

W3 Ecological Economics, Degrowth and Green New Deal



This document sums up the results of the groupworks in workshop 3. Our idea was to create different policy proposals for a sustainable, zero carbon future of the European Union. Three subgroups have developed policy recommendations for the topics [global ecological justice](#) (group 1), [public services and labour](#) (group 2) and the [financial sector](#) (group 3).

1 - Global ecological justice

The following policy recommendations have been developed within the workshop on Ecological economics, degrowth and the Green New Deal during the Summer Academy for Pluralist Economics 2020. Though the examples refer to the European Union as a region in the global north and mostly to Latin American countries of the global south, the recommendations may as well provide guidance for economic relationships of other countries or regions of the global north and south. **Where applicable, relevant degrowth principles are indicated in cursive and brackets.**

1.1 Status quo: The European Union on its way to carbon neutrality

Why does the EU need to speed up the green transition? The European Union is way behind its ecological and climate responsibility. The urgency of a substantial transition can be illustrated by the dramatic overshoot date of the EU: This year's Earth Overshoot Day is August 22 (2019: July 29¹). It marks the date when humanity's demand for ecological resources and services in a given year exceeds what earth can regenerate in that year. If EU consumption was the global norm, Earth Overshoot Day would have already been May 10 in 2019.² **The aim should be to limit the EU's ecological footprint to their fair share of resources (material output, waste, etc.) and greenhouse gas emissions.**

[Sustainability] [Cooperation] [Resource Sovereignty] According to the IPCC, carbon-neutrality by the second half of this century is essential to achieve at least the two degree threshold of global warming³. However, as the ecological footprint highlights,

¹ Overshoot Day, *Past Earth Overshoot Day* (no date). <https://www.overshootday.org/newsroom/past-earth-overshoot-days/>

² WWF, *EU Overshoot Day* (2019). <https://www.wwf.eu/?uNewsID=346835>

³ IPCC (2018) *Summary for Policymakers*. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P. R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R.

the EU and further regions of the global north have a much bigger responsibility for the ecological crisis the world is about to face. If one takes an equity approach to calculating national carbon budget for countries (Greenhouse Development Rights), the EU's carbon budget is already negative⁴ due to their historical high emissions. Therefore, in the light of global justice, the EU has to achieve carbon neutrality by 2030 already to give low-consumption countries in the global south more flexibility to transition.

[Sustainability] [Socially useful production] According to the United Nations, the levels of energy consumption and pollution have reached worrying figures. In the case of energy, it represents about 80 percent of world resource consumption. The situation does not improve when carbon emissions are analyzed, as energy consumption represents approximately 75 percent of global emissions. It is necessary that municipalities carry out projects to make their cities more sustainable and less vulnerable. One way to finance them can be found in the issuance of municipal green bonds. Green bonds and finance for degrowth are further discussed in Section 3.

1.2 Lessons from other countries - Looking up to the Global South

[Cooperation] [Sustainability] [Circularity] The Human Development Index (HDI) considers life expectancy, education and gross national income per capita, but it ignores environmental degradation caused by economic growth. In ecological terms, the **Sustainable Development Index** measures each country's CO₂ emissions in relation to parameters linked to human development. Latin America, in general, was found to be the region with the highest levels of sustainability according to the sustainable development index. One extraordinary case is Cuba which is at the top of developed countries in the world in terms of sustainable development. Based on the data from 2015, Cuba is at the top with a score of (0.85), while Costa Rica is the 2nd, (0.83) Panama the 5th (0.80) and Peru the 10th (0.78). The list includes 164 countries around the world and the data is only available for 2015.

Figure 1: Sustainable development index Map (2015)

Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.). World Meteorological Organization, Geneva, Switzerland, 32 pp. Available online: https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

4 van den Berg, N.J., van Soest, H.L., Hof, A.F. *et al.* Implications of various effort-sharing approaches for national carbon budgets and emission pathways. *Climatic Change* (2019). Available online: <https://link.springer.com/article/10.1007/s10584-019-02368-y#Sec11>

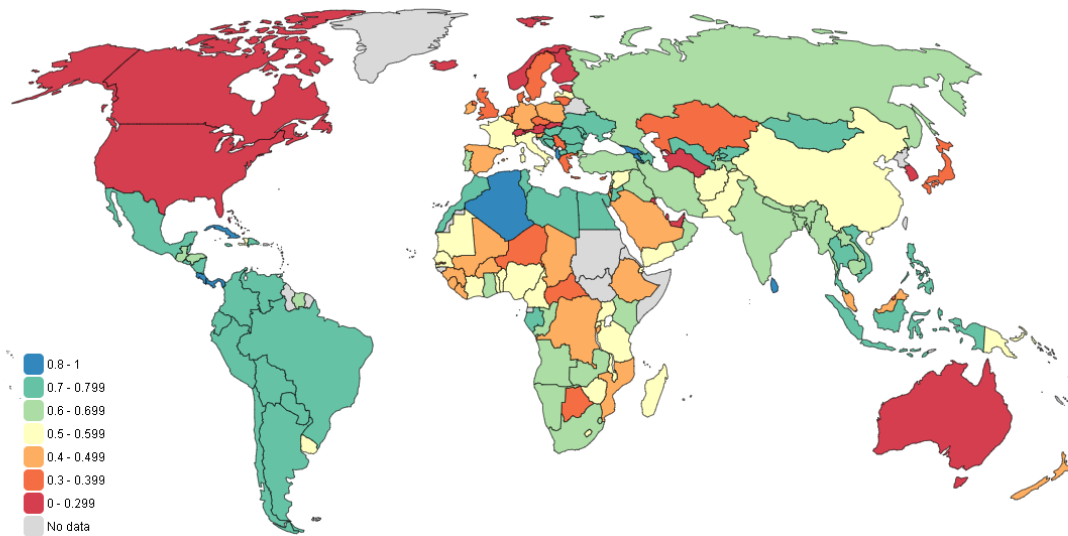
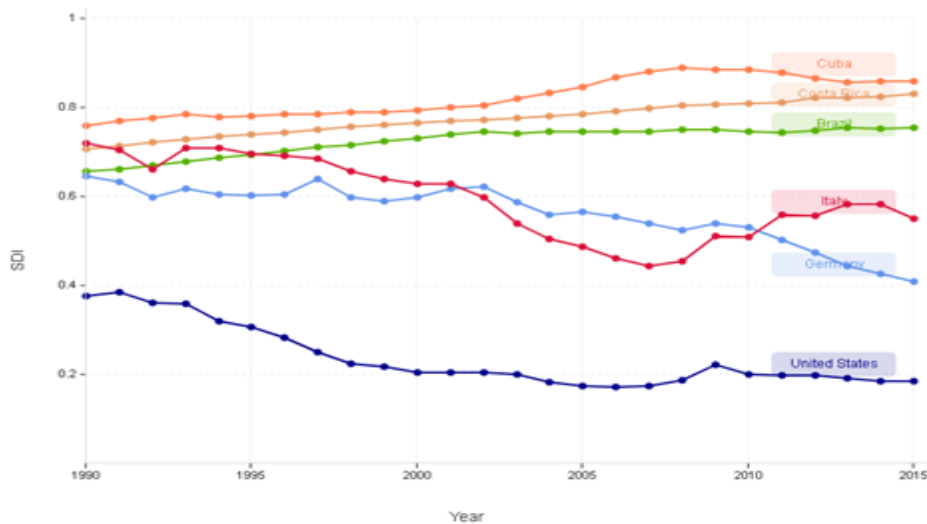


Figure 2: Ranking: Sustainable development index (2015)

Rank	Country	SDI	Life Expectancy (years)	Expected Years of Schooling	Mean Years of Schooling	Income (GNI per capita constant 2011\$ PPP)	CO2 emissions per capita (tonnes)	Material Footprint per capita (tonnes)
1	Cuba	0.859	79.6	14	11.4	21,000	3.42	8.04
2	Costa Rica	0.830	79.6	15.1	8.8	14,086	2.66	8.08
3	Sri Lanka	0.825	75.1	13.9	10.9	10,791	1.03	3.88
4	Albania	0.811	78.2	14.8	9.7	11,083	2.32	10.92
5	Panama	0.808	77.8	12.7	9.9	18,167	3.77	7.85
6	Algeria	0.805	75.9	14.3	7.9	13,338	1.96	3.03
7	Georgia	0.801	73.1	14.7	12.7	8,766	3.07	9.12
8	Armenia	0.800	74.4	13	11.6	8,517	1.99	7.63
9	Azerbaijan	0.798	71.9	12.7	10.7	16,334	3.24	5.91
10	Peru	0.788	74.7	13.8	9.1	11,420	2.14	9.38

Figure 3: Ranking: Sustainable development index: Cuba – Costa Rica – Brasil- Italy – Germany and United States. (1990- 2015)



One of the reasons that led Cuba to a sustainable development started with the collapse of the Soviet Union and the crisis that they were facing at that time. They were forced to restructure their economy and be much more resource-efficient than they probably would like to be.

Implemented measures:

- Change the mechanized agriculture to organic agriculture
- Turn patios into urban gardens
- Reduce waste of natural resources
- Cooperation between regions in ecological areas

The crisis of the Cuban agriculture resulted in a transformation process that intensifies and shows results today. The goal is achieved, minimise carbon footprint and produce food from the natural materials and human resources available. The Cuban model developed a national conscience of rationality and austerity that contributes to supporting the equilibrium between the social achievement, the economic performance and the environmental protection. (Eras et al., 2012)

Though it is a valued criticism that these measures have not arisen in a democratic setting, other examples reveal that also in democratic nations, high levels of human development have been achieved while maintaining a relatively low Gross National Income (GNI). (GNI: USD 14,086 and HDI 0,786 for 2015⁵).

These examples illustrate that economic growth is neither a condition nor guarantee for improved human development. Furthermore, countries in the south show to have a great capacity for providing localized solutions for high living standards combined with relatively low resource consumption. Based on this, several recommendations are made:

- *[Sustainability] [Socially useful production] [Value pluralism]* Any support activities aimed at increasing human welfare in the global south shall **not aim at economic growth but tackle a specific indicator of welfare**. Countries of the global south shall not be required to implement policies deemed necessary for growth (including also obligations regarding their monetary system, privatization etc.) as a condition for support.
- *[Proximity]* Before exporting potential solutions to human welfare challenges from the global north to the south, **local solutions** (e.g. from other countries in the continent) or from other regions in the global south shall be investigated and considered. This includes, e.g., fostering agriculture based on local heritage seeds instead of monoculture.
- *[Convivial tools] [Commons]* When European technological solutions are preferable to the community and thus provided, local actors should be educated

⁵ United Nations Development Programme (n.d.) Human Development Data (1990-2018). Retrieved from <http://www.hdr.undp.org/en/data>

for all required maintenance activities and the required parts must be accessible. **No patents should hinder the further adaption of the tools** to the local context or the independent further usage. Provided technologies must be green.

- *[Sustainability]* European countries should acknowledge their over-development and engage in exchange with adequately developed countries in order to **investigate and adapt strategies for high living standards at lower levels of emissions and resource exploitation.**

1.3 Fair and Ecological instead of Free Trade: Our policy proposals

Relocalize production and trade only in case of absolute scarcity *[Sustainability]* *[Proximity]*: The theory of comparative advantage, stating that trade always leads to more prosperity between two countries, is a myth of neoclassical economics⁶. It neglects many different variables, one of them being the ecological (and financial) cost of transport. For a future-fit EU, it should be clear that trade, in the long run, should only occur in case of absolute scarcity of certain resources needed for a socially focused production of goods. Of course, the same holds true for countries in the global south. Relocalizing production of different branches while decreasing exports may not be an attractive short term solution, it is therefore all the more necessary to plan this process in a socially just and economically feasible way. On top of that, in the face of the Covid-19 crisis in 2020, it has also become clear that outsourcing entire sectors of production can be dangerous to national economies and decide over life and death of citizens.

When trade cannot be avoided and until sufficient local production has started and the necessary infrastructure is in place, the following policies shall reduce negative effects of trade:

Make trade with the Global South a level playing field: *[Sustainability]* The global south must not have any disadvantage by trading with the EU. At the moment, for example, subsidized agricultural products from Europe are flooding markets in Africa and destroying local smallholder structures for their local economies. For low-income countries that are unlikely to have many, if any, absolute advantages on complex products (i.e. not-extractive focused) industry sectors, free trade can be detrimental for the environment. One solution must be to find new sustainable economic new patterns for trade. In this case if the EU wants to start trading in a meaningful way, it

⁶Kvangraven, I. 200 Years of Ricardian Trade Theory: How Is This Still A Thing? *Developing Economics*. [online] (2019). <https://developingeconomics.org/2017/04/23/200-years-of-ricardian-trade-theory-how-is-this-still-a-thing/>

has to design its trade agreements fairly instead of taking advantage of the relatively low bargaining power of some countries in the global south.

Regulate transportation of goods across the world: *[Sustainability] [Proximity]* At first, there should be harder regulations imposed on ship transportation across the oceans and other means of transport, in order to make transportation more expensive in terms of money (disincentivize the import of goods). Secondly, as the amount of goods transported decreases, it is also essential to switch to emission free modes of transporting goods via ship or airplane as soon as possible. The ultimate goal should be to ban all ship emission above what the oceans can take without falling into an acidification state and above what is healthy for the air (air toxicity for humans and ecosystems). This will lead to a very small fraction of what the imports look like today, and will make local production more desirable as well as reduce carbon emissions.

Stop beef import from Mercosur countries and provide aid on reforestation: *[Sustainability] [Proximity]* The EU already produces enough beef for itself (if not too much), so agreements like the one with Mercosur should not include more import of beef. These agreements should aim for ecological and economic cooperation. We propose that the EU should stop these imports and help on the reforestation of the Amazon forest instead, whose existence is endangered mostly due to the beef industry with figures ranging from 65 to 70% of all deforestation of the Amazon due to space for livestock and soy plantation to feed the animals.⁷ A “cows-for-cars” trade deal is neither ecologically desirable nor socially needed in any way.

Involve the affected local communities: *[Cooperation]* It is often claimed that local communities would benefit from increased trade and industrial agriculture or resource extraction projects. Many examples⁸ show, though, that effects can be disastrous to culture and quality of life. Therefore, multinational companies must be held responsible for any intended or unintended harm to the health of local people and natural resources, both in the country of activity and in the countries where the company is headquartered or has a focus of activity.

Ban on garbage exports: *[Sustainability] [Sharing] [Socially useful production]* There has to be no chance of moving residuals from a rich country to a poor one. Every country should take care of its own garbage, leading to the extinction of the mental distancing⁹ that happens with richer countries and their pollution and the huge pollution that third world communities suffer because of massive amounts of plastic burning and spreading to their ecosystems. Decreasing material throughput is

⁷ Rainforest Partnership, The Beef industry and Deforestation: <https://rainforestpartnership.org/the-beef-industry-and-deforestation/>

⁸ Environmental Justice, *Factsheets* (n. d.). <http://www.envjustice.org/section/resources/factsheets/>

⁹ Clapp, Jennifer . 2002. “The Distancing of Waste: Overconsumption in a Global Economy”. In *Confronting Consumption*, Cambridge, MA: MIT Press, p. 155-176. <https://mitpress.mit.edu/books/confronting-consumption>.

therefore crucial for the EU, as it not only leads to a decrease in garbage but also in resource extraction and greenhouse gas emissions.

Perpetual fund for fostering culture: *[Sovereignty] [Sharing] [Cooperation]* The EU can help transition other countries on a more sustainable development by funding projects that aim cultural and ecological restoration on former colonies. The idea is that these funds go to local communities, NGOs and regional institutions instead of governments.

Transfer of knowledge and technology: *[Cooperation] [Convivial tools]* As a compensation of over pollution and in an act of mutual cooperation on a sustainable development, the EU must share the knowledge and technology necessary for the creation of green energy. This also includes the release of patents, as well as free licensing of software, hardware and knowledge in general. There are experiences on solar energy policies being emulated in Perú that were at first implemented in the EU during 2006-2009.¹⁰

A new EU supply chain law against social and ecological exploitation; *[Cooperation] [Sustainability]* As globalisation intensified over the last decades, production moved out of EU-countries and instead in countries around the world, mostly countries of the Global South. Delegating orders to sub-companies made it more difficult to control human rights violations as well as ecological standards. Recently, the German minister for Development and the German minister for Labour proposed a supply chain law against exploitation of workers. The law would hold companies with more than 500 workers accountable for human rights violations within their supply chain and demands taking counter-actions if needed. Another EU country that already introduced a similar law in 2017 is France.¹¹ To ensure social, ecological and economical sustainability of products that are sold and bought within the EU, such a law is of absolute necessity for the whole European Union. It is immanent to the principle of responsibility and global justice. **A European supply chain law should not only emphasize human rights but also lay a strong focus on ecological sustainability:** resource extraction, greenhouse gas emissions, biosphere, pollution, etc. It should enter in force as fast as possible. However, starting to develop a European legislative now should not hinder member countries like Germany to already proceed with their own legislation. Stakeholders of the global south should be consulted in the definitions in order to avoid that any elements counteract local sustainable development.

¹⁰ The transfer of knowledge for renewable energy policy-making between Europe and Peru in the period 2006-2009 : Impacts in the Peruvian Solar Photovoltaic innovation system, Environmental Science, Aida Bruno, 2018.

¹¹Korn, F. How Germany plans to uphold human rights in supply chains. *International Politics and Society* (2020). <https://www.ips-journal.eu/regions/global/article/show/how-germany-plans-to-uphold-human-rights-in-supply-chains-4532/>

2 - Public services and labour

From Covid19 to a carbon-neutral (and degrowing) society - policy proposals

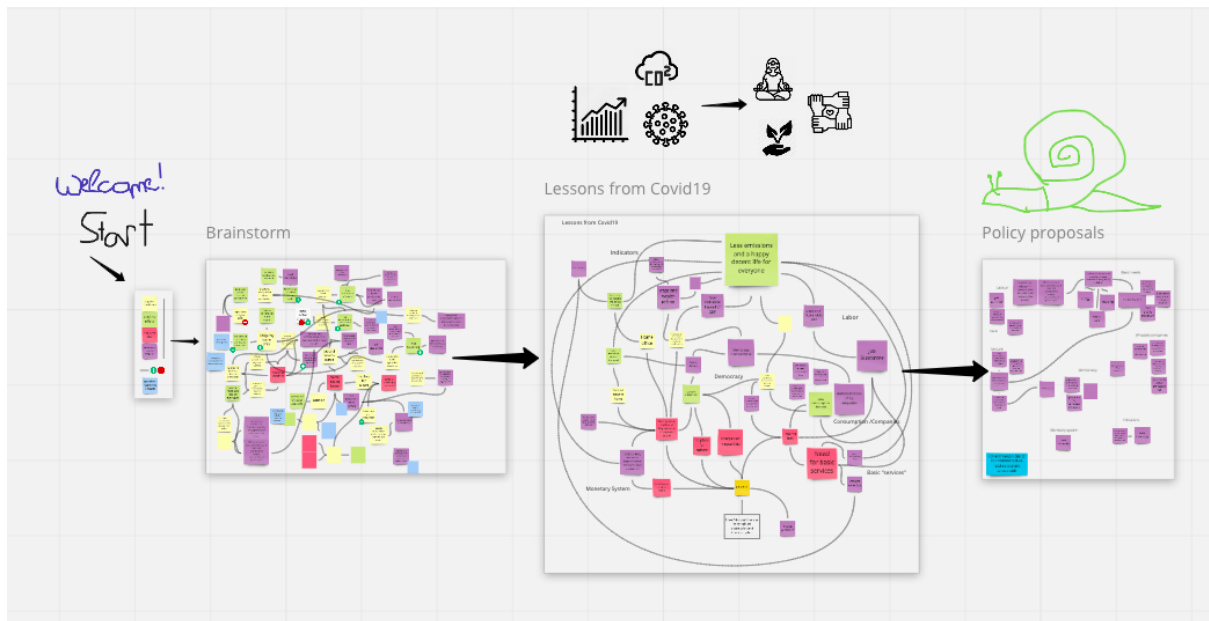
The Covid19 pandemic taught us multiple lessons. One of these was that a paradigm shift is truly possible. Measures, before unthinkable, were implemented and individuals adapted to a new way of life in a breathtakingly short time span. From this we can learn that we are perfectly adaptable and able to change the socially constructed reality we live in. However, for many individuals it was at a very high cost. Covid19 made visible the cracks of our current system and that indeed our society and especially the economic system need to change in order to ensure wellbeing of ALL members of our society now and in the future.

Likewise, the movements of Degrowth and the Green New Deal claim to reorganise our societies and stop the fixation on economic growth. Considering the boundaries of exploitation of nature and people, it points to the essential factors of well-being.

From the Covid19 crisis in general and the outcomes of the measures, we can learn a lot for tackling climate change and shaping the transition to a sustainable and liveable future. For example, we can see which groups were most valuable and take measure to prevent an unjust transition. Based on these considerations, we have constructed mind maps showing some of the lessons learned from the pandemic.

You can find our mind maps here: https://miro.com/app/board/o9J_kn551l0=

Starting from a brainstorming (first map), we derived a diagram showing the interconnectedness of current status, corresponding negative and positive effects and corresponding policy proposals (second map) and in the end condensed policy ideas (third map).



According to our analysis, the following policies should be implemented to move towards a more sustainable society (this proposal is non-exhaustive):

Universal basic services

With basic services like energy, water, but also housing publicly provided, there is less need to obtain monetary income. Subsequently, people need to pursue less paid work and there is less material throughput in society (as there is less production). In addition, this measure helps with a fair transformation to a sustainable future.

Job guarantee and labour policies

When reforming the society to reach a sustainable future it is important that no one is left behind and to still improve wellbeing. To make sure of this a job guarantee can help. This measure guarantees that there are enough "purposeful" jobs for those who lost their jobs. Further, no one needs to keep up work just for the sake of consumption. In addition, a job guarantee with jobs publicly provided can set a minimum standard with regard to working conditions and wage that private companies have to compete with. However, no one is obliged to take a job they do not want. This should be accompanied by a right to work part-time, whenever someone wants, and in longer term with general reduction of working hours.

Radical democratisation in the public and private sphere

A sustainable future is dependent on democracy. We need to encourage democratic participation and institutions especially on a local level by educating people to be able to participate, but also giving them time and space to do so, e.g. by providing paid

leave for democratic participation and enabling more participation on a regular basis. Moreover, companies should become more democratic. Big companies and wealth accumulation are a problem to democracy. Further, especially big companies often only focus on profitability without taking into account social and ecological implications of their actions. Giving voice to those affected by a company's action can avoid adverse effects. For example, we could convert private companies into cooperatives.

Income and wealth reform

Environmental inequality and income / wealth inequality are connected. The richest have the biggest carbon footprint. If the top 1% in the world gave away one third of their wealth, we could end absolute poverty. One measure could be a wealth and income cap. For example, to not be allowed to earn more than ten times more than a decent minimum wage. Moreover, right now incomes are not fairly distributed, we should pay more according to the social value of jobs. Finally, the taxation system should truly incorporate negative environmental effects.

Indicators

There are problems with the GDP. The GDP is not a wellbeing indicator - especially in rich countries GDP growth does not correspond to an increase in perceived or measured wellbeing. Furthermore, GDP growth and CO2 emissions cannot be decoupled. Therefore, we need other indicators that reflect the true wellbeing of societies, e.g. we could use the GPI (Genuine Progress Indicator).

Local currencies

We noticed during Covid19 that globalisation with trade and just in time production was problematic and very affected by external shocks. To make the system more stable we could implement local currencies (additional to national or supra-national ones) and try to produce more locally.

In the end, this is a very selective list of measures, which we believe would be very beneficial for the society as a whole. Please, see the above thoughts as a conversation starter and a source of inspiration. Last but not least, for these policies to be implemented we need a considerable social and cultural shift.

3. Financing the European Green New Deal

Finally, we want to consider how to finance the transition to a greener paradigm of the economy. We start (a) with a critical assessment of green bonds as the key financial instrument introduced for funding the European Green New Deal. This will be followed by (b) an analysis of green financial instruments in the theoretical framework of the degrowth paradigm. We conclude with (c) raising the question of whether de-growth might co-exist with interest-bearing finance after all.

3.1. European green bonds: towards greener financial instruments?

The “Green New Deal” for the European Union openly declared a need to redirect capital flows to greener investment. The key financial instrument to facilitate low-carbon emission is green bonds which are “standard bonds issued by governments, financial institutions, or companies having an environmentally beneficial purpose”¹². On the European Union level, the green bonds are issued by the European investment bank (EIB) which enjoys the highest credit rating (AAA) by Moody's, Standard and Poor's, and Fitch¹³. While green bonds represent a financial instrument for greener investments and offer the lowest risk for the investors, their practical application, and capability to facilitate the transition to the low-carbon economy remain challenging.¹⁴

Firstly, as there is no single approach to defining and classifying green bonds on the international financial market, which leads to a lack of comparability of green bonds, issued by different emitters¹⁵. Classifying projects as green is also tricky, as there is no sufficient peer review. This opens a window for harmful industries to self-report as green.

Conversely, even if the international agreement existed, there might be local differences for labelling particular projects as green. For example, although nuclear power has been recognised by the Paris Agreement as low carbon and serving climate mitigation goals, its ‘green status’ would be still a debatable issue for many countries, including Germany with a long history of strong anti-nuclear movements. In contrast, energy-deficit countries, such as China and India, still might invest in nuclear energy to fuel their economies and reach climate goals¹⁶. A possible solution might be the

¹² Reyes, Oscar, ‘Change Finance, not the Climate’, 2020. Available online: https://www.tni.org/files/publication-downloads/change_finance_not_the_climate_online_def.pdf.

¹³ “Credit rating”. European Investment Bank, n.d. Available online: https://www.eib.org/en/investor_relations/rating/index.htm

¹⁴ Reyes, Oscar, ‘Change Finance, not the Climate’, 2020, p. 100. Available online: https://www.tni.org/files/publication-downloads/change_finance_not_the_climate_online_def.pdf.

¹⁵ “Defining “green” in the context of green finance”. *European Commission*, 2020. Available online: <https://op.europa.eu/en/publication-detail/-/publication/0d44530d-d972-11e7-a506-01aa75ed71a1/language-en>

¹⁶ “Nuclear Power and the Paris Agreement”. *IAEA*, 2016. Available online: <https://www.iaea.org/sites/default/files/16/11/np-parisagreement.pdf>

development of the EU taxonomy and Green Bond Standards on the European level and the introduction of the ISO criteria for the green bonds for global actors.

Secondly, the market for green bonds is still small. The EIB issues green bonds on a small scale, whereas big players, such as the European Central Bank (ECB), demonstrate a lack of interest to invest in green bonds. The public investment banks should issue a large number of green bonds, and central banks (e.g. ECB) should stand by as a buyer of last resort on the secondary market.¹⁷ The last point, however, might be hindered by the 'market neutrality principle' of the ECB, which is designated to be an actor in monetary politics with no mandate to involve itself in economic policies. A problem is possible to overcome with the introduction of a 'green mandate' for the ECB¹⁸. Additionally, tax and non-tax incentives both for the emitters and investors on the green bonds market are needed.

3.2. Still about growth? Criticism of green bonds from the degrowth perspective

The main criticism of green bonds from a degrowth perspective is that they still drive growth. It is not yet empirically proven that decoupling GDP growth from environmental impact (usage of raw materials, energy, waste, pollution) is possible at all. Our current financial system creates high levels of private and public debt. If the GDP grows, debts become relatively smaller. Thus, governments seek a growing economy to manage their outstanding debts. To enable debts, however, debts have to be profitable. In other words, they require growth. Because of the growing pile of public and private debts, we stay in a vicious circle of economic growth and ecological destruction. Furthermore, green bonds are still part of the current bank system. To understand debts, we need to understand the monetary system. New money is created when banks make loans. If the money supply grows in our economy, the sum of debts grows too. Commercial banks are profit-seeking businesses, and loans are one of the main products they sell. So, money creation drives growth¹⁹.

3.3. Can de-growth co-exist with interest-bearing finance?

In the majority of literature on post-growth and de-growth, the conventional view is that interest-bearing debt cannot exist, because it inherently drives growth. Therefore, any

¹⁷ Reyes, Oscar, 'Change Finance, not the Climate', 2020, p. 100, accessible under https://www.tni.org/files/publication-downloads/change_finance_not_the_climate_online_def.pdf

¹⁸ Hercelin, Nicolas, "WHY THE ECB SHOULD GO BEYOND "MARKET NEUTRALITY". *Positive Money Europe*, 2019. Available online: <https://www.positivemoney.eu/2019/09/ecb-market-neutrality-doctrine/>

¹⁹ Sovereign Money Creation for a Post-growth Economy. *Positive Money Europe*, 2018. Available online: http://www.foeeurope.org/sites/default/files/resource_use/2018/sovereign_money_creation_discussion_paper.pdf

form of 'rentier capitalism' is incompatible with a de-growth agenda, and it must be ended, completely. In this view, no bonds, not even green bonds, are permissible.

Some modelling work, however, indicates otherwise. For example, Jackson and Victor (2015 and 2020)²⁰ and D'Alessandro et al. (2020)²¹ use stock-flow-consistent models, based on typical data for the UK, Canada, and France respectively²². These authors all show that, given appropriate government responses to shocks such as a drop-in consumer demand, the macroeconomy can achieve a steady-state or even de-growth. Using non-GDP-based measures of 'sustainable prosperity' and environmental impact, they claim that long-term stability with de-carbonisation and respect for global resource boundaries is achievable, whilst still having interest-paying loans between the finance sector and firms and households²³.

Although other authors reject the conclusions of these SFC models, the results seem to suggest that a dramatic change in financing methods and immediate 'euthanasia of the rentier class' is not essential to de-growth. At least in the transitional process to a de-grown economy with long-term sustainable well-being.

Conclusion

Our consideration of the place of finance and the financial system in a de-growth agenda for a developed economy has focused on the short- and medium-term question of how to fund the investments in infrastructure and the changes in production and employment that are essential in any de-growth and the transition to an ecologically sustainable future. Green bonds are an obvious existing financial instrument, and we find that they can have a place in a de-growth scenario – but, their 'greenness' needs to be assured much more robustly than at present. If a de-growth transition were gradual, the question of whether interest-bearing credit financing would eventually disappear from the economy seems to be a longer-term issue that depends more on policy decisions concerning the nature and creation of money and the operations of the related financial institutions.

20 Jackson, Tim and Peter Victor. "The Transition to a Sustainable Prosperity-A Stock-Flow-Consistent Ecological Macroeconomic Model for Canada". *Ecological Economics*, 2020. Available online: <https://www.sciencedirect.com/science/article/pii/S0921800920301427> and Jackson, Tim and Peter Victor. "Credit creation and the 'growth imperative'", *PASSAGE*, 2015. Available online: http://prosperitas.org.uk/assets/passage-wp_15-01.pdf

21: D'Alessandro et al. "Feasible alternatives to green growth". *Nature Sustainability*, 2020. Available online: <https://www.nature.com/articles/s41893-020-0484-y>

22 SFC models are valuable when considering financial markets because they deal correctly with issues of savings and capital accumulation.

23 Note that they only consider macro-economic variables with five main 'actors' – households, firms, banks, central bank and government – so responsibility for distributional equity is placed onto other policies such as redistributive taxation and government provision of foundational goods and services. They do also state a dislike of 'rentier' income, for other reasons, primarily related to equality issues

Appendix 1: Green bonds

Green bonds are understood as instruments intended to finance or refinance environmental projects. They have principles based on transparency and integrity²⁴:

1. Use of income: The destination of the resources generated by the green bonds must be clearly described in the legal documents. In addition, it is important that projects show the environmental benefits to be generated.
2. Project evaluation and selection process: The issuer must expose the project information to investors, emphasizing: Goals of environmental sustainability, The process by which the issuer determines how projects fit within eligible green projects and the eligibility criteria used.
3. Administration of resources: The net proceeds of green bonds must be constantly monitored by the issuer.
4. Report: Issuers must prepare and update annually the information regarding the use of resources obtained by green bonds.²⁵

Appendix 2: The Bigger Picture – Finance Policies in a Degrowth Perspective

We studied Fabian Scheidler and Matthias Schmelzer's (2014) Leipzig Degrowth conference paper²⁶ to understand the degrowth narrative and the modern financial sector and their relationship better.

According to Scheidler and Schmelzer, the financial sector and institutions (banks, non-banking financial sector) play a key role in the growth-economy and its destructive impacts on society, ecosystems and our planet as a whole. As investments largely depend on credit, financial institutions decide about where the money goes. As for private and corporate banks, their main criteria for lending are the maximisation of return on investment and shareholder value. In many countries, such as Germany and the US, corporations are even obliged by law to focus on profit maximisation. Consequently, credit flows to those sectors of the economy, which are most profitable. These sectors, however, tend to be the ones which are most successful in externalising social and ecological costs, like the fossil fuel industry, mining industries, agribusiness, chemical industry, car and aircraft industry, military and so on – in other words: all those who play havoc with the people and the planet. Consequently, the question of how to block the flow of money into destructive sectors and how to redirect investment to where it is needed for people and ecosystems becomes a central point of discussion in a degrowth perspective.

Another narrative that is central from a degrowth perspective is that the finance sector as we all know runs in a circular cycle. Investments lead to monetary returns and both the later and the former result in more output and increase in production as well as consumption or the culture of consumerism, which is totally against the narratives of degrowth that pushes for and advocates less production, less

²⁴ Climate Bonds Initiative (2018) The Green Bond Market in Europe. Retrieved from <https://www.climatebonds.net/files/files/The%20Green%20Bond%20Market%20in%20Europe.pdf?fbclid=IwAR3VzqGIMTiVz96FsENM7hrnzJW4yH8xka41uS8Zsk3tv3Ip-09vIA>

²⁵ International Capital Market Association (2018) Green Bond Principles. Retrieved from <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/June-2018/Green-Bond-Principles---June-2018-140618-WEB.pdf>

²⁶ Scheidler F and Schmelzer M, 'Beyond regulation: Money, banks and finance in a degrowth perspective' 2014, Available online: <https://www.degrowth.info/wp-content/uploads/2015/10/Sche.pdf>

consumption and less economic activity basically. So, degrowth and the financial sector doesn't go hand in hand in the long run, unless we come up with a financial sector that completely replaces the growth imperative that the financial sector always promotes through interest-bearing money and interest-bearing debt.

Also, from a degrowth perspective, the question of reshaping finance has to go beyond the frame of regulation. The issues of ownership and democratic control have to be addressed; the criteria by which investment decisions are made have to be shifted from the profit principle to the common good.

But according to Scheidler and Schmelzer, some form of money and credit will always be needed in a degrowth society or at least during the transition towards it. A fact we can neither argue nor deny.

But suppose some form of money and credit is needed in a degrowth society or at least during a transition towards said society, some of the key questions raised by Scheidler and Schmelzer that we find asking ourselves too are:

- 1) Which types of financial institutions do we need in a degrowth perspective? Which rules, legal forms, property structures and decision-making processes are needed? Who should decide about money flows and by which criteria?
- 2) Are these forms to be purely local and small scale, or do we need middle and large scale structures as well, at least for the transition?
- 3) Can we find starting points or prototypes of such structures in existing institutions, such as cooperative banks? If not, where can a transformation of finance start?
- 4) Which role can local currencies play?
- 5) What forms of capital controls are needed for a degrowth economy?

The proposals made by Fabian Scheidler and Matthias Schmelzer in their paper are as follows:

1) From a degrowth perspective many of the progressive proposals for regulating financial markets and financial products that mainly serve speculative purposes are welcome. This holds true as well for and for closing for proposals on the reorganisation of international currency systems (for example building on Keynes' idea of an International Clearing Union). However, they are not enough.

2) At least in the transitional period, investments are needed for the strengthening of social infrastructures and the commons (e.g. public services, care economy, education, non-profit and reproductive sector) or ecosystem enhancements (reforestation, climate adaptation, cleaning up industrial wastes etc.). These investments will not be profitable in the short term and in monetary terms. Market mechanisms are entirely inadequate to generate these non-profit investments. Thus, democratically controlled public investments are needed – a whole new institutional structure for investment control is necessary (public budgets, regional investment councils, etc.)

3) In the 2008/2009 crisis, things happened that were deemed impossible before: large banks were nationalised, and their break-up into smaller units was discussed. Suddenly, the inviolability of private ownership had evaporated. However, nationalization in itself can hardly be seen as a solution to the destructive impacts of global finance, as state ownership has regularly turned out to be no better than private ownership. Moreover, nationalizations often serve as a means to socialise corporate losses and shift debts from private to public hands. New forms of finance must therefore go beyond state ownership. As in the case of energy systems, decentralized local and regional structures controlled by citizens are needed.

4) In the wake of the crisis, the financial system and capitalist logics have lost much of their legitimacy in large parts of the population. In this context, one of the central challenges is to connect struggles against the power of finance and social injustice, to the struggles for ecological justice and degrowth.