POLICY BRIEF
NOVEMBER 2021

FEPS
FOUNDATION FOR EUROPEAN PROGRESSIVE STUDIES

RETHINKING SCENARIO ANALYSIS FROM A GREEN AND SOCIAL PERSPECTIVE

SUMMARY

To transition towards a green economy, information about the climate impacts of state economic policies and company transition plans is a prerequisite.

Ahead of COP 26, assessment methodologies that compare government plans with possible climate scenarios conclude that targets and action remain far apart, thus arguing for increased ambition and rapid fundamental changes.

While these messages are important, this policy brief takes a closer look at the methodologies that underlie such assessments – so-called scenario analyses – and explores how they are already being used in a legally binding way in financial regulation.

Against the increasing importance of scenario analysis, this brief outlines that the methodologies need to remain science based on the environmental side and incorporate the social dimension of the just transition to remain useful and legitimate policy instruments. In the medium term, scenarios also need to become more inclusive and be integrated with other fields such as green investment policy as there are significant overlaps with regard to data and methodology.

AUTHOR

ANDREAS DIMMELMEIER
FEPS Policy Analyst for Climate and Environment

This policy brief benefited from the valuable comments of Saïd El Khadraoui and David Rinaldi at FEPS. Any errors and omissions remain the responsibility of the author.

TABLE OF CONTENTS

FEPS
FOUNDATION FOR EUROPEAN PROGRESSIVE STUDIES

THE FOUNDATION FOR EUROPEAN PROGRESSIVE STUDIES (FEPS)
European Political Foundation - Nº 4 BE 896.230.213
Avenue des Arts 46 1000 Brussels (Belgium)
www.feps-europe.eu
@FEPS_Europe

This Policy Brief was produced with the financial support of the European Parliament. It does not represent the view of the European Parliament.

1. Global context

The 26th Conference of the Parties (COP 26) that is taking place this year in Glasgow marks the first round of updates for countries' Nationally Determined Contributions (NDCs). According to the 'ratchet mechanism' logic of the Paris Agreement, the ambition of the NDCs should increase with each interval. This mechanism should ensure that the gap between the goal of keeping global warming well below 2° C and ideally to 1.5° C and the stated policies is shrinking over time. While the 'global stocktake' of the announced measures is only foreseen for 2023 according to the Paris Agreement, ahead of COP 26 the updated NDCs as well as other relevant plans and data sources have been assessed by international organisations, research institutes and civil society organisations.

The emissions gap report published by the United Nations Environment Programme (UNEP) concluded, for instance, that:

> Global warming at the end of the century is estimated at 2.7°C if all unconditional 2030 pledges are fully implemented and 2.6°C if all conditional pledges are also implemented. If the net-zero emissions pledges are additionally fully implemented, this estimate is lowered to around 2.2°C.[1]

The International Energy Agency (IEA), an intergovernmental organisation that was established within the Organisation for Economic Co-operation and Development (OECD) framework following the oil crises of the 1970s, comes to a similar conclusion when stating that with the policies in place the world as a whole is still heading for levels of global warming which are in the range of +2.7° C above pre-industrial levels.[2]

A final example of pre-COP assessments is provided by the 'production gap report', which is produced by a coalition between UNEP and various research institutes and think tanks. Based on a stocktake of governments' projections on future fossil fuel production the report concludes that the planned production of fossil fuels by 2030 will be twice the amount that is consistent with a world that limits global warming to 1.5 degrees.[3]

The obvious interpretation of the above findings is that countries must step up their ambition at COP 26 and beyond. More concretely and urgently, they need to reverse a tendency where the emerging recovery from the Covid pandemic is increasingly becoming a squandered opportunity for locking-in sustainable economic systems. Hence the implementation of comprehensive economic reset plans like the Fit for 55 package that is currently being discussed by the co-legislators at the EU level is crucial. The urgency of closing the gap between the goals of stabilising global warming at the lowest possible level is also illustrated by the 6th IPCC assessment report, which has confirmed that the irreversible changes to the planet's climate system are already today impacting every inhabited region of the planet. Moreover, with every further centigrade of global warming, the occurrence of extreme events such as droughts and floods becomes more likely.[4] In this context, the floods and wildfires that occurred in various regions of the world in the recent past are a reminder that while it is already painful and costly to adapt to the already occurring changes in the climate system, more extreme changes might in some cases well exceed the adaptive capacity of communities and even states.[5]

The severity and cost as well as the urgency for action are one important conclusion from the above assessments. Rather than elaborating on the factual findings, the remainder of this policy briefing will, however, take a different route and focus on how those methodologies mentioned and similar ones are increasingly becoming governance tools. Importantly, some of the most impactful use of these tools today might actually be beyond the COP process as they are already implemented in a legally binding way in fields like financial regulation.

This policy brief thus focuses on the role of 'scenarios', which have become the dominant methodology to compare the projected policy and investment choices with possible climate pathways. The following section outlines briefly the basic functioning of scenario analysis and recounts why it has emerged as a central policy instrument in financial governance. The third section moves from the description of developments in financial regulation to critical analysis by outlining environmental and social principles that scenarios need to respect in order to fulfil their functions. The fourth section broadens the scope and connects the discussion around scenario analysis, which has, so far, been principally connected to the issue of (systemic) risks to the wider governance of the just transition. The final section concludes by summarising the policy implications for scenario design and applications that can be derived from the previous assessment.

2. Scenarios as policy tools

2.1 Basics of scenario analysis

From a conceptual point of view, scenario analysis requires two building blocks. First, there need to be plans or projections from the assessed entity. These can be explicit as it is the case with states' NDCs. Detailed net zero plans by companies, subnational actors or financial institutions are also explicit sources of information regarding the transition. In the absence of existing plans or when these lack detail, implicit forecasts that extrapolate, for instance, from past and current performance (of e.g. a sector or a company) can be used.

The second ingredient of scenario analysis are one or several benchmark scenarios. These scenarios are often based on modelling exercises that link economic activities such as the investment in fossil or renewable energy sources to the climate pathways that have been developed by the Intergovernmental Panel on Climate Change (IPCC). Such scenarios are often developed and used by regulators, international organisations or civil society actors that are interested in judging the performance of states, private companies or other actors. By comparing the (economic) transition plan and the benchmark scenario, information about the climate alignment of the assessed actor can be obtained. Importantly, there is also a feedback mechanism as a company might for example consult one or several benchmark scenarios when coming up with its transition plan.

2.2 Applications of scenario analysis

Comparisons between transition plans and benchmark scenarios can and have been used to assess the plausibility of net zero claims. The already introduced work of the IEA on energy transition pathways, whose latest report highlights that any additional investment in fossil fuel exploration is inconsistent with a 1.5°C warming[6] has, for instance, been used in the recent landmark court ruling by the district court of The Hague that found the carbon

reduction targets of the Dutch oil major Shell to be insufficient.[7]

The most consistent and far-reaching application of scenario analysis has, however, so far happened in the context of financial regulation and supervision. Several central banks and financial supervisors – including in the EU the European Central Bank (ECB), the Banque de France, and De Nederlandse Bank – have started to benchmark the exposure of banks' assets against different scenarios. These scenarios explore both the effects of transition policies and of the physical impacts of climate change on financial stability. The main reference point for scenario development has been the Network for Greening the Financial System (NGFS), a collaboration of central banks and regulators that was founded in 2017 and has by now already more than 90 members. In terms of methodology, the assessment of physical risks is often based on climatological models that display an increasingly granular geographical resolution. Transition scenarios that look at climate action are, meanwhile, derived from socioeconomic pathways that combine technological and economic assumptions with emissions and their effects on the climate system in so-called integrated assessment models (IAMs).[8]

The impact of these scenarios and their use by central banks and regulators on the real economy should not be underestimated. Indeed, the 'shadow of regulation' is arguably one of the reasons for the proliferation of related methodologies from private data providers in recent years.[9]

And the momentum around supervision through transition plans and scenario analysis is still increasing. One powerful illustration of this is that in a recent speech, Frank Elderson, vice-chair of the ECB's supervisory board, went as far as suggesting there should be a legally binding requirement for banks to have transition plans that are compatible with the goals set out in the Paris Agreement.[10]

2.3 The prudential perspective

The interest of central banks in developing benchmark scenarios should not be surprising as it derives from the tasks that they have been given following the financial crisis of the late 2000s. Among the main lessons from the crisis was that regulators must take a so-called 'macroprudential' view, which looks at the stability of the whole financial system rather than only at individual institutions.[11] In this framework, the impacts of the actions of individual organisations on the systemic level must be considered.

Applying this reasoning from the financial crisis to the context of the climate crisis, it becomes clear that in the same way that the short-term oriented high-risk strategy taken by Lehman Brothers and other financial actors contributed to the financial crisis, short-termist actions by companies that continue fossil fuel exploration or make unsubstantiated net zero pledges fuel a systemic crisis in the future.

The important difference between the financial crisis and the climate and nature crises is that a changed climate, unlike a dysfunctional financial system, is irreversible. The bail-outs, guarantees, fiscal stimuli and asset-purchasing programmes that were undertaken by governments and central banks to 'mop up' the financial crisis had a substantial cost and arguably large knock-on effects on politics and societies. However, they achieved their aim insofar as they stabilised an (however imperfect) system. With a changed climate system, such after-the-fact remedies are simply not possible.[12]

Hence, a precautionary assessment that screens out and addresses reckless behaviour is crucial.[13] Importantly, such measures are not about picking winners. Instead, as all prudential policies, assessing the credibility of transition plans is about preventing the build-up of future crises.

3. Environmental and social principles for scenarios

The previous section outlined why detailed transition plans as well as benchmark scenarios are becoming increasingly important and why from a prudential perspective this is a welcome development.

However, to fulfil this ambition, reference scenarios must be based on two fundamental principles. First, they must be science-based in the sense that they represent the accepted state of knowledge in climate and other environmental sciences and defend it against vested interests. Second, and equally crucial, scenarios must reflect social considerations of justice and fairness and ensure that the benefits and costs of the green transition are distributed progressively.

On the first issue, scenario developers have arguably made some progress. Until recently, the IEA was repeatedly criticised by civil society organisations such as Greenpeace for privileging the continued use of fossil fuels and making them appear viable by deploying generous assumptions on carbon capture and storage (CCS) as well as by choosing less ambitious and thus more risky climate pathways from the IPCC scenarios.[14] Hence, the step up in tone and ambition that the most recent IEA World Energy Outlook presents is a welcome development.

However, we need to continue to closely scrutinise assumptions regarding CCS and negative emission measures more generally in the future. Climate scientists have recently recalled that net zero pledges that are based on large amounts of negative emissions are unrealistic and were incorporated into climate-economic models not because of their proven technological value but because of their political expediency.[15] Afforestation and other nature-based solutions likewise are no silver bullets on a large scale. This is because large tree plantations for carbon sequestration can have adverse effects on biodiversity and might hence fuel another environmental crisis. In addition, afforestation projects have been linked to so-called "green grabbing", where – often indigenous – people are driven from their lands.[16] Finally, despite improvements of accounting standards and audits, nature-based carbon offsetting projects are still beset with possibly exaggerated claims – often linked to the question of what "additional" benefits a given project provides – and double counting.[17]

While the challenges of keeping assessments and scenarios science-based are formidable, the speed with which institutions like the IEA or central banks have advanced on these questions in recent years (notably under significant political, academic and civil society pressure) gives some reason for careful optimism.

With regards to the social dimension, however, much more political and intellectual work remains to be done. The NGFS scenarios that provide the baseline for the assessments of central banks such as the recent ECB climate stress test start from assumptions about policy, technology and society. As the technical

documentation further specifies, policy is often operationalised through a (shadow) emissions price. Technological assumptions, meanwhile, relate amongst others to the cost and scale of different types of energy as well as to changes in land use. Finally, societal assumptions include issues like population growth, migration dynamics, diets and economic preferences.[18]

While these assumptions certainly cover relevant social issues, they remain relatively silent on just transition questions such as inequalities[19] or the evolution of work conditions in the sectors and technologies that are affected in the transition.

The IEA scenarios, likewise, privilege assumptions about technology deployment across different sectors as well as about energy demand. Questions about the social dimension are, by contrast, left somewhat as an afterthought. Accordingly, the employment effects of the net zero scenario as well as questions of energy availability are considered in the last chapter of the recent IEA report.[20] However, these issues are relegated to 'outcomes' rather than being considered as crucial input assumptions when designing the scenarios.

This should not be too surprising given that institutions like the ECB and the IEA do not necessarily have social matters as their key expertise. Yet as scenarios are becoming impactful tools for planning and assessment of the transition, this omission becomes increasingly problematic. Choices and assumptions regarding the development of particular technological configurations (think centralised or decentralised energy systems or different mobility systems) and policy instruments (for example on the design of carbon prices and the associated revenue distribution as well as on environmental regulations) are by definition linked to the social dimension. Moreover, the recent increases in energy prices in Europe and across the world are in this context a powerful reminder that any decarbonisation and energy transition scenario must pay attention to questions of affordability and energy security during the whole transition pathway and not only in the long run.

Hence, a broadening of the scenario development process with an eye towards more inclusivity and a more prominent place for social considerations is imperative. Importantly, incorporating social considerations also makes sense from a prudential perspective. Just as unrealistic assumptions about the mass deployment of CCS can lead to the underestimation of systemic risks in the future, pathways that do not take account of the social dimension and imply inequality and precarious working conditions will likewise underestimate the true risks. This is because actions and policies that are based transition scenarios that fail to be explicit about employment and redistribution effects will likely encounter scepticism if not outright resistance from the workers and communities that ultimately have to implement them in the real economy. To paraphrase the often repeated but true statement by the European Commission's Executive Vice-President Frans Timmermans: if a transition scenario is not just, it will ultimately just not materialise.[21]

The challenge is thus to make actors that represent the social dimension and can bring expertise on matters of the just transition part of the conversation on scenario analysis. On the one hand, this applies to academic questions. In this context, research from organisations like the ILO[22] and the International Trade Union Council (ITUC)[23] can bring definitions, indicators and targets on the just transition to the debate. One of the methodological challenges will be to reconcile these research streams with the forward-looking nature of scenario analysis.

A workstream that could potentially act as a bridge as it is already closer to the work of financial regulators is the European Commission Platform on Sustainable Finance subgroup on the social taxonomy.[24]

On the other hand, integrating social concerns also relates to making the process of constructing scenarios more inclusive and diverse. Involving representatives from the labour movement as well as from civil society actors would be extremely valuable as it would not only give the scenarios greater legitimacy, but could also improve their quality. This is because the involvement of actors that have so far been absent from debates about scenario analyses can add perspectives and knowledge that are currently overlooked and mitigate biases that might arise if the scenario development is carried out exclusively by people with homogenous backgrounds (for example in terms of education, gender or socio-economic status).

A final point that is linked to both the environmental and the social principles of scenario analysis and the assessment of transition plans is the issue of transparency. It was already outlined above that the assumptions in transition plans must be made transparent and accessible so that supervisors and civil society can judge whether they are credible and in line with benchmark scenarios. The same standard must, however, also hold for the design of benchmark scenarios themselves. Hence, scenario developers should ensure that both the narrative of benchmark scenarios as well as their technical implementation remain understandable and do not become 'black boxes'.

4. Linking transition plans and scenarios to other policy fields

Benchmarks and transition scenarios have in the past often been developed and used for prudential purposes. In other words, one of their main functions has been to provide forward-looking guidance for risk assessment. As outlined above, when it comes to their use by central banks and regulators this perspective is entirely justifiable as it reflects the historical mandates and institutional set-ups of many of these institutions.[25]

Yet, coming back to the introductory remarks about COP 26 and the importance of assessing the impact of actions by companies, countries and other actors, the question arises whether and how scenarios can become policy instruments that go beyond the risk perspective. As noted above, scenarios are already used for benchmarking purposes by civil society actors, international organisations and courts. In addition, companies and financial institutions can use them for strategic planning.

Beyond these existing practices, it is noteworthy that there are significant overlaps between risk-based scenario analysis and other policy areas and instruments when it comes to data and methodologies. Public investment policies that need to benchmark the deployment of financing for climate action and a just transition in a dynamic manner are one prime target for such potential overlaps.

One example of such public investment policies is the recent adoption of the Recovery and Resilience Facility (RRF) in the EU and the associated demand for member states to come up with transition plans that feature at least 37% in climate-related investments. With regards to the just transition aspect, the ongoing

formulation of territorial just transition plans that are foreseen as part of the implementation of the European Green Deal is another possible connection.

Just as the transition plans explored in the context of financial supervision, these plans also need to take into account a forward-looking perspective. Moreover, they need to be benchmarked against reference scenarios to assess their credibility and identify potential for improvements. The important difference is, however, that their aim is to maximise environmental and social impact rather than merely avoiding the worst risks. Such policies are thus more active in the sense that they do not just set the guardrails on what is to avoid under any circumstances but also identify long-term targets or what has been called a 'mission'[26] towards which the economy should transition.

In any case, there are strong overlaps between the data needs for risk-based and impact-based transition plans and scenarios. The indicators that are needed for these assessments, notably, can draw from the broader work on Beyond GDP accounting and the operationalisation of the sustainable development goals (SDGs).[27]

If transition plans and benchmark scenarios are moving towards becoming a policy instrument that is increasingly used and legally and institutionally embedded in policy fields that go beyond financial supervision and instead encompass fields like public investments, the question arises of whether the current institutional setting of scenario development and assessment is still appropriate. First, if scenario analysis moves from becoming a somewhat arcane risk analysis tool to a more mainstream instrument for judging actors' performance, this means that the scope of application must be broadened. Hence the requirement for submitting transition plans might be extended from financial institutions to all private and public organisations that are meaningfully affected by the transition. When designing such binding rules, the proportionality principle should, however, be respected to ensure that organisations only have to submit information that is relevant to their core activities.

Second, the increasing extension of scenario analysis beyond the financial sector raises the question of whether supervisors and central banks are still the right 'institutional home' for such assessments. While initiatives like the NGFS have done much for the advancement of scenarios, the questions around inclusivity and participation that were raised in the previous section as well as the need to have a democratic and political discussion of what are the reference points for a just transition suggests that a change of the institutional setting might be welcome in the future.

5. Conclusion and policy recommendations

This policy brief has argued that transition plans and benchmark scenarios are useful and increasingly important tools in governing the transition to a green economy. As their importance increases it is, however, crucial that these tools are developed in line with both environmental and social principles. Moreover, this policy brief argues for a more participatory approach towards scenario analysis and the integration with similar methodologies that are emerging in other policy fields. The points listed below summarise the recommendations that can be taken from this policy brief.

Principles for scenario design as currently practised in financial supervision

- Assumptions and pathways on decarbonisation and other environmental impacts must remain science based and precautionary.
- Just transition considerations on issues such as employment, inequality and continued accessibility of energy and other necessities must be incorporated at the very first stages of scenario design and be mandatory items for the submission of transition plans.
- The process of design and analysis should become more transparent and inclusive. This would prevent benchmark scenarios becoming black boxes and ensure that important developments and perspectives are not overlooked due to bias of scenario developers.

Forward-looking issues

- Questions of inclusiveness and broader participation could be addressed by designing novel, democratically legitimised institutions that design and apply reference scenarios.
- A cross-fertilisation between scenario analysis and other policies such as just transition plans in recovery packages should be pursued to ensure policy coherence and avoid the duplication of methodologies.
- The scope of the mandatory submission of transition plans and their assessment against benchmark scenarios should be extended to companies outside of the financial system.

Notes

1. UNEP (2021). www.unep.org/resources/emissions-gap-report-2021
2. IEA (2021). www.iea.org/reports/net-zero-by-2050
3. https://productiongap.org/2021report
4. For instance, extreme '50-year' heatwaves become 13.9 times more likely under a 2° scenario vs an increase of 8.9 times in a 1.5° world. 10-year heavy precipitation events over land become 1.7 times more likely in the 2° scenario and 1.5 times more likely in a 1.5° scenario.
5. According to recent estimates, unmitigated climate change could result in three billion people being exposed to temperatures that are above the niche mean temperatures that have supported human civilisations in the past several thousand years by 2070. Cf. www.ft.com/content/072b5c87-7330-459b-a947-be6767a1099d
6. https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-ARoadmapfortheGlobalEnergySector_CORR.pdf. IEA World Energy Outlook 2021: 51.
7. http://deeplink.rechtspraak.nl/uitspraak?id=ECLI:NL:RBDHA:2021:5339
8. www.ngfs.net/sites/default/files/ngfs_climate_scenario_technical_documentation_final.pdf In this context it should be noted that there is a wider academic discussion that casts doubt on whether the economic theories, assumptions and methods like general or partial equilibrium modelling that still underpins many IAMs are an adequate tool in light of the dynamic and non-linear characteristics of the climate crisis and the green transition. While this important discussion by far exceeds

the scope of this policy brief, the interested reader may consult S. Keen, 'The appallingly bad neoclassical economics of climate change'. *Globalizations* 18, no. 7 (2021): 1149–177 for a critique of IAMs, and P. Bolton at al, *The Green Swan* (BIS Books, 2020) for an overview that connects epistemological with policy questions in the context of scenario analysis.

9. The credit rater Moody's offers for instance "Climate-adjusted macroeconomic forecasts with an 80-year horizon. Fully aligned with the Network for Greening the Financial System's (NGFS) representative scenarios." https://esg.moodys.io/climate-solutions

10. www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211020~03fba70983.en.html

11. Cf A. Baker, 'The new political economy of the macroprudential ideational shift'. *New Political Economy* 18, no. 1 (2013): 112–19. https://doi.org/10.1080/13563467.2012.662952

12. See also www.bankingsupervision.europa.eu/press/speeches/date/2021/html/ssm.sp210603~e0388eab0d.en.html

13. For a deeper discussion on the necessity for a precautionary view, see H. Chenet, J. Ryan-Collins and F. van Lerven, 'Finance, climate-change and radical uncertainty: towards a precautionary approach to financial policy'. *Ecological Economics*, 183 (2021), 106957. https://doi.org/10.1016/j.ecolecon.2021.106957

14. Muttit (2017). 'Forecasting failure. Greenpeace and Oil Change International'. https://secure.greenpeace.org.uk/page/-/ForecastingFailureMarch2017.pdf

15. https://socialeurope.eu/climate-scientists-concept-of-net-zero-is-a-dangerous-trap

16. Ibid. For a literature review see also C. Corson, K. I. MacDonald and B. Neimark, 'Grabbing "green": markets, environmental governance and the materialization of natural capital'. *Human Geography*, 6, no. 1 (2013): 1–15.

17. For recent examples, www.bloomberg.com/news/features/2021-08-11/the-fictitious-world-of-carbon-neutral-fossil-fuel, www.ft.com/content/cfaa16bf-ce5d-4543-ac9c-9d9234e10e9d

18. NGFS (June 2021), 'Climate scenarios for central banks and supervisors': 21. https://www.ngfs.net/en/ngfs-climate-scenarios-central-banks-and-supervisors-june-2021

19. While the NGFS documentation does not contain references to inequality, it should be noted that high-level assumptions on cross- and intra-country inequality are carried over from the use of the shared socio-economic pathways (SSPs). As the reference scenario that is used is SSP 2, the 'middle of the road scenario' that assumes that historical patterns on inequality continue in the future, the criticism about the relative lack of attention to social issues arguably remains valid. On the SSPs see Riahl et al, 'The shared socioeconomic pathways and their energy, land use, and greenhouse gas emissions implications: an overview'. *Global Environmental Change* 42 (2017): 153–68.

20. IEA (2021). https://www.iea.org/reports/net-zero-by-2050: 151ff.

21. The original statement by Timmermans is: "We must ensure that this transition is just, or there just will be no transition." https://ec.europa.eu/commission/commissioners/2019-2024/timmermans/announcements/executive-vice-president-timmermans-speech-eurogas-annual-meeting-2021_en

22. For an overview, https://journals.openedition.org/poldev/3107

23. https://www.ituc-csi.org/governments-fail-paris-agreement

24. https://ec.europa.eu/info/publications/210712-sustainable-finance-platform-draft-reports_en

25. This is mostly the case for European financial regulators. In other set-ups of financial systems and financial regulation, eg in China or Bangladesh, financial regulators have taken both a prudential and a promotional role with regards to climate action. For a comparative framework see M. Baer, C. Campiglio and J. Deyris, 'It takes two to dance: institutional dynamics and climate-related financial policies'. Centre for Climate Change Economics and Policy Working Paper 384/ Grantham Research Institute on Climate Change and the Environment Working Paper 356 (London: London School of Economics and Political Science, 2021).

26. M. Mazzucato, 'Mission-oriented innovation policies: challenges and opportunities'. *Industrial and Corporate Change*, 27 (no. 5) (2018), 803–15.

27. Eg www.oecd.org/naec/averting-systemic-collapse/SG-NAEC(2019)3_Beyond_Growth.pdf and https://zoe-institut.de/en/publication/inventory-of-indicators

About the author

ANDREAS DIMMELMEIER

Andreas Dimmelmeier is a Policy Analyst on Climate and Environment at FEPS. He holds a PhD in Political Science and Political Economy from Copenhagen Business School and the University of Warwick. His doctoral research focused on the expert networks in the emergence of sustainable finance, the role that economic ideas played in this process, and how socio-technical tools such as standards, metrics and scenarios have made sustainable finance governable. Andreas has published on the interactions between finance and financial regulation and the transition towards a sustainable economy in international peer-reviewed academic journals and edited volumes. In addition, he has contributed to policy reports and policy briefs on these topics.

About FEPS

The Foundation for European Progressive Studies (FEPS) is the think tank of the progressive political family at EU level. Its mission is to develop innovative research, policy advice, training and debates to inspire and inform progressive politics and policies across Europe.

FEPS works in close partnership with its 68 members and other partners -including renowned universities, scholars, policymakers and activists-, forging connections among stakeholders from the world of politics, academia and civil society at local, regional, national, European and global levels.

European Political Foundation - Nº 4 BE 896.230.213 | Avenue des Arts 46 1000 Brussels (Belgium)

www.feps-europe.eu | Twitter/Instagram: @FEPS_Europe | Facebook: @FEPSEurope

ON THE SAME TOPIC