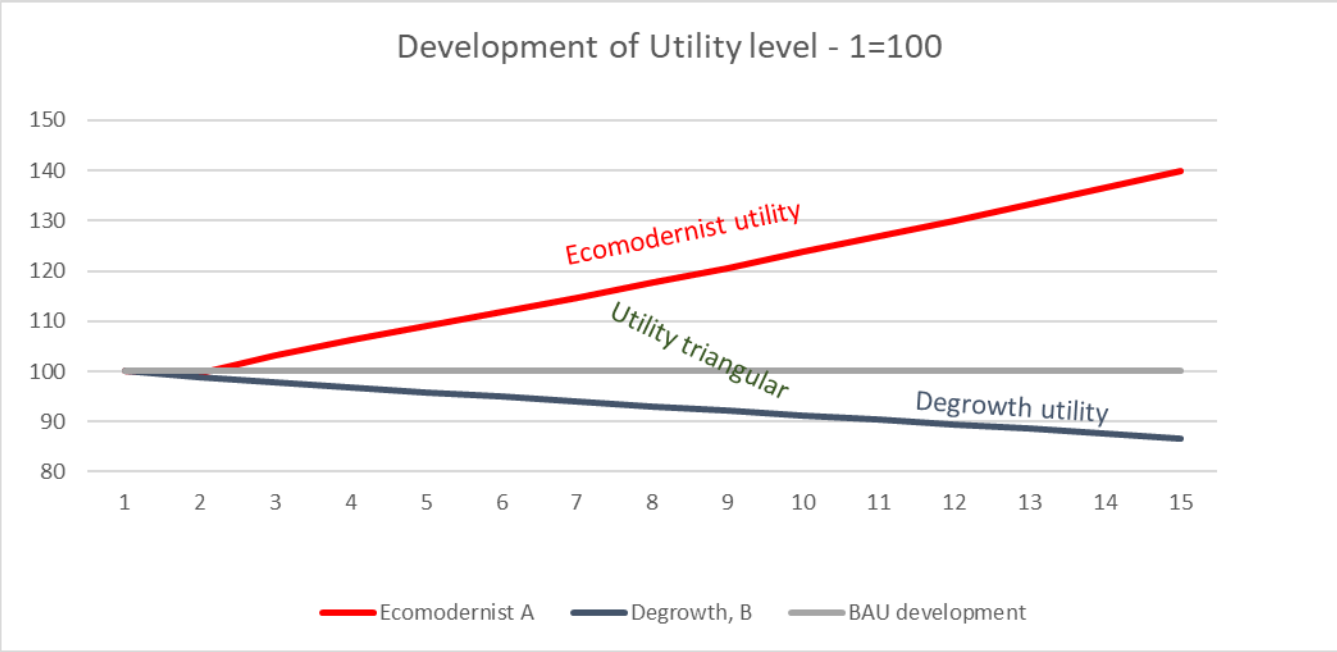


Triangular between the two countries - Gross Output	
Ecomodernist A and BAU	817
Degrowth B and BAU	282
Triangular A and B	1099

Source: Own calculation, 2025

CO2 EMISSION DE-GROWTH TRIANGULAR

UTILITY TRIANGULAR



Triangular between the two countries

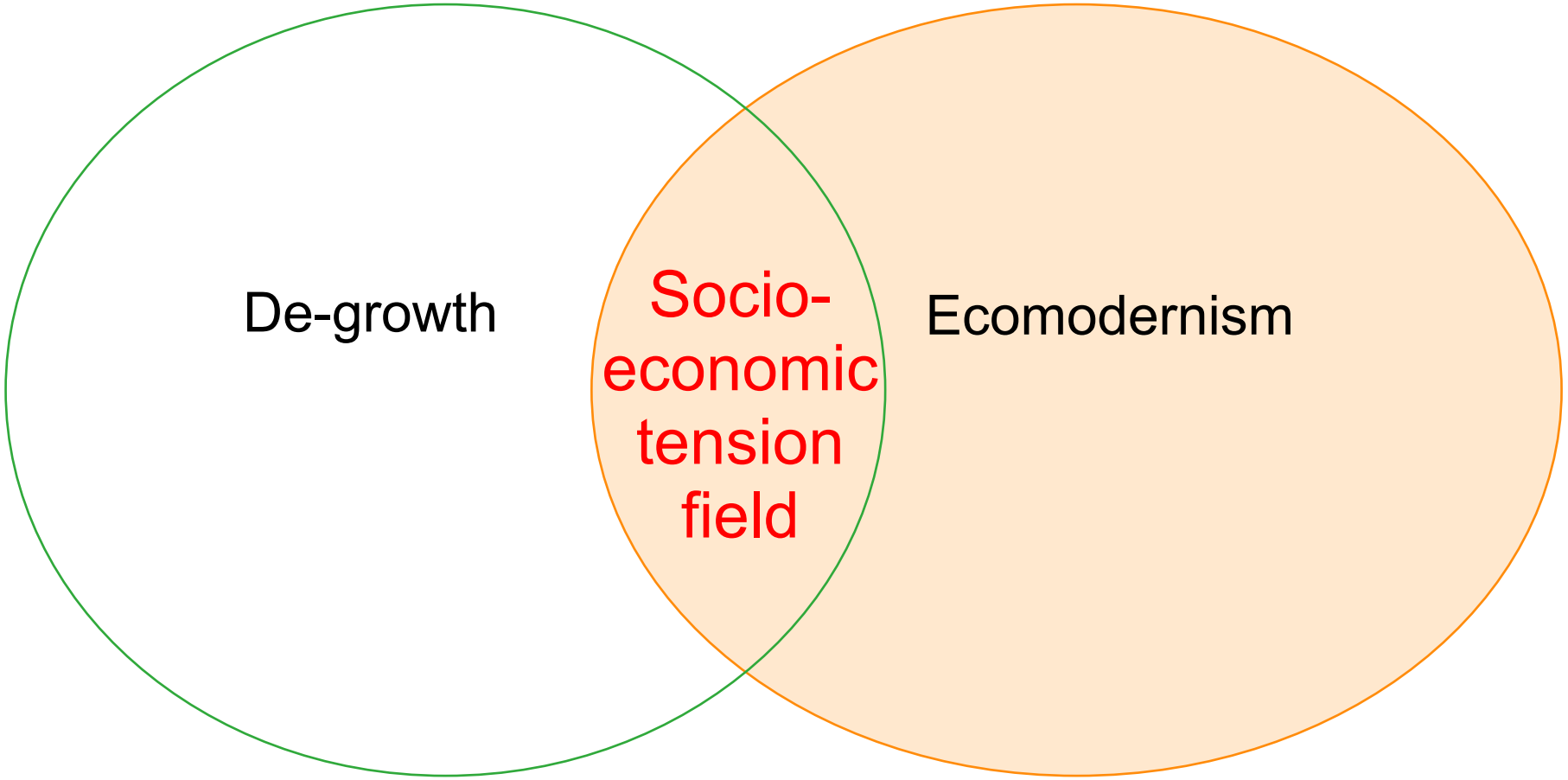
Triangular between	Utility All sectors
Ecomodernist A and BAU	255
Degrowth B and BAU	95
A and B	350

Source: Own calculations, 2022

CONCLUSION FEW-NEXUS

- The challenge for the management of the FEW-nexus is that the cross-country FEW-Nexus is confronted with two different green economy approaches.
- The agricultural sector of country A follows an Ecomodernism pathway, whereas the utility sector of country B is on a De-growth pathway.
- This can cause economic tensions and stresses in the sector and between the countries and poses a major challenge to the management of the FEW-Nexus.

TENSION FIELD OF THE GREEN ECONOMY

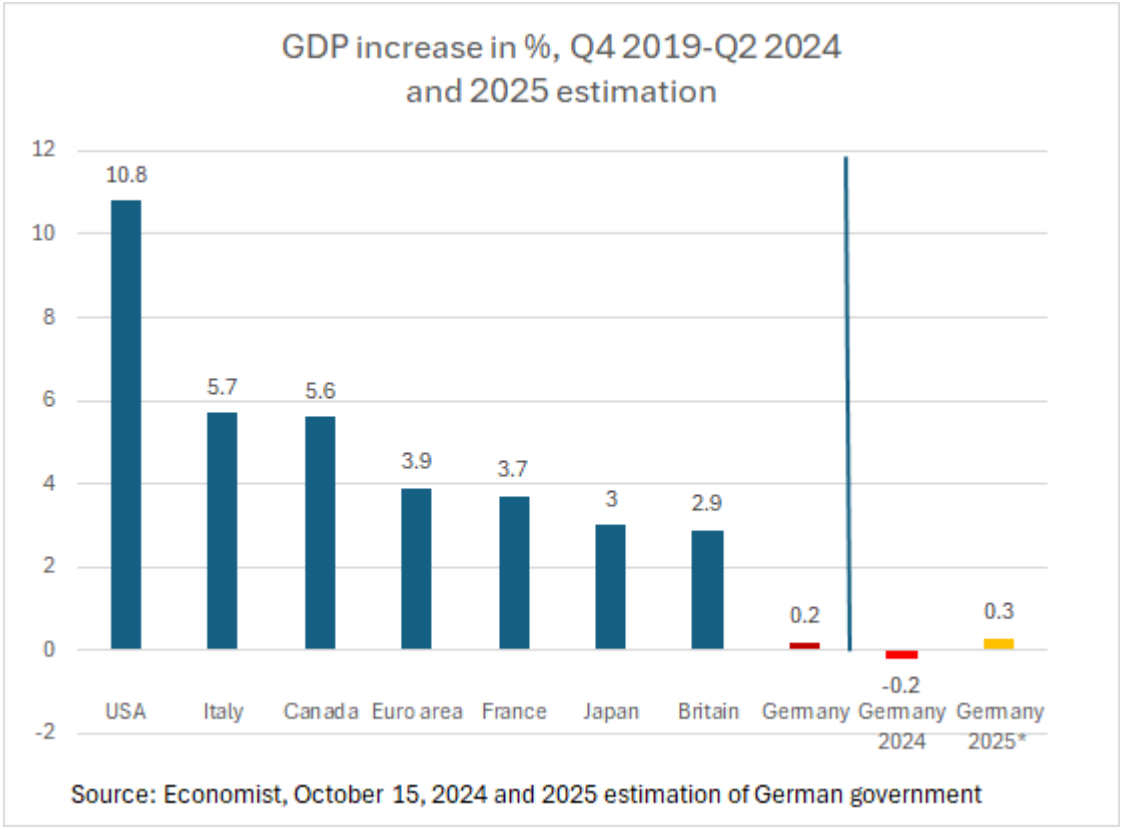


The degrowth triangular visualizes the socio-economic conflict zone of the two Green Economy approaches.

POSTSCRIPT: POLITICAL UPDATE

- Germany has failed to achieve positive economic growth since 2019.

- The consequence of this lack of growth over five years has been the collapse of the coalition government in November 2024 and a subsequent crisis surrounding the financing of the federal budget of 2024 and 2025, which has resulted in the general election February 2025.



SECOND POSTSCRIPT – GROWTH AFTER 28.2.25

Growth and Defence Capabilities

- “Everything - social issues, tax reforms, climate protection - is now secondary.
- If we fail to secure our Western European democracies both internally and externally, we will achieve neither justice nor sustainability.
- From this perspective, a prosperous economy is the basic prerequisite for achieving all other goals.
- Without growth, everything is nothing (Henrik Müller, Spiegel Online, 2025)”.

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Thank you for your attention!

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