

IS ECONOMIC GROWTH COMPATIBLE WITH A SUSTAINABLE FUTURE?

Conference on Decoupling in
the Nordics 2023



Nordic Council
of Ministers



Contents

1. RESUME	3
2. BACKGROUND	5
3. PRESENTATIONS	6
4. PANEL DISCUSSION	20
5. NEXT STEP – RECOMMENDATIONS	29
BIBLIOGRAPHY	31
About this publication	32

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1. RESUME

Baggrund og opsummering

Grøn vækst udgør kernen i mange bæredygtige udviklingsstrategier i de Nordiske lande, i Europa, og resten af verden. Det er en central antagelse at økonomisk vækst kan fortsætte samtidig med at vores ressourceforbrug, miljøpåvirkning- og belastning reduceres. Med andre ord, at vores ressourceforbrug og miljøpåvirkning kan afkobles absolut, og vi derfor kan bremse klimaforandringerne og tabet af biodiversitet uden væksten påvirkes. Men det er usikkert om absolut afkobling er realistisk på lang sigt. I 2021 publicerede Nordisk ministerråd rapporten [*Is Economic Growth Compatible with a Sustainable Nordic Future?*](#) af Norion Consult. Rapporten analyserede de foreløbige beviser, og argumenter for og imod afkobling, samt om det er en realistisk langsigtet løsning. Rapportens formål var at gøre nordiske beslutningstagere opmærksomme på centrale spørgsmål og usikkerheder tilknyttet grøn vækst. I 2023 blev der afholdt en konference med det formål at fortsætte denne vigtige diskussion. Mange interessenter engagerede sig og deltog i diskussionen. I forlængelse af projektet afholdt Norion Consult på vegne af Nordisk Ministerråd i marts 2023 en konference i København, hvor mulighederne for absolut afkobling blev drøftet. Flere end 100 interessenter deltog i konferencen og engagerede sig i diskussionen, som blev sparket i gang af fire foredragsholderes perspektivering af spørgsmålet om afkobling.

De fire præsentationer på konferencen

- Daniel Montalvo fra EEA præsenterede tidligere politikker, der har understøttet forandring samt gav et indblik i nuværende politiske tiltag fra klima- og biodiversitetsdagsordenen
- Bjørn Bauer fra Norion Consult præsenterede de vigtigste pointer fra 2021 rapporten og konkluderede, at der er få eksempler på absolut afkobling især af materielt ressourceforbrug.
- Mikael Malmaeus gav en introduktion til hvad vi mener når vi bruger ordet 'vækst' samt kerneargumenterne i den offentlige svenske debat for eller imod vækst indenfor et bæredygtighedsperspektiv
- Outi Haanperä fra Sitra fremlagde et studie af hvordan det teoretisk er muligt at nå 1.5°C målet, hvis vi accelerer udfasningen af kul, implementerer CCS teknologi, og skifte til elektriske forsyningsnet på skala.

Hovedpointer fra konferencen

- Der er få egentlige eksempler på absolut afkobling, og endnu færre hvor det materielle fodaftryk er blevet afkoblet. Tværtimod ser vi en genkobling af BNP og materielt ressourceforbrug da meget produktion er flyttet til lande der har en mindre effektiv produktion.
- Et aftryksbaseret perspektiv giver et mere præcist billede af vores emissionsudledninger og ressourceforbrug end et territorialbaseret perspektiv.
- Det er sjældent at politiske strategier tager højde for rebound-effekter, selvom der er en risiko for, at rebound-effekter undergraver de resultater man forventer at opnå.
- Det er svært at forestille sig hvordan vores liv og økonomi vil se ud i et samfund der bliver indenfor de planetære grænser. Vi har derfor brug for holistiske visioner der giver os et billede af et sådant samfund. Hvordan vil et servicebaseret samfund eller et samfund der bygger på et tilstrækkelighedsparadigme se ud?
- Der er i højere grad behov for et paradigmeskift fremfor gradvis forandring.
- Det er nødvendigt med stærke politikker der understøtter den bæredygtige dagsorden, fx beskatning af primærressourcer, et loft på emissioner, ressourcer.
- Vi har før reageret hurtigt på eskalerende kriser fx håndtering af COVID-pandemien.
- Man bør overveje hvad vi måler på, hvad formålet er, og overveje yderligere parametre end BNP.

Anbefalinger til fremtidig handling

- Initier en samfunds- og politisk debat om begrebet tilstrækkelighed, hvad indebærer det og hvad kan betragtes som tilstrækkeligt i en nordisk kontekst.
- Skab visioner der illustrerer vejen mod bæredygtighed, og giver folk mulighed for at forestille sig hvordan deres liv vil se ud i scenarier der understøtter en bæredygtig samfundsomstilling.
- Påbegynd en undersøgelse der identificerer politiske værktøjer, som kan understøtte de nødvendige skift.
- Stimuler en debat om hvilke mekanismer det er der ligger bag vækstimperativet samt hvordan disse mekanismer kan håndteres så de foranlediger samfundsmæssig ustabilitet.
- Analysér hvilke mekanismer der før har resulteret i at kriser er blevet håndteret på succesfuld vis.

2. BACKGROUND

Green growth forms the core of sustainable development strategies in the Nordic countries, the rest of Europe, and the rest of the world. The central assumption is that economic growth can be continued while reducing resource use, emissions, environmental pressures, and impacts. In other words, resource use and environmental pressures can be absolutely decoupled from economic growth such that climate change and biodiversity loss can be halted without impacting economic growth. However, while there are several examples of relative decoupling, evidence on absolute decoupling is scarce, and it is unclear whether absolute decoupling is possible, especially in the long term or whether it is simply a pipedream that those who see economic growth as a societal priority can hang on to.

In 2020 the Nordic Council of Ministers' steering group for Environment and Economy commissioned a literature study on decoupling and its feasibility in a Nordic context. The project was carried out by Norion Consult (then PlanMiljø) in collaboration with Gaia. The literature study led to the report 'Is economic growth compatible with a Sustainable Nordic Future' published in 2021. The report assesses, evaluates, and questions the arguments and evidence for and against decoupling as a realistic long-term solution to rapidly approaching environmental crises, aiming to raise awareness amongst Nordic policymakers and others as to the key issues and uncertainties in the green growth concept. To follow up on the report and continue the dialogue concerning this important topic, a conference was commissioned by the Environment and economy steering group. The conference was carried out by Norion Consult and was held on March 23rd, 2023, with the title *Decoupling in the Nordics – Is economic growth compatible with a sustainable future*. The conference was planned as a hybrid, allowing for the highest possible attendance across the Nordics.

3. PRESENTATIONS

Four presenters provided both a theoretical and evidence-based introduction to the theme:

- Daniel Montalvo, Head of Sustainable Resource Use and Industry, European Environment Agency, gave the keynote speech *Decoupling, where are we and where should we go?*
- Bjørn Bauer, CEO at Norion Consult, summarised key findings presented in the report *Is economic growth compatible with a Sustainable Nordic Future?*
- Mikael Malmaeus, Environmental Intelligence, IVL Swedish Environmental Research Institute, introduced *The concept and the content of economic growth in the 21st century.*
- Outi Haanperä, Project Director, Nature and the Economy, SITRA, focused on *Growth positive zero-emissions pathways to 2050*

The presentations were followed by a panel discussion with the four speakers, with questions from both the onsite and online audiences. Bjørn Bauer moderated the conference.

3.1 Keynote by Daniel Montalvo, EEA

The presentation gave an overview of current efforts and whether these are sufficiently addressing the existential crises we face. In the last 200 years, humans have induced exponential change to a wide range of social and economic parameters, including world population, water use and real GDP. These trends are coupled with many parameters of the functioning earth systems that have experienced correlated exponential change, including atmospheric carbon dioxide concentrations, ocean acidification and terrestrial biosphere degradation. We are currently mainly in control of major geochemical cycles such as the carbon or nitrogen cycle. Our societal and economic patterns are strongly coupled to our earth systems, and it is this correlation we strive to decouple.

According to IPCC and other international institutions, our response and efforts to tackle the existential crises of nature and climate change are insufficient to abate the crises we face. To tackle these crises sufficiently, we need more considerable transformative changes. The connections between the environment and the health of citizens are another issue that has not received much attention but is emerging, according to OMS. We are already seeing irreversible changes and approaching tipping points beyond which the correlation between our societal behaviour and the functioning of the earth's systems is no longer within our control. There is a clear relation between how we process and turn resources into products and services in our economy - and climate change and nature loss. We must be aware of trade-offs and interconnections when we address the crisis.

There is no quick fix for sustainability transitions. We need to reconfigure our energy, food, mobility, and industrial systems and find more robust ways to provide the services that we need in our society. The conversation about relative and absolute decoupling provides some nuance to this discussion.

The below sections briefly discuss developments and the current situation in Europe within key policy areas relevant to the conference topic.

Climate Change

The EU have strong climate policies that have made a significant impact, but the progress varies across the different sectors of the economy; for instance, we have begun transforming our energy supply systems, but progress in the agricultural sector has long stagnated. We need to scale up and speed up with a factor of 3 if we are to reach the target for 2050, and for this to happen, we need a paradigm shift. In addition to emission reductions, it is necessary to sequester more carbon, so-called negative emissions with, for example, industrial carbon capture (expensive and not yet at a sufficient scale) or biological carbon sequestration (requiring a changed relationship with the agricultural system and with our forestry sector).

Materials

Some progress and relative decoupling have been achieved, but waste and resource use is still correlated with economic growth. The European green deal has facilitated improved policies for the circular economy, but the systemic challenge of production and consumption systems remains. No substantial reduction has been achieved, and several planetary boundaries have already been breached when considering Europe's fair share.

Looking at the current circular material use rate, which is the share of recycled materials over the total supply of materials to the economy, the trend is relatively flat and not living up to the 2030 aspiration.

Establishing a circular economy is not on track, so how do we progress towards a resilient and climate-neutral economy where resource use is low, recirculation of materials is high, and the material cycle is clean?

- Consolidating a more binding and target-oriented policy – beyond waste.
- Promoting high-quality recycling, fostering EU resource independence.
- Leveraging the concept of sufficiency.
- Leading globally and with our trading partners.
- Transforming domestic industrial production so it promotes & delivers safe and sustainable design products.
- Continue establishing value-chain-specific strategies.
- Doing more to get the economics right, e.g., increasing market competitiveness for secondary raw materials.

Pollution

The EU has a zero-pollution ambition plan, and addressing pollution is crucial to maintain and to restore landscape health. However, it has been challenging to discuss pollution reduction in recent years because there has been a prevailing narrative that European pollution has largely been solved mainly due to technological progress. But numerous pollutants still need to be handled, such as PFAS and others, that we either didn't know about before or have not addressed sufficiently yet.

Decoupling has been achieved for several pollutants, and it is central to acknowledge that incremental thinking, regulation, and technological approaches can deliver a lot. One success story is that SO₂, NO_x, and PM emissions from combustion plants have been absolutely decoupled, and there is solid evidence that incremental policy interventions mainly drove this development.

The zero-pollution action plan has several targets focusing on health outcomes, biodiversity-related degradation due to pollution, and production and consumption system aspects. Currently, four of them are on track. For the rest, we are currently not or only partly on track, so our current policy mechanisms for this need to be changed.

Key Takeaways

Furthermore, our society is continuously shocked by phenomena that have long-ranging consequences due to the complexity and interconnection, e.g., COVID-19 or the war in Ukraine. There is a general conception that doing something new is challenging. However, one can argue that the difficult part is to phase out because phaseouts will cause sector disruptions and conflicts. It is crucial that disruptions are managed sufficiently to ensure a just transition. Furthermore, there is a need to convince society to change paradigms and shift revenue streams. The critical question, based on all that we know, is economic growth compatible with a sustainable future.

VUCA World

Volatility

Uncertainty

Complexity

Ambiguity

3.2 Presentation by Bjørn Bauer, CEO of NORION Consult

Bjørn Bauer presented the key findings from the report '*Is economic growth compatible with a sustainable Nordic future?*' that formed the actual foundation of the conference. The core of the study was a systematic and in-depth literature review on the evidence and arguments for the historical decoupling of environmental impacts/resource use from economic growth and the potential for decoupling in the future, with a Nordic focus. 48 papers, reports and books presenting pro-growth, de-growth and agnostic viewpoints were assessed against an analytical framework. The report sheds light on two critical questions: 'Is decoupling feasible, or is it a convenient pipedream?'; and 'Can decoupling be rapid enough to prevent overshoot of planetary boundaries?' Key concepts introduced in the report and essential for understanding the discussions on decoupling can be found in the box below.

Key Concepts

Absolut or Relative Decoupling: Decoupling in the context of environmental economics is the antithesis of what is often considered the norm for an economy under development; economic growth leads to, or is caused by, an increase in the throughput of materials and energy through the economy, which itself leads to increases in environmental pressures. Decoupling can be *relative* or *absolute*. Under *relative* decoupling environmental pressures continue to grow but at a slower rate than economic growth. Under *absolute* decoupling, environmental pressures reduce despite economic growth.

Territorial-based or footprint-based perspective: The scope is highly relevant when investigating decoupling. Decoupling analysis often takes either a territorial-based perspective (where trends in direct emissions/pressures within national boundaries are compared to trends in national GDP) or a footprint-based perspective (where trends in global pressures caused along the value chains of all consumed products and services are compared to trends in national consumption expenditure).

Planetary boundaries: The planetary boundaries framework defines a safe operating space for humanity that respects ecological and geophysical systems. The framework comprises nine planetary boundaries within which society can safely develop and thrive. Seven boundaries are already assessed to be crossed, and other planetary boundaries are at high risk of being crossed soon. A safe operating space may often be defined in terms of the remaining budget of resource use or emissions that there is space for without overstressing the boundary. It is common to discuss the fair share of this budget as the remaining budget per global citizen, although there are varying views on this issue (Stockholm Resilience Center 2022).

Rebound effects: The *rebound effect* describes cases where efficiency improvements increase consumption that partially or wholly offsets the expected energy/resource use reductions. Considerable evidence for the rebound effect was found in the literature, placing a question mark against the potential of technological improvements to deliver absolute decoupling. Despite these findings, rebound effects are seldom considered in energy efficiency policy.

Three types of rebound effects have been identified:

1. *Direct rebound effects:* When the lowered price due to an increase in resource efficiency results in more consumption of the same resource.
2. *Indirect rebound effects:* When the lowered price due to an increase in resource efficiency results in more consumption of other types of goods.
3. *Structural rebound effects:* When the lowered price due to an increase in resource efficiency results in a higher and different consumption pattern on the macro level.

Historical evidence of decoupling to date

The literature review identified many cases of relative decoupling but only a few examples of absolute decoupling. When absolute decoupling has been achieved, it has mainly been territorial-based GHG emissions and not footprint-based GHG emissions. Still, Denmark, Estonia, and Germany achieved absolute decoupling of footprint-based GHGs between 1993 and 2010. Sweden managed to decouple footprint-based GHG emissions absolutely, most air pollutants, water use and land use from 2008-2014. There is little evidence of absolute decoupling of material resource use in any country. These distinctions between different types of decoupling are essential when discussing the feasibility of decoupling.

Looking Ahead

To respect planetary boundaries, citizens in developed countries must reduce their material resource use. The environmental impact per capita in the EU is too high by a factor of 8 for particulate matter and climate and a factor of 60 for land use. There is a broad recognition in the literature that green technologies, improved resource efficiency and the circular economy are essential to decouple pressures from economic growth. One of the biggest challenges is to decouple material use, and a circular economy holds enormous potential to achieve decoupling by looping resource use and avoiding further extraction. However, if the circular economy is to deliver, focusing more on product lifetimes, reuse, repair, and refurbishment is necessary instead of recycling.

Many argue that green technology, resource efficiency, and circular economy are not sufficient to achieve absolute decoupling but only relative decoupling; we also need lifestyle changes. Governments generally prefer means such as technology and efficiency to achieve pressure reduction. They are cautious of anything limiting economic growth due to the societal disruptions it will likely cause. Still, the highest observed yearly increase in carbon productivity lies under 3%, and we need 90% by 2050. Some theorists argue that GDP is so strongly linked to material resource use that any reductions in material resource use necessarily will lead to GDP reductions. Many of the cited authors in the literature study argue that we need new or additional measures of wealth. Since standing alone, GDP is not a sufficient measure of wealth, human health, and life satisfaction have stalled as economic output has grown. Numerous alternatives to GDP have been proposed and used, but there is no consensus on which shall supplement or replace GDP. But can we manage without economic growth, and what is the alternative? Do we want de-growth?

Key Takeaways

- Evidence of absolute decoupling has been limited, especially for material resource use.
- Absolute decoupling requires global cooperation and strong policies; we cannot rely on technology.
- The circular economy is an essential means to achieve decoupling. Still, it cannot stand alone, and there is a need to shift focus away from recycling and focus more on the inner circles of circularity by encouraging long product lifetimes, reuse repair and refurbishment.
- We need a lifestyle change which requires behavioural change. For this to happen, strong supportive policy frameworks are needed.
- We must focus on goods and services with the most significant global pressures.
 - Currently, we see a high material resource demand for buildings and infrastructure.
- Absolute decoupling can only be achieved if we address rebound effects.
 - Rebound effects critically undermine efficiency improvements.

3.3 Presentation by Mikael Malmaeus, IVL Swedish Environmental Institute

The presentation gave a brief overview of how the term 'growth' is used in the public debate in Sweden and what arguments are used in discussions on whether growth is desirable. The presentation was based on the study report 'Tillväxten inför verkligheten' (growth before reality). The study reviewed over 200 news articles and documents and investigated how we use the growth term and what type of growth we mean. This was partly an attempt to clarify why, even though many of us see an apparent conflict between growth and environmental sustainability, many people still argue that we need to pursue economic growth.

The current state of green growth

Furthermore, looking onward, many strategies for reaching our goal depend on carbon capture and storage technologies. These technologies yet have to be done at a grand scale. We don't know how efficiently it will work or if it is feasible at the necessary scale. Furthermore, decreasing emissions largely depend on electrification, which is currently expensive due to the energy crisis. Green growth does not seem compatible with sustainability, so why is the dominant narrative that we can reach the global climate targets with green growth, and why do so many argue for green growth? How we define and use the term growth can partly explain this. The study 'Tillväxten inför verkligheten' investigated what kind of growth people mean when using the term growth, which is not always the same, and in many cases, people do not specify what type of growth they mean when they say growth.

Illustrative example: GDP growth is primarily about quantity, not quality.

20 years ago, if you bought a mobile phone e.g. a Nokia, the price would have been around 500 € when adjusting for inflation, today the price for a smartphone will approximately be the same. This means that the smart phone does not add further to GDP growth, even though the smartphone is of better quality. Today most people own a phone some own several and this adds to the GDP. Growth is not primarily about quality but quantity.

When people use the term growth, they typically mean one of these three types of growth:

1. The standard definition is that economic growth means increased GDP over time.
2. Development and progress in more general terms.
3. Partial growth, i.e., increased turnover or production within a firm, sector, municipality, region, or the like.

In many of the articles and documents that talked about growth in a climate or environmental context, a definition for growth was not given. The study found that many who argue that we need growth do not define what type of growth they mean. Most often, when people talked about growth, the kind of growth they had in mind was GDP growth, but not always. An interesting example concerns Swedish legislation. Only in two out of 19 cases was the type of growth explained.

Arguments for and against Growth

The different arguments concerning growth in an environmental and climate context can essentially be summed up in the following ten arguments, 8 of them consider growth to be a prerequisite for sustainability, and the last two do not:

1. Without growth, we cannot afford the climate transition.
2. Without growth, no new technology to solve environmental problems.
3. We can get more from less.
4. Growth can be combined with sustainability.
5. Sweden should increase growth to export sustainability.
6. Sustainability triggers growth.
7. In rich nations, growth is primarily about more services.
8. Nations with no growth have a bad environmental performance.
9. Growth should not be prioritised before the environment.
10. Obvious relation between growth and environmental impact.

Several of these arguments can, of course, be challenged and discussed. For instance, growth in rich nations is mainly due to services. It is true that people increasingly tend to work with services, but it has little impact on our consumption and production since we rely more on imports and have streamlined the production processes. Or does it make sense that we need growth to achieve a sustainable transition, even though the growth paradigm is one of the critical causes of the crisis? Several of these arguments might also be theoretically correct but far from the actual situation. For instance, we have no evidence of decoupling happening at

a sufficient scale for growth to be sustainable. It is also true that it is possible to do more with less. However, we currently see that we do more with more; GDP grows, but so does material resource use.

What is next?

What is the colour of growth currently, and will green growth be sufficient? The crises we face are so substantial that we need a paradigm shift. We do not need incremental change but a new system for doing things.

We must consider and explore other ways of organising our society and economy. One suggestion could be a caring economy, where we still work, but rather than produce goods, we produce services such as health care and education.

We, therefore, need new alternative narratives to the green growth paradigm because, so far, the green growth paradigm has not delivered what was promised. In addition, we need to set clear limits for our use of nature instead of hoping that policies will be able to reduce our environmental impacts alone. We, therefore, need to do it the other way around and establish clear limits and then let the economy adapt to these limits. The market economy has before proved to be adjustable.

3.4 Presentation by Outi Haanperä, Sitra

Presentation of the study 'Growth-positive zero-emission pathways to 2050' The study aim was:

- Whether net-zero emissions by 2050 is possible? And how?
- Can we combine stringent climate policies with economic growth towards 2100?

The methodology used two different complementary models:

- TIAM-UCL: The bottom-up energy system model provided the exact adjustment of the power generation mix and associated investments to the economic model.
- GEM-E3: The economic model provided the economic activity, the driver for energy demand and the overall economic pathway.

The modelling was built on various assumptions (from the IPCC's shared socioeconomic pathways) that will make it easier to reach the Paris Agreement. These assumptions include the following:

- Global cooperation, rapid technology development, strong environmental policy, low population growth, declining inequality, dietary shifts, and forest protection.

If these assumptions are absent, reaching the target will be even more difficult or impossible. These assumptions also served as the foundation for the new scenarios presented in the project. One can always consider whether these assumptions are realistic. There are examples of, for instance, global cooperation, most recently, the adoption of the Global Biodiversity Framework at COP15.

What will it take to reach the 1.5 degrees target?

The study found that reaching the 1.5 °C target by 2100 is possible while maintaining an average annual growth rate of 1.7%. However, it will require unprecedented action by all countries and strong public policies to support it. Global emissions need to peak around 2020 and then very rapidly decrease afterwards. Key actions necessary to reach the target in the central scenario are carbon capture and storage technologies (CCSs) and negative emission technologies (NETs), fast coal reduction, and wide-scale electrification.

In the central scenario, global temperatures will peak around 1.88 °C and then decline and reach the 1.5 °C target by 2100. Numerous uncertainties are associated with the central scenario, including whether CCSs and NETs will become sufficiently available and cheap. Another uncertainty is whether the global temperature will decrease as expected. The scenario also depends on a rapid phase-out of coal, which we are not currently seeing. Some countries and industries are even switching back to coal due to the war in Ukraine. Lastly, it is crucial to decarbonise the electricity system by switching to renewable energy sources such as Solar PV and onshore- and offshore wind since the need for electrical generation will be seven times higher in 2100 compared to 2010. Clean electricity will be needed for transportation, heating of buildings and industry.

In the central scenario, the size of the world economy will be 4.5 times bigger at the end of the century. At the same time, the primary energy demand does not increase that much due to the expected energy efficiency of new technology, e.g., due to electrification. The average annual growth rate will decrease but still be positive at an average annual growth rate of 1.7%. The growth can be divided into technical progress, population, and investment. The role of population growth will decline over time, and then growth will primarily be driven by technological progress and investments. According to the study, the impact of decarbonisation on economic growth will only be negative if decarbonisation increases the price of energy or decrease the rate of technological progress. There are no reasons to think that since clean energies have become the cheapest type of energy and clean technologies are proliferating, and progress innovations are being made for batteries, hydrogen etc.

Several sensitivity scenarios were also conducted as part of the study. The sensitivity scenarios investigated what will happen if the coal phase-out does not happen rapidly enough or if carbon capture and storage technologies (CCSs) and negative emission technologies (NETs) are unavailable and therefore do not deliver the necessary offset emissions.

Reaching the 1.5 °C target with a slower coal phase-out is still possible, keeping roughly the same peak temperature and a final 1.5 °C temperature increase by 2100. However, it is only possible by making significantly greater use of CCSs and NETs. Without CCS and NET in any scenario, reaching the 1.5 °C target is impossible despite a rapid coal phase-out.

Key Takeaways

From the study:

1. Strict climate targets can be achieved while the global economy grows.
2. The 1.5-degree target requires unprecedented action from all countries.
3. Technology leap: Countries need to invest heavily in carbon sequestration to have a better chance of reaching the 1.5-degree target this century. Coal must be phased out rapidly. Similarly, heating, transport and industry must switch to clean electricity as much as possible.

Important to consider what was not part of the study:

1. Wider environmental issues (e.g., land use for bioenergy)
2. Circular economy and other new business models were not considered.
3. Decoupling of other environmental issues from GDP
4. Economic costs from increasing temperatures and other climate damages

Nature's carrying capacity is eroding:

- The climate and nature crises cannot be solved separately; a holistic approach is necessary.
- The key drivers of the nature crisis: changes in land use and sea use, climate change, pollution, direct exploitation of natural resources, and invasive alien species.
- Without nature, there is no economy.

Another key takeaway from this study is that any arguments for delaying decarbonisation for the sake of the economy do not have a sound foundation. We should put all our actions into figuring out how to decarbonise our society and economy. Even though this study shows it is possible, it is important to consider all the assumptions it is based on and that multiple factors have been exempt from this study. Other studies that analyse different factors, such as other environmental issues or circular economy models, are needed. Furthermore, we still ought to consider the concept of sufficiency and sufficient consumption rates.

4. PANEL DISCUSSION

Many issues were put forward by the online and onsite audience, Bjørn Bauer moderated the debate, and the four speakers weighed in with their insights and knowledge during the debate. This section provides a resume of the panel discussion.

Question 1: The Nordic decoupling study identified the possibility for absolute decoupling of GHG emissions. And how it is relatively well understood through substitutions, technological change, etc. A worry could be that climate change might be solved, but we still have issues with material use, land use, and associated biodiversity loss. Can you imagine achieving the same kind of decoupling mainly through technology, and substitution can be achieved for these other issues?

For instance, bio-economy is a controversial topic that puts pressure on land use and forestry, which might have been overlooked due to our sole focus on climate change. Do you have optimism for solving the resource use and biodiversity crises?

Or is there the risk of facing much bigger crises when we move past our climate change tunnel vision?

Key points from the panel:

- The challenge is enormous, and it gets much more complex when considering the entire ecological crisis instead of just a part of it, e.g., emissions. It is difficult to imagine this is possible without implementing ambitious and strict policies such as putting a cap on resource use and seeing how the economy reacts. Without these types of robust policies, it is improbable that it will be possible.
- The climate problem is a scale problem, and we need to minimise our emissions. When you look at it within the boundaries of the energy system, the different dimensions are quite limited. It gets much more complex if you start talking about trade-offs and consequences in other systems.
- Earlier, we discussed potential models for degrowth, but degrowth alone will be too one-sided a vision; the different issues or challenges we face will behave differently. If you look at climate from an energy provision perspective, it is mainly about technology and investments and changing how we do it, and this is relatively easy. But for the food system, the challenge might be different. Earlier, we talked about dietary shifts as a measure. It is

not always a matter of reducing the size, e.g., emission reductions, and sometimes the approach needs to be different.

- Another aspect that needs to be considered is critical raw materials. Massive investments in wind power require a lot of critical raw materials and finite resources. There is also a time perspective. Opening and making a new mine operational takes time, making it difficult to scale up the extraction of critical raw materials at the necessary speed needed to ensure the large amounts of renewable energy the transition require.
- We have previously seen rapid actions from a political site to address societal challenges, e.g., during the covid pandemic, where politicians rapidly took decisions that harmed the economy but benefitted citizens. One can hope that the same precautions and willingness to act can also be true in other areas.

Q2: The COVID pandemic escalated rapidly and was very visible; how can the current crises be made more visible and present in a political context?

Key points from the panel:

- We should acknowledge that many policymakers at an EU level understand and recognise the sense of urgency. Perhaps we should arm ourselves with some patience and wait to see how newly implemented measures affect the economy and how the solutions are deployed. One can always discuss if current actions are enough, but progress is being made. When we discuss the current crises, we should always try to address the problems and provide solutions to ensure fruitful discussions.
- To facilitate progress, it is crucial to create holistic narratives with social dimensions showing where we are going as a society. We do not have a clear vision of a good life within the planetary boundaries or what the economy will look like. Another aspect we can debate is how we measure it and what we measure.

Q3: what we decide to measure is important. What measures besides economic measures will be relevant in this context?

Key points from the panel:

- The doughnut economy is a good example, entailing all the essential dimensions where the different parameters can be measured.

Q4: How can we better envision the concrete impacts on daily life?

Key points from the panel:

- Policymakers should not define solutions to the last detail. We don't want a planned economy where everything gets decided centrally. We need to tap into the creativity of society.
- Policymakers need to create an environment that lays out the direction for our society—for instance, removing harmful subsidies or protecting new ideas that support the objectives we want to achieve. Defining how a t-shirt should be made down to the last detail is neither feasible nor effective. Instead of providing engineering solutions, policymakers should set the direction.
- It is not only growth and prosperity that generate innovation. A crisis often triggers innovation. There will still be profits in a steady state economy. A steady state economy means that the whole economy is not growing, parts of the economy will be growing, but damaging elements will experience degrowth. We should not be afraid of low growth; growth is unimportant. The problem is not that we are not producing enough but that the distribution is unequal.
- It is essential to shift revenue streams and dematerialise services. But there will still be trade, and there will still be a generation of wealth.
- We have a lot of information and tools on how to improve agriculture and forestry without negatively impacting biodiversity or having a positive impact. These approaches need to be scaled up while unhelpful or harmful practices need to be phased out, and that is the tricky part.

Q5: Can the newly adopted carbon border adjustment mechanism at the EU level enable resource taxes? Within the EU on carbon, concrete or steel etc. Or do you have other proposals for how to reduce material consumption?

Key points from the panel:

- In principle, it is very good and holds promises. We should set resource use limits and let the economy adapt within these limits.
- Any tax on materials will, at least to some extent, reduce consumption. Taxing materials is one way to approach it; another is to figure out the fair share of materials and then cap them and see how the economy will react—any measure, whether cap or tax, could reduce our materials.
- This concept has been around for several decades. The EEA has investigated how we can rethink the tax system and shift from the current model to a model that is nudging towards more sustainable patterns and trying to understand why it has not happened before. The carbon adjustment mechanism recognises the capacity of a project like the European Union to be assertive towards other partners, to ask for more and to limit what is placed on the market when it is not produced here. So that we don't undermine ourselves with a very stringent environmental policy without asking the same for other parts of the world, we can be naïve and achieve decoupling within our sovereignty by outsourcing the production elsewhere, where it will be less resource or climate efficient. We currently see that material footprints are recoupled to GDP because production is moved to other parts of the world where the efficiency is much lower. So, we basically bring in this inefficiency through trade. The carbon border adjustment mechanism is a significant breakthrough, but we still must see what it delivers.

Q6: Do you think that it can be further developed to account for outsourced biodiversity impacts and not just carbon?

Key points from the panel:

- Then the difficulty will be methodological; how do we link the science to put numbers into that specific fee? However, the fact that the carbon border adjustment mechanism is happening will lead to further development, and the potential is enormous.

Q7: Could you speak more to the relationship between population growth and economic growth in the context of limiting growth for sustainability?

Key points from the panel:

- First, it is important to acknowledge that this is a sensitive topic, and when the population grows, it impacts our resource use. But our increasing living standards and how we are consuming have a much more significant effect than population growth.
- Historically there have been several disastrous attempts to limit population growth. Any attempts to impact population growth need to take a human rights-based approach; for instance, giving women access to education and health services. It is about improving the conditions, not reducing the population.

Q8: Is decoupling made easier or more complicated because the world's population is becoming increasingly urban?

Key points from the panel:

- The evidence on this is still emerging.
- Some advocate for urbanisation from an environment and climate perspective because you can achieve efficiency gains such as for energy supplies. Other argues against urbanisation in this context since the urban population, on average, is wealthier than the rural population. If living standards increase, then material consumption often increases, an example of rebound effects.

Q9: In the rich part of the world, we must face that we might have to lower our living standard, especially if we want a fair adjustment. Since some parts of the world need to grow and keep their economies growing while the rich countries need to grow less, would a well-being measurement make sense since we might have to accept decreasing living standards in a degrowth world?

Key points from the panel:

- The economy is not growing because we measure GDP; it grows because of dynamics in our way of producing and consuming. Measuring something else will not immediately change those dynamics. By measuring something else, those dynamics will not necessarily change. But we, of course, need to lower the pressure on the planet, and that means de-growing our material production in some way. And it is essential that we are outspoken about how we do it and that it is the only fair solution for the planet. The role of other well-being or welfare measures is to show that we still can build good societies, but we need to focus on other things than GDP growth, and these measures should play a small role as indicators, but we should not rely on them.
- It might be helpful to provide tools that allow individuals to imagine what kind of life they want to lead, what makes them happy, and, in terms of sufficiency, what is enough.
- This is where it gets complicated because a consumption level in Denmark would not deliver the same level of happiness if you had the same

consumption level in the U.S. due to cultural differences in expectations, education, etc. GDP is good in that it delivers comparable numbers, the methodology can be challenged, but it is well-established. What we are discussing now is, to a large extent, unknown territory that could deliver different results in different contexts, and it is too one-sided to consider de-growth as the only solution. Any solution needs to be multifaceted.

- In the circular economy, everyone uses the circular material use rate parameter. It is the circular economy's GDP, and it is shaping the conversation. Circular economy policies are not only about recycling by looping the material resources but so much more. It is also about time, the time that materials are part of the anthropogenic stock, and the longer the time materials stay in the stock, the lower the embedded impacts. However, because we use the circular material use rate, we tend to revolve around the circularity of the loop. So, changing what we measure can shift the conversation and impact our direction.

Q10: The papers in the Nordic study 'Is economic growth compatible with a sustainable Nordic future?' identified direct, indirect, and systemic rebound effects as hugely problematic in all predictions of the impact on energy policy and climate policy. How can we tackle and counter this in a liberalised capitalist society?

Do we need to account for it in all our policies? Is it currently considered enough, and if not, what do we need to do?

Key points from the panel:

- Sometimes rebound effects are described as something that happens by accident. We did something good, and then, whoops, we see rebound effects. But if you look at efficiency, efficiency is a major growth trigger. When you make something more efficient, it brings growth, so you should not be surprised. It is not an accident; it is the purpose of efficiency. We must address this if we want efficiency to bring something other than more consumption. You can endorse efficiency for many reasons but not for environmental reasons.
- What you can do to address rebound effects is to put a cap on resource use and emissions.
- Rebound effects would be less critical in a world where all the products would be taxed based on environmental impacts.
- If we understand the system and how it behaves, we will acknowledge that rebound effects are a part of that system. We must consider how to counter

phenomena that we think should be minimised. Using the forces of the market has been a tool for policy in other contexts like the emission trading scheme. We need to investigate the toolbox and see how to counter the phenomena we are currently not addressing.

Q11: During this debate, we have talked a lot about tax reforms. Do you see this tool as central to the development we want?

Key points from the panel:

- SITRA has published a study on environmental tax reform that received much positive attention and broad support from the whole political spectrum in Finland, and it was implemented into the government program. There was a specific clause on environmental tax reform, but implementation has been relatively slow. On paper, it is excellent, but it isn't easy to implement at a greater scale.
- It is also important to acknowledge the forces of the political debate and the boundaries of the European Union project, even if social science and economists conclude this is the right direction. Taxation is a politically sensitive area, and at an EU scale, it requires unanimity; it needs to become mainstream at a national level before it becomes a European policy.
- However, other hard and ambitious directives are being adopted in the EU, such as the Eco design directive.
- Many governments in the EU are facing a situation where their population are getting older. They need to raise new revenue streams for care, and one of the most significant potentials for new taxes, according to the SITRA study, is some carbon-based consumption tax on all products.

Q12: Do you have any examples where the idea of sufficiency was successfully promoted in society? And if so, how?

Key points from the panel:

- Sufficiency is a relatively new concept, at least in the political debate. There are no current policies that address this. It is picking up as a conversation in political conversations, for instance, in France. So far, there are no specific policy decisions on this, but it is good that this narrative is being built since it helps address complex issues in a less emotional way.
- SITRA has created a lifestyle test where you can insert information about your lifestyle, such as diet and mode of transportation. Then it calculates your carbon footprint and provides you with some solutions on how you can reduce your carbon footprint. It has been very popular; people have shared their good experiences of living within the 1.5-degree target. The European Commission has requested that it be scaled up to a European level.
- The current energy crisis and resulting advice to cut energy consumption is a type of sufficiency discussion, and sufficiency by consuming less can solve the problem of an energy shortage. Still, sufficiency should be discussed more.

Q13: Can you provide some visions for what our society will look like for people, sectors, and the economy if we create the needed transition? How can we envision this future for a typical Nordic society?

- We will see change by using both old and new concept need. We will also see technological breakthroughs, efficiency gains, and a shift in the products we put on the market and how we relate to those products. During this discussion, we have not talked much about shifting from products to services, but we might see such a societal development. We may begin to relate to providers in different ways.
- Mikael Malmaeus has done a study on beyond GDP growth - where they made with four widely different scenarios. We still do not know what it will look like, we can still make choices that impact what it will look like within the limits, and we need to discuss it. It is not up to the experts to decide this; it is up to everyone to create this future.

5. NEXT STEP – RECOMMENDATIONS

This section provides recommendations (from presentations, speakers and audience) for the Nordic countries and the Nordic Council of Ministers on continuing this discussion.

Envisioning the Future

- Stimulate a debate in politics and broader society about sufficiency, what the concept entails, and what can be considered sufficiency in a Nordic context.
- Create visions of future pathways towards sustainability that allow people to imagine their life under different scenarios that support a sustainable transition in our society.
- Develop positive win-win language to use when promoting greener lifestyles.

Reconsidering the existing economic model

- Stimulate debate in politics and broader society about the relevance of and means for stepping outside the pro-growth versus de-growth frame.
- Encourage debates and discussions on the shortcomings of GDP in education, particularly in economics and business management studies in higher education.
- Stimulate debate on which mechanisms lie behind the growth imperative and how these mechanisms might be tackled without causing societal instability.
- Investigate the potential benefits of different schemes, such as reducing working hours to reduce unemployment risks from low growth and simultaneously reduce levels of material consumption.

Addressing multilateral and cross-sector challenges sufficiently

- Analyse the underlying mechanisms that previously have led to successfully handling great crises. There are numerous previous examples of how society and policymakers have addressed imminent threats rapidly at a sufficient scale, e.g., COVID-19 and the depletion of the ozone layer. How can we transfer some of the knowledge and experience to our current crises?
- Commence a study that develops measurement systems that enable monitoring of environmental pressures abroad caused by national consumption and map current best practices.
- Identify the goods and services with the most significant pressures globally. The policy should focus on these, even if these pressures don't occur domestically, and start a dialogue on how to address this best.

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