Have local municipalities in the Netherlands installed degrowth conditions and are there initiatives that align with creating a degrowth society?

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As Rockström et al. (2009) stated in their many cited article 'A safe operating space for humanity', humans already have crossed planetary boundaries. These boundaries define the safe operating space for humanity with respect to the earth system and are associated with the planet's biophysical subsystems or processes. The crossings of these boundaries have harmful and potentially even disastrous consequences for humanity. Biodiversity loss, climate change, the anthropogenic distortion of the nitrogen cycle and recently chemical pollution (Persson, 2022) and green water, the water available to plants, (Lan Wang-Erlandsson, 2022), have, from a set of nine planetary boundaries, already transgressed their boundaries. And humanity may soon be approaching the boundaries for change in land use, ocean acidification and interference with the global phosphorous cycle.

Worldwide initiatives for sustainability

Many initiatives are already taken worldwide to get back into safe planetary boundaries. The 2030 Agenda for Sustainable Development (UN, 2015) for example, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and our planet. At its core are seventeen sustainable development goals, which are an urgent call for action by all countries. Member states recognize that: "ending poverty must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth. This all while tackling climate change and working to preserve our oceans and forests".

Another international agreement that must help countries to stay within a planetary boundary is The Paris Agreement (UNFCC, 2015). This agreement is a legally binding international treaty which was adopted by 196 Parties in Paris on 12 December 2015. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach a global peak of greenhouse gas emissions as soon as possible. And then achieve a climate neutral world by mid-century.

Also, on a country level measures are taken for 'planetary action'. The Netherlands for example, have initiated a national Climate Agreement (Klimaatakkoord, 2019) which describes how to reach the Paris Agreement climate goals on a national level. And in the United States representatives introduced a resolution in the U.S. House of Representatives calling for a national biodiversity strategy (H.Res 1247, 2020). This strategy will 'serve as a blueprint for strengthening and coordinating a federal response to combat unprecedented loss of wildlife and habitats'.

And then there are business-initiatives which aim at a liveable planet for humans and other species. The World Business Council on Sustainable Development (WBCSD) for example is an organization of over two hundred leading companies. The WBCSD states that "The world faces three critical challenges: the climate emergency, nature loss and mounting inequality." In their Vision 2050 report (WBCSD, 2020) it sets a shared vision of a world in which more than 9 billion people are able to live well, within planetary boundaries, by 2050.

An initiative that brings together leaders from government, private sector, academia, and civil society is the Carbon Pricing Leadership Coalition (CPLC). The CPLC expands the evidence base for the most effective carbon pricing systems and policies so climate goals can be achieved. The CPLC is 'a voluntary partnership of 34 national and sub-national governments, over 164 businesses from a range of sectors and regions, and upwards of 85 strategic partners representing civil society organizations, NGOs, and academic institutions that agree to advance the carbon pricing agenda' (CPLC, 2021).

Recent results

Despite all these measures and initiatives, the International Energy Agency (IEA) predicts a rise in CO2-emissions in 2021. The IEA states that: "Global energy-related carbon dioxide emissions are on course to surge by 1.5 billion tonnes in 2021, the second-largest increase in history, reversing most of last year's decline caused by the Covid-19 pandemic. This would be the biggest annual rise in emissions since 2010, during the carbon-intensive recovery from the global financial crisis" (IEA, 2021).
Also the latest report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) shows that human actions threaten more species with global extinction now than ever before. It states that: "An average of around 25 percent of species in assessed animal and plant groups are threatened, suggesting that around one million species already face extinction, many within decades, unless action is taken to reduce the intensity of drivers of biodiversity loss" (IPBES, 2019).

It is not only recently that scholars warn for humanity transgressing planetary boundaries. Already in 1972, the so called Club of Rome wrote an influential report called 'The limits to growth' (Meadows et. al, 1972) which laid a relation between economic growth and negative environmental impacts. More than twelve million examples of this report are sold worldwide.

The many current initiatives for a more sustainable planet show a will of changing the world for the better, but the actual results, unfortunately, point out that we are driving in the wrong direction.

Economic system

Many scholars are questioning if the current economic system the world is operating in, is fit to stay within planetary and social boundaries. Economic growth seems to be the international norm of how to 'run the economy'. Even one of the seventeen UN sustainable development goals (SDG's) is about economic growth. SDG 8 wants to "Promote sustained, inclusive and sustainable economic growth" (UN, 2015).

The hegemonic role of neoliberal ideas about growth in today's political-economic thought and practice is discussed by many scholars. It is presumed that markets are deemed to provide the best instruments to coordinate individual knowledge, interests and purposes for the benefit of society as a whole. But in the end these ideas caused inequality, planetary destruction and less freedom. It considers citizens as mere consumers that have the ability to pick from a pre-selected number of alternatives in the marketplace (Windegger and Spash, 2021, Hickel, 2020, Hickel & Kalis 2019).

Hickel (2020, p.21) states that "Global ecological breakdown is being driven almost entirely by excess growth in high-income countries, and in particular by excess accumulation among

the very rich, while the consequences hurt the global south, and the poor, disproportionately". He refers to a chart made by the University of Leeds that demonstrates the profound challenge nations currently face. National performance on seven environmental sustainability indicators is plotted against eleven minimum social thresholds for a good life. Rich western countries have for a good part achieved minimum social tresholds, but are all transgressing biophysical boundaries (University of Leeds).

Scientists state that also science itself is too much focused on a growing Gross Domestic Product (GDP) as the best indicator for progress. Instead of striving for an ever growing GDP, we should focus on how to find a balance and put the economy back into a safe operating space (Raworth, 2017, Hickel, 2020, Bauwens 2021). Thereby we should not focus solely on the planetary boundaries as defined by Rockström (2009) but as much, or even more on the societal boundaries. Brand et al. (2021) claim that "societal boundaries are necessary for coping with the deepening ecological crisis and its devastating socioeconomic impacts – especially for those who already live under precarious conditions and whose voices are not generally heard in the halls of decision making."

So, when our present growth-focused economic and social system cannot keep us within planetary and societal boundaries, then what are the alternatives?

Green growth

Green growth argues that 'continued economic expansion (as measured by Gross Domestic Product) is or can be made congruent with our planet's ecology' (Hickel & Kallis, 2019). Green growth requires that we achieve permanent absolute decoupling of resource use and greenhouse gas emissions from GDP. The European Commission has adopted a package of measures and legislative proposals, for example, to boost green growth and help Europe make the transition towards a resource efficient and no waste economy (EU, 2020).

Technologies and innovations
A decoupling of economic growth and material and energy use might be achieved by new innovations and technologies. Examples of such new technologies are bio-energy with carbon capture and storage (BECCS), CO2 capture and utilization (CCU) and CO2 capture and storage (CCS). Many climate mitigation paths depend heavily on these techniques (IPCC 2014, Klimaatakkoord 2019).
With BECCS, energy is extracted from biomass and the caused carbon emissions are captured and stored in the soil or deeper grounds, thereby removing it from the atmosphere. There is a lot of criticism on BECCS though. Like the enormous surface of land and water that is needed, the loss of biodiversity and the competition with food production (Creutzig et. al, 2021).
The other promising technique that transports and stores already emitted CO2-emissions from industry or energy plants in the ground is CO2 capture and storage (CCS) (De Coninck & Benson 2014). Due to doubts about the safety of CCS and a difficult legal, social and political context, the success of CCS is still unsecure. De Conick & Benson (2014) state that "If the current context of CCS prevails, it is unlikely that the world can rely on CCS to do its share in climate change mitigation". Also Hickel et al. (2021) state that "Relying on negative emissions technologies is not an ecologically coherent approach to the crisis we face".
There also is the CO2 capture and utilization technique (CCU). CCU technologies capture CO2 from industrial or power plants, or directly from the air, and convert the CO2 into a product, or use the CO2 directly. Examples of products are fuels, chemicals and construction

materials. CCU appeals to policymakers and consumers as part of the circular economy, and to industry as a way to create value from waste. However, many CCU technologies are not yet market-ready. Kiane de Kleijne et. al (2022) systematically gathered data from previous life cycle assessment studies on CCU and harmonized system boundaries, functional unit, hydrogen source and electricity source for 74 CCU routes. Only 8 out of the 74 analysed CCU routes are found to be compatible with the Paris Climate Agreement by 2030. These routes use biogenic CO2, store CO2 permanently, or do both. The rest are either not able to reduce lifecycle emissions by 50%, or are not market-ready in time.

Rebound effect
When products or services are becoming more ecofriendly because they use less energy and/or materials then Robra et al. (2020) warn for the 'rebound-effect'. Efficiency improvements are often partly or totally compensated by a reallocation of saved resources and money to either more of the same consumption (e.g. using a fuel-efficient car more often), or other impactful consumptions (e.g. buying plane tickets for remote holidays with the money saved from fuel economies). It can also generate structural changes in the economy that induce higher consumption (e.g. more fuel-efficient cars reinforce a car-based transport system at the expense of greener alternatives, such as public transport and cycling).

Thus, the effectiveness of some advocated techniques and measures is still under debate. Other empirical projections though, show no evidence, even under highly optimistic conditions, that an absolute decoupling of GDP with resource use and greenhouse gases emissions at a global scale is possible (Hickel & Kallis, 2019, Parrique et al., 2019). Haberl et al. (2020) studied 835 paper publications related to final energy use, use of material resources, as well as CO2 and total GHG emissions and concluded that only 2 studies had observed absolute decoupling. Even here, emissions reductions were found to reach nowhere near the scale required to meet the objectives of the Paris Agreement.
The government spending in response to COVID-19 in 2020 supports the poverty of necessary green investments. Only 1% of the $11 trillion in stimulus money world-wide was dedicated to a green economy (IIF, 2020).

Circular economy

Also a circular economy (CE) is often mentioned as a way to keep the ecological and social consequences of economic activities within what is ecological feasible for the planet. A circular economy can be defined as "an economic system that is based on business models which replace the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity" (Kirchherr et al., 2017, pp. 224–225). A circular business model strategy proposed by Geissdoerfer et al. (2018) is about narrowing, slowing, closing, dematerializing and intensifying material loops.

Regarding the environmental impacts of a CE, the Ellen MacArthur Foundation estimates that there will be a halving of CO2 emissions due to CE until 2030, while The European Commission believes there will be a 25% reduction (Bauwens et al. 2020). In the EU in 2019 12% of all materials was recycled (Eurostat, 2020).

Parrique et al.(2019) discuss the limited potential of recycling. They state that: "Recycling rates are currently low and only slowly increasing, and recycling processes generally still

require a significant amount of energy and virgin raw materials. Most importantly, recycling is strictly limited in its ability to provide resources for an expanding material economy." In their 'Critiques of the circular economy' article from Corvellec et. al (2021) is confirmed that: "We believe that it is time for producers and the state to reclaim the idea of circularity and to create a closed, material loop limited in size and space, based on the principle of fair distribution of resources".

So for reaching a climate neutral world in 2050, a circular economy seems not to be the decisive strategy. Bauwens (2021) states that, from an environmental standpoint, it is crucial to pursue and promote circular business model strategies. But "a circular economy will likely remain a mere pipe dream as long as the growth imperative drives the economy". Then, "a post-growth economy and society would entail a deep reconsideration of the very meaning of doing business, which would have to be recentred around the values of cooperation, care, sharing, community and solidarity instead of profit making for capital accumulation."

Degrowth

Another strategy to stay within planetary boundaries is a 'degrowth strategy'. This strategy is getting more attention last years in literature and the scientific discourse. A recent article in Nature (Nature, May 2021) for example compares 1.5 Celsius of global warming degrowth scenarios with archetype scenarios of the Intergovernmental Panel on Climate Change (IPCC). In this study a simplified quantitative representation of the fuel-energy-emissions nexus was used. It found that: "the degrowth scenarios minimize many key risks for feasibility and sustainability compared to technology-driven pathways, such as the reliance on high energy-GDP decoupling, large-scale carbon dioxide removal and large-scale and high-speed renewable energy transformation" (Nature, 2021). Also Hickel et al. (2021) pledge for an urgent need for post-growth climate mitigation scenarios.

What is degrowth?
The term Degrowth is explained by scholars in different ways. Jason Hickel describes it, in his book 'Less is More' (2020, p. 29), as: 'A planned reduction of excess energy and resource use to bring the economy back into balance with the living world in a safe, just and equitable way'. Research & Degrowth (2021), an academic association around the topic of degrowth, describes degrowth as: 'Sustainable degrowth is a downscaling of production and consumption that increases human well-being and enhances ecological conditions and equity on the planet. It calls for a future where societies live within their ecological means, with open, localized economies and resources more equally distributed through new forms of democratic institutions.' And Hamkammer et al (2021) describe degrowth as an 'equitable downscaling of production and consumption that increases human wellbeing and enhances ecological conditions at the local and global level, in the short and long term'.

Parrique (2019) describes three elements a of degrowth definition that he believes must be a part of it. **Element one** is 'the environmentalist element' which is about reduction: the decrease of material and energy use. Parrique states (p. 222) that "this definition of degrowth puts the emphasis on that which should be reduced: e.g. production, material and energy consumption, economic activities, throughput, or anything else linked to environmental pressure." But then: "degrowth is only possible in a society of degrowth" (Latouche 2010 in Parrique 2019). So **the second element** of a degrowth definition is about a socially just and democratic transformation or emancipation process that must be made away from economic growth and consumerism. Parrique (p.228): "One should decolonise our imaginary, not to

return to an unreachable, previous state of freedom, but to educate our desire towards an emancipated condition outside of the constraints of growthism. This makes degrowth a countercultural movement in the sense of that it is a subculture whose values and habits are in direct opposition to what is considered mainstream." But where is this all heading to? That is described in the **third element** of a degrowth definition: the utopian part. Degrowth it is not only a reduction of biophysical throughput, but also "a political project that seeks more democracy, equality and justice". Parrique (2019) on page 230 describes more definitions from other scholars: "Its (degrowth) goal is to create an economy that provides enough, for everyone, forever. Or, A society of sharing, frugality and conviviality, or A good life for all within planetary boundaries."

Which conditions are needed to make degrowth possible?

Which conditions are needed to shift the current focus from GDP growth to the fulfilment of human needs and well-being within planetary boundaries? To start with, such a transformation is not only about economics. Degrowth societies would be "societies that are organised according to fundamentally different cultural, social, economic, political and technological principles as the ones that are dominant at the moment, organised around the growth ideology" (Büchs & Koch, 2019). Also Hamkammer et al. (2021) argue that a transition towards a degrowth society and a sustainable future would require cultural and political changes. Concrete policies such as pollution caps, green taxes, worktime reduction, or a basic and a maximum income could progressively lead to a prosperous degrowth. But degrowth "does not only challenge the material and ideological foundations of growth economies, but also questions the cultural infrastructure that justifies it" Brand et al. (2021).

Brand et al. (2021) also call on the scientific community to form "a dialogue between natural sciences and social sciences and the humanities, between so called 'modern' forms of knowledge and 'traditional' ones, but also between scientific and "non-canonized" knowledge, toward understanding and defining the conditions and thresholds in complex social-ecological system dynamics, as in our call for societal boundaries".

Now how can these basic conditions be transformed into more concrete policies? Kallis (2015) made some policy-proposals for a degrowth society. The context to which these proposals refer is specific; but with certain amendments and adaptations they are also applicable elsewhere. These are his ten policy proposals:

1. **A citizen debt reduction**. Restructure and eliminate part of the debt of people which they obtained by considering that future growth would get rid of that debt.
2. **Work-sharing**. Reduce the working week to at least 32 hours and develop programmes that support firms and organisations that want to facilitate job-sharing.
3. **Basic and maximum income**. Design this policy in conjunction with other tax and work reforms so that they increase the income of the poorer 50% of the population while decreasing that of the top 10%, to finance the change.
4. **Green tax reform**. Implement an accounting system to transform, over time, the tax system, from one based principally on work to one based on the use of energy and resources.
5. **Support the alternative, solidarity society**. Support, with subsidies, tax exemptions and legislation, a not-for-profit co-operative economic sector that include alternative food networks, cooperatives and networks for basic health care, co-operatives covering shared housing, credit, teaching, and artists and other workers.

6. **Stop subsidising and investing on activities that are highly polluting.** Reduce to zero the public investment and subsidy for private transport infrastructure, military technology, fossil fuels or mining projects. Invest in the improvement of public rural and urban space, public transport and cycle hire schemes. Support the development of small scale decentralised renewable energy under local and democratic control.
7. **Optimise the use of buildings.** Stop the construction of new houses, rehabilitating the existing housing stock and facilitating the full occupation of houses.
8. **Reduce advertising**. Establish very restrictive criteria for allowing advertising in public spaces. Prioritise the provision of information and reduce greatly any commercial use.
9. **Establish environmental limits**. Establish absolute and diminishing caps on the total amount of CO2 that a country can emit and the total quality of material resources that it uses, including emissions and materials embedded in imported products, often from the global South.
10. **Abolish the use of GDP as indicator of economic progress**. If GDP is a misleading indicator, we should stop using it and look for other indicators of prosperity. Monetary and fiscal national accounts statistics can be collected and used but economic policy shouldn't be expressed in terms of GDP objectives.

Cosme et al. (2017) found in their literature study that proposals for a degrowth society have largely a top-down structure with a national focus. In the 54 peer reviewed articles that were analysed they also found that social fairness is at least as important in the degrowth proposals as environmental sustainability. Three groups were created to categorize the found degrowth proposals:

1. The proposals that are most commonly put forward to **reduce environmental impact** are (from most- to least cited): reduce material consumption; reduce energy consumption; encourage or create incentives for local production and consumption; and promote changes in consumption pattern.
2. The proposals that are most commonly put forward to **achieve social fairness** are (from most- to least-cited): promote community currencies, non-monetary exchange systems, and alternative credit institutions; promote a fair distribution of resources through redistributive policies of income and capital assets; promote work-sharing; create a citizen's income; create salary caps; encourage the reform of corporation charters and new ownership patterns; improve social security and invest in public goods; and implement redistributive taxation schemes.
3. The most commonly put forward proposals to **achieve the transition from a materialistic to a convivial and participatory society** are (from most- to least-cited): promote downshifted lifestyles; reduce working hours; and explore the value of unpaid and informal activity.

Hickel et al (2021) state that ecologically destructive and socially less necessary forms of production and consumption have to scale down. Additional, and sometimes consistent with the policy proposals mentioned above, they also suggest ideas for policymakers to set the conditions for a degrowth society. Some ideas are already being explored on a small scale in real life, other ideas, rights or laws need a strong political and societal back-up so they can be implemented:

Ideas for the transportation sector: a shift from private cars to public and non-motorized transportation; reduce air travel in a fair and just way, for example by removing subsidies for

aviation, equalizing or increasing taxes on aviation fuels compared with those of land transport, and introducing frequent flyer levies or a rationing framework.

Ideas for the industrial sector: extending product lifespans through warranty mandates, rights to repair, and regulations against planned obsolescence; incentivizing and institutionalizing second-hand product purchases over new; regionalizing production and consumption where possible to reduce freight; limiting advertising; and shifting taxes from labour to resources.

Ideas for the agricultural sector: minimize food waste; reduce industrial production of ruminant meat and dairy, while shifting to healthier plant-based diets; and prioritize agroecological methods to sequester carbon and restore biodiversity.

Ideas for the buildings sector: promote maintenance and retrofits over new construction; improve efficiency and reduce energy use of existing buildings; reduce the average size of new dwellings; introduce progressive property taxes; and mandate net zero energy certifications.

Ideas for cities: urban planning to enable 15-minute urban centres requiring little motorized travel and sufficiently compact to encourage reasonable-sized dwellings; and reallocation of some public urban space from parking structures and roads to infrastructure for non-motorized mobility.

New laws have to be made to make some of these ideas possible, like warranty mandates, rights to repair, and regulations against planned obsolescence. And therefore creativity, imagination and political will is needed. But also, and even before that, knowledge is needed by the public and politicians about the meaning and necessity of degrowth scenarios. And then politicians have to feel a sense of urgency by their voters to bring up these new laws. That sense of urgency can already be made out of the number of sixty-four percent of people worldwide that believe climate change is a global emergency, despite the ongoing COVID-19 pandemic (UNDP, 2021). But still then, measures that have to be taken to combat the climate crisis can meet strong civil protest. Like the yellow vests movement in France that was very outspoken against the rise of petrol and diesel prices as a concrete climate action by the French government (The Guardian, 2018).

Research question, respondents & method

Introduction

Both the ten policy proposals from Kallis (2015) as the proposals from Hickel (2021) need to be more empirically tested, as the writers suggest. The context in which Kallis formulated his ten policy proposals was too specific, because focused on the Spanish society and submitted to progressive political parties. Also Hickel asks for more research at new models or frameworks "so that post-growth scenarios can be successfully modelled. Such alternative frameworks would illuminate new possibilities and help broaden the range of policy options for public debate." And finally Hankammer et al. (2021) believe that a subsequent evaluation of their principles by degrowth researchers could provide a theoretical adjustment and validation. Hankammer proposed a set of eleven principles that could serve as guidelines for organizations approaching degrowth. These eleven principles were inductively found in degrowth literature. Hankammer et al. state that "a fruitful direction to further research might be to analyse the links between organizations approaching degrowth and relevant institutions

(regulations, standards, social norms) and other actors that can foster the transition towards a degrowth society (such as governments, NGOs, social movements or individuals)".

Degrowth proposals and ideas are often initiated locally or do have local implications. Think about encouraging or creating incentives for alternative local production and consumption (Cosme et al. 2017, Hickel, 2021), establishing restrictive criteria for allowing advertising in public spaces (Kallis, 2015, Hickel, 2021) or the promotion of public transport and car-sharing in cities (Krähmer, 2019, Cosme et al. 2017). Steurer (2010) developed an overview of what kinds of policies that foster sustainability can be distinguished. He describes five types of policy instruments (legal, economic, informational, partnering, and hybrid) and four thematic fields of action (raise awareness, improve transparency, foster socially responsible investment, and lead by example). Some of these policies can be executed on a national level and some on a local level and many times on both levels.

Local community enterprises can play crucial roles in fostering sustainable innovation diffusion by providing local knowledge and societal support for sustainability transitions (Bauwens et al. 2022). Typical examples of community enterprises (CE's) include community-based sustainable energy projects, carsharing communities, and community-supported sustainable agriculture initiatives. Bauwens et. al (2022) state that CEs "may play a pivotal role in market formation for sustainable products and services which are not provided by private companies or the public sector. Evidence also suggests that resistance against sustainability transitions is lower if local communities are meaningfully involved in the decision-making of projects and receive a fair share of their benefits. And because CEs are anchored in local contexts, they can be more effective in using accumulated local knowledge to devise rules that are better adapted to local needs and address local problems than enterprises with a one-size-fits-all approach."

We already described which conditions and which measures can be taken to create a degrowth society. We are interested to find out if local governments in the Netherlands are already working on such a degrowth society. Which conditions for a degrowth society do local leaders believe are necessary? And can these necessary conditions be made by local authorities, or do they need a national government? Do we see activities already taken place that fit into a degrowth society? Can we make an inventory of what kind of degrowth measures are already realised in practise? In which themes can they be categorized in (food, energy, caring, sharing etc.)? In this way we can test if the already described degrowth conditions and measures in literature are being practised in real life.

Research question
Have local municipalities in the Netherlands installed degrowth conditions and are there initiatives that align with creating a degrowth society?

Method and respondents
To find out if and how degrowth conditions and activities are already taken place in Dutch municipalities, we asked 10 local leaders (aldermen and mayors) what they believe that are effective conditions to create a degrowth society. We also asked them which activities, from which they believe that fit in a degrowth society, are already taken place in their municipality. By introducing them the term degrowth, we used Jason Hickels' (2020) citation:

Degrowth is: 'A planned reduction of excess energy and resource use to bring the economy back into balance with the living world in a safe, just and equitable way'.

Besides the interviews we also investigated webpages of the concerning municipalities which are about their sustainability-policies and activities. By doing so, we were able to include even more possible examples of measures that can lead to a degrowth society.

Inventory of results

For the inventory of the conditions that local leaders think are necessary for creating a degrowth society, we used the three dimensions that Parrique describes on page 490 in his work 'The political economy of degrowth' (2019). By describing policy instruments, he differentiates between *legislative tools* (e.g. fine, ban, quotas, quality standard, licence, access restrictions) *economic tools* (e.g. subsidies, taxes, tariffs, grants, loans, fees, inkind transfers, price control), and *cultural tools* (e.g. information, awareness raising, education, experiments, routines, nudges). We used that differentiation too as the three dimensions in which we can place the conditions for a degrowth society mentioned by local leaders.

For the inventory of all already taken measures that are mentioned by local leaders and found on the municipality website, we used the categorization that Parrique uses in his same work (2019). He composed, by using other lists of already published degrowth measures, a set of 19 themes, 60 goals, 43 objectives and 140 instruments (appendix 5, page 844). Themes that are used are for example: Energy, Food, Transport and Waste. In the theme Energy there are goals like Reduce energy consumption and More renewable energy. Instruments then are, for example, Promote eco efficiency or Subsidies for changing heat systems.

Results

Conditions

Local leaders gave us a total of 46 conditions from which they believe they help creating a degrowth society. 15 of these conditions fit in an economic dimension, 11 are legislative and 20 cultural.

Most named economic condition (4 times) is: Integrate all social and environmental costs involved with the production of products and services into the market price.

Second most named economic conditions (both 2 times) are: 1. make it easier for companies to let them lease their products so they stay owner of it which makes the quality of these products better and 2. Higher taxes on the use of plastic packaging materials so circular alternatives become more attractive.

Most named legislative conditions (both 3 times) are: 1. More government rules for less and more sustainable packaging and 2. more rules and enforcement of rules that foster a sustainable society.

Most named cultural condition (5 times) is: Create awareness about the ecological impact of products in their entire value chain and lifecycle.

Second most named cultural conditions are (both 3 times): 1. Develop awareness campaigns focused on target groups about the environmental impact of their purchasing habits and 2. let the media applaud for lifestyles that are about spirituality, culture, experience and relationship instead of being about a material status.

All 46 conditions can be fulfilled in a more top-down, nationally driven context. Think about installing taxes or create binding rules for a more sustainable packaging. 27 of all conditions (59%) can also be initiated by local governments. Like a communication campaign for a more sustainable living, or local subsidies for businesses to reduce their fossil energy use. This confirms the findings of Cosme et al. (2017) that proposals for a degrowth society have largely a top-down structure with a national focus.

-all of the 15 economic conditions can be fulfilled nationally, 5 of them also locally.
-all of the 11 legislative conditions can be fulfilled nationally, 2 of them also locally.
-all of the 20 cultural conditions can be fulfilled nationally, and all 20 of them also locally.

Cosme et al. (2017) found that of all proposed degrowth conditions social fairness was at least as important as environmental sustainability. We did not find that in our research. Of the 46 named proposals, we found 33 proposals for environmental sustainability, 6 for social fairness and 7 about achieving the transition from a materialistic to a convivial and participatory society.

Measures
Besides the 46 collected conditions we also collected 201 already taken measures that help a local society grow towards a degrowth society. We shall name below all the themes that had at least 8 named measures.

Most named measures, a total of 54, fit in the Energy theme. 27 of them are about reducing the use of fossil energy, for example by local insulation campaigns, free energy-saving scans or energy-cooperatives informing locals about how to reduce fossil energy use, and 27 about using more renewable energy by, for example installing solar roofs or windmills with the help of local energy-cooperatives (mentioned 4 times), subsidizing solar panels or providing second hand solar panels to low-income people.

Second most named measures, a total of 36, fit in the Transportation theme. Examples are stimulating electric car sharing initiatives (mentioned 6 times), facilitating car sharing apps (mentioned 4 times), make space for bicycles in city traffic (mentioned 4 times) and install more charging stations for electric cars (mentioned 4 times).

Third most named measures, a total of 32, fit in the Waste theme. Think about the presence of repair café's (mentioned 8 times), thrift shops (mentioned 7 times), or the stimulation, by service and financially, of segregated waste collection from households (mentioned 6 times).

Fourth most named measures, a total of 19, fit in the Environment theme, most of them are about preserving biodiversity and species. For example by planting trees, realise green rooftops or mow public green areas in such a way that it helps insects to survive.

Fifth most named measures, a total of 12 times, fit in the theme Education & Culture (like organizing excursions, lectures, energy-cafés or installing a knowledge institute).

Sixth most named measures, a total of both 11 times, fit in the theme Sustainable production (like facilitating local businesses with network, finance and information to operate more sustainably).

Seventh most named measures, a total of 9 times, fit in the theme Food (like stimulating sustainable agriculture, facilitating a seaweed farm and reduce meat consumption).

Eighth most named measures, a total of 8 times, fit in the theme Housing and regional planning (like a call for tenders for new circular houses, cheap loans for inhabitants for buying solar panels or facilitating a collective purchase of insulation materials for making houses of inhabitants more energy-efficient).

Also measures were found in the themes Public services and facilities (5 times), Science and technology (4 times), Governance (3 times), Indicators (2 times), Money, banking & finance (2 times), Work, (2 times), and Consumption (1 time).

In 4 of the 19 themes (geopolitics, inequality, international trade and population) no measures were named.

That no measures were named in the theme Inequality by our respondents does not corresponds with the named policy proposals that Kallis (2015) mentions. He starts his list, gathered by respondents from progressive political parties in Spain, with 1. Citizen debt reduction, then 2. Work-sharing and at 3. Basic and maximum income. These initiatives that can make a society more equal were not mentioned in our research in the Netherlands. We did though see many overlap with our found policy measures and the ideas that Hickel et al. (2021) describe in their article.

As described before, Bauwens et al. (2022) state that local community enterprises can play crucial roles in fostering sustainable innovation. We did not get answers from the local leaders about empowering or supporting such enterprises as a condition for creating a degrowth society. When we look at the taken measures though, there are already lots of organized local communities working on sustainable energy, environmental or circular projects. Empowering these already existing networks could help municipalities to become also more futureproof on other themes.

Discussion

The question now is if the mentioned conditions and measures taken by the investigated municipalities do lead to a degrowth society?

We use Hickel's citation of Degrowth*: 'A planned reduction of excess energy and resource use to bring the economy back into balance with the living world in a safe, just and equitable way'* to answer that question. We split the citation into three parts. Following Parrique's (2019) distinction, as described before in this article, we use:

1. the environmentalist part, which is about reduction,

2. the social part, that is about how this transformation must be made and

3. the utopian part: where this all must head to.

The environmentalist part
The first environmentalist part of Hickel's citation is about 'A planned reduction of excess energy and resource use'.

The investigated municipalities all work on the reduction of energy use in different kinds of manners. For example, they stimulate better insulation for households, more solar panels for businesses and mobility apps that can reduce the use of fossil fuelled cars. Also the reduction of resource use is encouraged by reducing waste, repair what is broken and re-use objects by creating second hand markets.

So, yes municipalities actively stimulate the reduction of energy and resource use, but is it planned in such a way that it aims to reduce all the use that is 'excess'? To know what is excess use, you have to know in which ecological and social boundaries you can operate as a municipality. Countries in the EU for example strive for a reduction of greenhouse gas emissions by 55% compared to emissions in 1990. You can follow these numbers as a municipality too in line with national and EU reduction targets.
And yes, we saw some goals projected in the future which can lead to yearly set boundaries. There are goals formulated about becoming a climate neutral city in the year 2040 for instance, becoming a natural gas free community in the year 2040 or a 100% circular city in the year 2050. But, we saw no yearly ecological budgets, reduction obligations or boundaries to make these goals more tangible and steerable.

We saw some goals about becoming a climate neutral municipality in 2040 or 2050. But, climate change is just one of the nine planetary boundaries that Rockström et al. (2009) describe. We have not seen tangible goals about, for instance, reducing the loss of biodiversity, the anthropogenic distortion of the nitrogen cycle or chemical pollution. And it is worth to do so, because these goals are all interconnected and sometimes stimulating one goal, automatically helps the other. For example: reducing the use of fossil fuels leads to less global warming ánd to less air pollution ánd less ocean acidification. Important research by Creutzig et al. (2021) discovered that many strategies that lead to less energy and material use, also have a positive impact on well-being. An example in the food sector: shifting to plant-based diets is a main option in the developed world, it delivers potentially 40% or even higher reduction in greenhouse gas emissions while reducing global mortality by 6–10%, equalling health cobenefits of 0.4–13% of global GDP. Another example in the transportation sector: by shifting transport from fossil fuel cars to electric cars or even better a bicycle, reduces the emissions of greenhouse gases but also particles of soot and other air pollutants.

Besides the planetary, there are the social boundaries and their interdependencies with each other and with the environmental boundaries. Sometimes aiming for environmental improvement can lead to a conflict with societal progress. For example: rapid growth in the use of biofuels, in order to reduce carbon emissions from fossil fuels, leads to significant higher food prices which hurt millions of people already living in poverty. By setting goals for all environmental boundaries, it makes it possible to see their interdependencies and also the social implications. An idea of what kind of social boundaries exist to take care of, are mentioned in Raworth's Donut Economics Model (Raworth, 2017). The economist Kate Raworth pledges for an economy that should be designed to thrive, not to grow. She describes a route to a fair and ecologically responsible world in her 'Donut Economy approach'. The environmental outside of the Donut consists of nine planetary boundaries, as set out by Rockström et al (2009), beyond which lie unacceptable environmental degradation and potential tipping points in earth systems. In the heart of the donut are twelve dimensions of

the social foundation, which are derived from internationally agreed minimum social standards. Between social and planetary boundaries lies an environmentally safe and socially just space (the donut) in which humanity can thrive. Housing, energy and food are social boundaries and so are decent education and work. Also gender equality, social equity and having a political voice are mentioned for instance. And this counts not just for one's own country, Raworth advices us to look at the donut on a global scale. Because in global markets, actions in one region have consequences in other regions as well. For instance, buying scarce metals for a clean energy transition in the global North, can mean poor labour conditions and environmental damage in the global South where these metals are mined.

Another point of discussion is about the environmental and societal externalization. With that we mean that a city can achieve progress within her own geographical frontiers, but more and more consumer products are made in other countries. Out there, production is still causing CO2-emissions and companies can treat their employees less friendly then a fabric owner in a city in, for example, the Netherlands does. So then a Dutch city might have created less greenhouse gas emissions per capita, but when products or services are now being made elsewhere then worldwide emissions per capita still grow. This is also pointed out by Krähmer (2019) who gave critique of the sustainable urban development in Copenhagen. This city is considered a role model of sustainability, but looking at what this is based on, then only emissions produced locally are counted. Meanwhile, emissions produced outside of the city for products and services consumed locally remain high. So being active on sustainability does not mean that a municipality is actively following degrowth conditions, it points out that it is looking for ways to stay within ecological and social boundaries. Hankammer et al (2021) applied degrowth principles to four commercial organizations certified as being very sustainable (B Corp certified). They held interviews with corporate representatives and used additional company data. Overall, their findings show that "While all four organizations can be considered to approach green growth, we showed that none of them aims to fully cover the principles of organizations approaching degrowth."

The social part

The second element of a degrowth definition is about a socially just and democratic transformation or emancipation process that must be made away from economic growth and consumerism. In Hickel's definition of degrowth we talk about the *safe, just and equitable way* (that brings the economy back into balance with the living world).

The part *Safe* can be seen in two ways here. We must be swift te get back into our planetary boundaries to keep the world safe from ecological and resulting economical and humanitarian disasters. As the latest IPCC climate change report states it "the window of opportunity for action is "brief and rapidly closing" (IPCC, 2022).
Looking at the municipalities we interviewed, we did not notice an overall hurry or strategic focus in the statements made and found. Only one of all the municipalities interviewed declared a state of climate emergency. All have set climate goals for the years 2040 or 2050, but what to do when in 2025 emissions are still going up instead of down? We have not find any emergency interferences that can be taken. But this might be well necessary: the latest greenhouse gas emissions assessment report for the Netherlands shows that emissions are 2,1% up in 2021 compared with 2020 (CBS, 2022).

Then the transition towards a society within planetary boundaries has to be safe too. Everyone must be supported to be part of it and not only within one's own national frontiers. Just like

climate change affects all of us over the world, everyone can do it's share to prevent global warming to increase even further. Getting back in all planetary boundaries asks for an enormous effort of us all to change habits and behaviour. Such a cultural change can lead to misunderstanding and protest. So explaining why things need to be changed and then change in such a way that everyone can join and do it's fair share will keep this process of transformation safe. That is also what the interviewees of our research advocate for: "Create awareness by the public about the ecological impact of products in their entire value chain and lifecycle. Develop campaigns focused on target groups about the environmental impact of their purchasing habits and let the media applaud for lifestyles that are about spirituality, culture, experience and relationship instead of being about a material status."

And then the element about *Just and equitable.* This also can be put in two different perspectives: Internationally and from a national perspective.
First Internationally. Hickel (2021) states that "The vast majority of ecological breakdown is being driven by excess consumption in the global North, and yet has consequences that disproportionately damage the South." We can see this for example in terms of emissions: The North is responsible for 92% of global CO2 emissions in excess of the safe planetary boundary, and yet the South suffers the vast majority of climate change related damages (in terms of both monetary costs as well as loss of life). One of the ways to improve the position of the global south, argues Hickel, is not more exploitation, but more economic justice: the South should receive fair prices for the labour and resources they render to the global economy. It is not just or equitable that high-income nations maintain high levels of income and consumption through an ongoing process of net appropriation (of land, labour, resources and energy) from the South, through unequal exchange.
Looking at the municipalities we interviewed, we did not notice any overall strategy to handle this injustice. Yes, some of them buy coffee, tea and other products with a Fair Trade label. But looking at everything a municipality can buy: new buildings, vehicles, roads, ICT-equipment etc., then there is much more to achieve then just tea and coffee.
What we did find was that local leaders do see it as important to integrate all social and environmental costs involved with the production of products and services into the market price. When this would be executed, then many parts of inequality can be solved. Also Lous, Schenderling and Olthaar (2022) advocate for a globally orchestrated carbon pricing system, with carbon taxes of at least 2.2% of GDP. In addition they state that: "Similar to pricing greenhouse gas emissions, resource extraction and other forms of exploitation, such as land and water use, and cheap labor, should be priced in order to provide incentives to invest in reduction of these drivers of greenhouse gas emissions and loss of biodiversity."

Then nationally: Following research from the Stockholm Environment Institute (Oxfam, 2020), the richest 10 percent accounts for over half (52 percent) of the emissions added to the atmosphere between 1990 and 2015. The richest one percent was responsible for 15 percent of emissions during this time, which is more than twice that of the poorest half of humanity (7 percent). The report argues that "While the COVID-19 pandemic triggered a chaotic and often inequitable contraction in consumption around the world, it has also shown that once unthinkable changes to the lifestyles of the richest in society can be adopted in the interests of us all. Public policies – from taxing luxury carbon like SUVs, frequent business class flights and private jets, to expanding digital and public transport infrastructure – can cut emissions, reduce inequality and boost public health. But to do so before the carbon budget for 1.5C is totally depleted, they must happen now."
Reducing inequality is a powerful way to reduce ecological pressure. It cuts high-impact luxury consumption by the rich and reduces competitive consumption across the rest of

society. But it also removes pressures for unnecessary growth. Besides that, extreme wealth has a corrosive effect on society, our political system and the living world (Hickel, 2020). Ways of reducing economic inequality are for example an increase of national taxes for the highest incomes and higher taxes on interest, rents and dividends. And, from Australia and the USA to South-Africa and Slovenia, people are demanding for a basic income to make sure that anyone has enough income to provide for basic needs as food, housing and education (BIEN, 2022).
Although the income measures mentioned above have equalizing effects, Raworth (2017, p.170) states that is also important to level sources of wealth. The possession of things like land, money or ideas also creates inequality because it lets other (working) people pay rents for things that make the owner even more wealthier. A wealth (or solidarity-) tax is a way to solve this problem. A tax of just 1,5 percent for the more than 2.000 billionaires we have in the world, generates 74 billion dollar. This alone would be enough to let all children in low income countries go to school and be provided with the most necessary health care (Seery, 2014).
In our research we did not got or find any condition or measure that goes into inequality as described before.

The utopian part

The third element of a degrowth definition is about the utopian part. Where is a planned reduction of excess energy and resource use in a safe, just and equitable way heading to? Degrowth is also a political project that seeks more democracy, equality and justice says Parrique (2019). Using Hickel's definition of degrowth the utopian part is then about '*bringing the economy back into balance with the living world'.*

All the interviewees showed support for this goal or vision. Important question is if this support leads to the necessary measures that makes such a living world possible? Are the proposed conditions and already taken measures radical and timely enough to prevent us from ecological and social breakdown? And is degrowth possible in current political, cultural and economic structures?

Degrowth questions the capitalistic system's reliance on economic growth to maintain economic and social stability. It criticises overconsumption and rejects the belief that it is possible to decouple the processes of more production and environmental degradation. Instead degrowth proposes a radical reduction in production and consumption, especially in rich nations, in order to mitigate the future impacts of natural resource depletion and climate change on the global economy and social well-being (Van der Woude, 2021). Degrowth is necessary and might be even forced upon us as a result of reaching the planet's physical and social limits. Without a well-considered economic planning, this could have disastrous ecological, economic and social impacts (Kallis, 2017).
It seems currently not appropriate to advocate for a decrease of production and consumption in a local community. The idea that decrease would be good for people and planet is so contrary to what we are used to do and believe, that it might keep the local leaders we interviewed from mentioning it.

For bringing the economy back into balance with the living world, a focus on Gross Domestic Product (GDP) as an indicator of how a society thrives, is not suitable, as discussed before in this article. GDP focuses too much on economic growth and neglects social and

environmental consequences. Therefore local communities could use other benchmarks like the Genuine Progress Indicator (GPI) or Index of Sustainable Economic Welfare (ISEW). Two of the municipalities in our research are working with alternative indicators. One tries to steer local policies with a sustainability-dashboard with variables like circular economy, energy transition and sustainable transportation. The other is using the Donut Model of Raworth (2017) as a basic condition for local policies.

To shape a story of where degrowth might head to, it is worthwile to look across borders and cultures. Van der Woude (2021) adresses the importance of including and uniting pluriversal and culturally diverse ideas in the process of post-capitalistic worldbuilding. Through embracing non-Western and indigenous perspectives in the creation of new political-economic systems, nations can begin to fight against the historical and ongoing processes of colonization, imperialism and globalization which have been maintained by neoliberal capitalism. Also Singh (2019) proposes to start dialogues and alliances between the Environmental Justice movement in the global South and the Degrowth movement in the global North to reconceptualize work and care in a post-growth world.

Conclusion

Have local municipalities in the Netherlands installed degrowth conditions and are there initiatives that align with creating a degrowth society? In this article we have mentioned the conditions and measures from which local leaders believe they will keep the local economy within its ecological and social boundaries. We discovered many initiatives that contribute to a greener and more just society. Nevertheless, as we showed in the discussion chapter above, its elaboration in practice is completely insufficient. It does not contribute enough to stay within social and ecological limits. Of Course, it remains highly valuable to take initiatives that contribute to a reduced energy and material consumption, but as long as it is not implemented in a well-planned, safe and equitable way, we will continue to pursue green growth.

By formulating recommendations for policymakers below, we want to end this research on a practical manner. This also makes it clear where more efforts are needed to be able to flourish as a municipality within its ecological and social boundaries.

Tips for policy makers:

-Make goals more tangible, set yearly steerable goals

-Do not just only set goals related to climate change, but use all planetary boundaries

-Elaborate on what kind of societal implications the reaching of planetary progress has

-Elaborate on what kind of planetary implications the reaching of societal progress has

-Elaborate on what the global North can see as sustainable actions actually mean for the Global south

-What is found to be important in the Global North for achieving degrowth, might be different in another culture and/or country

-What kind of emergency interferences can a city reserve when polluting emissions, despite taken policy measures, are still going up? Already make scenarios with concrete actions when

this might be the case.

-Embrace or initiate organizations that can help municipalities to buy more Fair Trade products and services then just coffee and tea. Find out where most of the local government money is spend on and how you can have the most Fair Trade impact there.

-Elaborate on what kind of implications climate and/or other environmental policies mean for global and national inequality.

-Don't use local growth of GDP as an indicator, but use alternative indicators focused on social and environmental wellbeing.

-Look for ideas, when conceptualizing a degrowth society, across national borders and cultures.

-Empower and include local circular networks and energy cooperatives so they become active on other degrowth themes too.

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