A future-fit recovery?

A sectoral analysis of practices for promoting systemic change in the NRRPs based on the Recovery Index for Transformative Change (RITC)

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Executive summary

The EUR 672.5 bn Recovery and Resilience Facility (RRF) is a once-in-a-generation opportunity for EU Member States to channel new funding towards reshaping economic sectors, supporting communities and restoring ecosystems while simultaneously creating jobs for resilient societies and contributing to a healthy and just economic recovery. To access EU funds for their pandemic recovery, Member States submitted National Recovery and Resilience Plans (NRRPs) to the European Commission that outline reforms and investments for recovering from the pandemic.

The disbursement of funds within the NRRPs depends on a variety of conditions. For example, reforms and investments have to meet the Do No Significant Harm (DNSH) principle, 37 % of investments must be spent on climate and measures should be in line with the recommendations from the European Semester and the EU flagship projects. These conditions provide an effective and innovative approach to policy design. They are an important first step to make the case for what a recovery can look like; that is not about returning to business as usual, but about promoting the profound changes the EU needs to thrive. However, it remains an open question whether the ambitious guidelines by the Commission effectively translated into systemic measures that address the root causes of the EU's persistent social and environmental challenges together.

Against this background, this report presents a novel should be methodology to assess the systemic scope of the NRRPs and help policymakers in the assessment of measures within the plans: the Recovery Index for Transformative Change (RITC). On the one hand, our assessment examines the potentials and risks of investments and reforms of individual NRRPs that either promote or hinder transformative change. On the other, our analysis paints a comprehensive picture about the kind of future that is promoted through investments and reforms in the NRRPs using a sectorial lens that also links to the flagships of the European Semester.

Transformative change in our analysis is structured into two clusters: The width of change refers to the potentials and risks of the policies to enable a just transition and at the same time ensure the protection of the natural world; the depth of change refers to the structural aspects of a systemic change. The latter examines whether the plans address the root causes of current ecological and societal problems.

The unique value of our analysis lies in drawing special attention to whether **interconnected problems are recognised in the NRRPs and addressed as such, rather than siloed solutions.** We assessed whether reforms and investments are cross-cutting and facilitate systemic change towards a regenerative, distributive and resilient economy, rather than stabilising the status quo.

Our assessment through the RITC shows that while each of the 13 NRRPs has its strengths and weaknesses, overall none fulfill all the criteria needed for delivering the kind of deep transformation needed for Europe to thrive.

The assessment of the NRRPs through the RITC revealed three common shortcomings across the plans:

1. A general lack of rigorous application of the DNSH principle which often overlooks the risks to biodiversity in particular.
2. In addition to supporting industries affected by the pandemic, the recovery needs to create jobs in those regions that are most affected by the digital and green transition. This will be important to decrease social polarisation in the recovery process.
3. The lack of a longer-term, overarching vision of the future to be built in this process.

In many cases, our assessment revealed that the plans contain some missed opportunities, notably when it comes to translating solutions to social and environmental problems into new investments. In addition, the analysis found that the plans mainly focus on investment and renewal. Strategies are lacking on how to phase-out current entrenched unsustainable practices and policies, for example through environmental taxes, social and environmental safeguards or regulations.

This report provides a detailed breakdown of the RITC's analysis of the plans by sector. It offers specific examples of measures which take a transformative approach. In addition, it explains why and how some measures need improvements to comply with the guidance from the Commission and to contribute to overarching strategic goals like realising the European Green Deal or the Sustainable Development Goals. This sectoral analysis of the NRRPs not only connects to measuring contributions to the flagships, but it also illustrates emerging trends for the EU as a whole and thus provides insights on what kind of future we can expect from the plans and what more needs to be done.

Introduction

A year into the pandemic, there is global recognition that the recovery process should not just be focussed on a return to business as usual. Unprecedented public health and economic crises have revealed substantial shortcomings in the way our economies are run and highlighted and exacerbated pre-existing inequalities. While the European Union (EU) grapples with these challenges, the scale of Member States' collective response to the pandemic shows both the potentials and risks for rapid and large scale transformation in the face of a crisis. In parrallel to the pandemic, climate change, accelerating biodiversity loss and increasing social polarisation within the EU pose a substantial challenge to our current societal and economic systems[1]. The recovery process to the pandemic offers an opportunity to not just tackle the public health crisis, but also work towards transitioning the economy to one that is low-carbon, resource-light and that restores nature while creating high social welfare and cohesion at the same time.

The economic recovery from the pandemic provides a unique opportunity to rebuild the EU economy so that it becomes fit for the future and people and nature can thrive. Creating an economy that equally addresses economic, social and environmental challenges requires policymakers to think of long-term solutions in a systemic manner[2]. It requires a novel and integrated assessment of policy impacts to boost out-of-the-box solutions and public policy innovation.

It is in this context that we have undertaken an analysis of the National Resilience and Recovery Plans (NRRPs) across the EU to understand how far Member States commited to innovative systemic solutions and what still needs to be done to achieve sustainable prosperity in Europe.

The NRRPs submitted to the European Commission by each EU Member State represent an important opportunity to channel new funding towards reshaping economic sectors and restoring ecosystems, forests and land, while simultaneously creating jobs for resilient societies and contributing to a healthy and just economic recovery[3]. These plans outline investments and reforms for recovering from the pandemic, and together paint a picture of what the future of Europe looks like.

The European Commission set out mandatory criteria to assess NRRPs' green credentials, namely the Do No Significant Harm (DNSH) principle. This framework represents a big step forward in efforts to introduce greater scrutiny for investment in general, and public investment specifically. It facilitates large-scale funding going towards climate objectives and was introduced to limit environmentally-damaging activities and impacts of investments and reforms. A rigorous, thorough, and evidence-based DNSH would be a radical shift in how the EU approaches public investment. However, as our analysis shows, the application of this principle did not reach its tranformative potential. More strict adherence to the principle of DNSH is needed for systemic change.

To achieve the necessary systemic change to address the overlapping and intersecting challenges the EU is currently facing, plans also need to take a systemic approach. This means not only rigorous environmental DNSH assessment, but also this level of scrutiny for social objectives and interconnected challenges. To do that we have developed the Recovery Index for Transformative Change (RITC) that aims to support policymakers in looking at the NRRPs through a systemic lens.

The RITC aims to assess the extent to which the measures found in Member States' NRRPs make use of the innovative potential for policy design, root-

1 European Commission. (2019). *Communication from the Commission to the European Parliament,* The European Council, the Council, The European Economic and Social Committee and the Com-mittee of Regions. The European Green Deal. https://ec.europa.eu/info/sites/default/files/european-green-deal-communication_en.pdf

2 ZOE. Institute for future-fit economies. (2021). *Towards a resilience donut: Recommendations for operationalising and mainstreaming resilience.* https://zoe-institut.de/en/publication/3636/

3 For more information about the NRRPs and Resilience and Recovery Facility which funds the NRRPs, please see https://zoe-institut.de/en/publication/systemic-change-for-a-resilient-europe/

ed in the DNSH, and deliver the kind of transformative change required. Through the RITC analysis, we also provide recommendations on how NRRPs might better contribute to an environmentally and socially just transition. This index differs from other assessments of the NRRPs like the Green Recovery Trackers and the Greenness of Stimulus Index by looking at the whole plans, and not just climate measures, by taking a deeper look at the transformative potential (and risks) of investments and reforms in the plans as well as a holistic view of the plans and the policy coherence between elements within[4]. We look not only at level of funding, but at the design of instruments and measures. It is designed to complement these other indexes that take a sector-specific view of the investment reforms (e. g., whether they reduce waste, reduce carbon emissions, provide jobs etc.)[5].

This report summarizes the analysis from the RITC. It provides an overview of the potentials and risks of 13 Member States to deliver transformative change through their NRRPs. It offers specific examples of measures which take a transformative approach, as well as explaining why and how some measures need improvements to build a resilient economy. In this way we illustrate specific ways in which countries are delivering a systemic transformation, and also specific ways in which measures need to be improved. We break down this analysis by sector, rather than country, as no country had a plan without weaknesses or risks. In addition to this summary report, country profiles for each Member State that we analysed will be available on the ZOE institute website.

Methodology

The framework of the RITC examines the potentials and risks of investments and reforms to help or hinder transformation. The RITC consists of four sets of indicators: three at the "component level" (where a collection of investments and reforms are categorised under one banner), and the last set looking more holistically at the entire plan and the policy coherence between the various components. At the component level, we examined characteristics which contribute to the **width** and **depth** of transformative change.

The **width of change** refers to the cross-cutting reach of a policy measure which contributes towards multiple objectives at the same time. In this sense, systemic change is about steering the transformational journey towards an ambitious European Green Deal. For policies to be systemic, the reaction to any kind of challenge – be it from COVID-19, social polarisation, digitalisation, environmental degradation or demographic change – should contribute to the creation of a thriving Europe that is both sustainable and fair[6]. The RITC assesses the width of change through four indicators for the protection and enhancement of the **Natural World** and five indicators which address the social dimensions of a **Just Transition** as illustrated in the table below.

The **depth of change** explores whether the interventions tackle the "root causes" of a challenge, whether this be environmental or social. Systemic policies are creative solutions to problems (such as biodiversity loss or social inequality) which change the underlying mental models, norms, relationships, financials flows and policies in a way that the symptoms no longer occur, rather than fighting the symp-

4 Vivid Economics. (2021). *Can't see the wood nor the trees: Nature is largely missing from the National Re-covery and Resilience Plans*.

5 See for example: Bankwatch & Euronatur. (2021). *Building Back Biodiversity: How EU Member States fail to spend the recovery fund for nature.* https://www.euronatur.org/aktuell/detail/news/missed-opportunities-for-biodiversity-conservation/ Or: Vivid Economics. (2021). *Can't see the wood nor the trees: Nature is largely missing from the National Recovery and Resilience Plans.*

6 ZOE. Institute for future-fit economies. (2021). *Systemic change for a resilient Europe: Sustainable transformation through the NRRPs*. https://zoe-institut.de/en/publication/systemic-change-for-a-resilient-europe/

toms themselves[7]. In this sense, systemic change means "changing the formal and explicit (policies, practices, resource flows), as well as informal and semi-implicit (power dynamics, relationships and connections) and implicit (mental models) institutions of today's economies[8]."

Using these two characteristics as a frame, components received a positive score for their ability to contribute positively to the indicator or a negative score for potential risks and harmful lock-ins. Where there was both positive and negative in one component, these could cancel each other out for a 0. For Width, components are ranked for each criterion either 1 for "strong potential" or 0 if "not strong potential", and either -1 for "strong risk" or 0 if "not strong risk". For Depth, components are ranked for each criterion on a scale of -1 to 3 (-1 = Negative effect, 0 = None, 1 = Low, 2 = Moderate, 3 = High). If there was not enough information to have some kind of indication of the direction, the component was assessed with a 0 for that factor. Therefore, our scoring is relatively conservative.

At the whole-plan level, the plan was reviewed for the way in which the Member State managed the coherence across the plan and between different components and assessed the coverage of key intervention areas needed for systemic change covered in the literature[9].

A more detailed description of the methodology and process behind this assessment will be published after this report on the the project site. How the indicators can be used to inform a sectoral assessment can be found in our sectoral analysis below.

Assessment Process

Each plan was divided into eleven sectors across the themes that were most prevalent in countries' plans:

- administrative & fiscal reform;
- social policy, education & employment;
- mobility;
- energy;
- biodiversity, bioeconomy & agriculture;
- digitalisation;
- innovation & business & industrial policy;
- built environment & material use;
- health;
- culture & tourism;
- and sea & marine issues.

The plans were assessed at the component level rather than by each individual measure. Since each country had a different number of components and interventions, scores were averaged according to each indicator. After the component-level assessment of the plans, each plan was then reviewed holistically to ensure consistency across sectoral assessments. In addition, we conducted a whole-plan level assessment regarding the overall coherence between components and the coverage of key indicators intervention areas needed for systemic change.

As with any methodology, there are some limitations to this approach. The plans had varying levels of detail in their components, making it hard to assess in some cases where very little detail was available. In addition, some countries completed the DNSH assessment more thoroughly and clearly than others, making it hard to understand what actual impact some measures would have on the natural world: in some cases the anticipated impact on the

7 ZOE. Institute for future-fit economies. (2021). *Systemic change for a resilient Europe: Sustainable transfor-mation through the NRRPs.* https://zoe-institut.de/en/publication/systemic-change-for-a-resilient-europe/

8 Barth J. and Abrar R., Coscieme L., Dimmelmeier A., Hafele J., Kumar C., Mewes S., Nuesse I., Pendleton A. & Trebeck K. (2020). *Building a resilient economy. Analysing options for systemic change to transform the world's economic and financial systems after the pandemic.* ZOE-Institute for future-fit economies: Bonn.

9 Barth J. and Abrar R., Coscieme L., Dimmelmeier A., Hafele J., Kumar C., Mewes S., Nuesse I., Pendleton A. & Trebeck K. (2020). *Building a resilient economy. Analysing options for systemic change to transform the world's economic and financial systems after the pandemic.* ZOE-Institute for future-fit economies: Bonn.

Width of Change		Depth of Change
Just Transition (-5 – +5)	**Natural World** (-4 – +4)	**Sytemic Change**[10] (-4 – +12)
Social Protection for Workers & Communities Most Affected by Transition Policies to support vital "social infrastructure": a range of public services and facilities that meet local needs and enable a good quality of life (e.g., education, health & social care)	**Biodiversity Conservation** Measures which conserve the abundance and diversity of different species of flora and fauna in a given place (e. g., rewilding projects, national parks, protected natural areas)	**Mental Models** Habits of thought – ingrained beliefs, expectations and taken-for-granted ways of operating that influence thoughts, discourse and behaviour
Resilient Local Economies Should be locally specific, create economic diversity, meet local needs and provide community stability (e. g., utilities, food supply, transport networks)	**Nature-Based Solutions** Solutions to natural, semi-natural, novel & urban ecosystems which address societal challenges effectively and adaptively, providing human wellbeing & biodiversity benefits (e. g., reforestation to prevent flooding, green walls & roofs for energy savings)	**Relationships & Connections** Quality of connections and interchange between systemic actors, especially among those with differing histories and viewpoints
Jobs for Resilient Societies Jobs which are necessary for strong and resilient societies which don't harm the environment (e. g., social and health care, education, arts, green agriculture, renewable energy)	**Connecting People with Nature** Policies in this area should remedy poor individual behaviours and social habits towards nature (e. g., polluting actions) and create stronger connections between people and nature (e. g., increasing access to green spaces, educational programmes built around understanding the natural world)	**Power Dynamics** The distribution of decision-making power, authority, and both formal and informal influence among individuals and organisations
Social Dialogue & Civic Engagement Should give citizens a say in the decisions that affect their lives and communities, especially citizens who have been historically marginalised, allowing people to participate in civic society (e. g., citizen assemblies and participatory budgeting)	**Climate Change Action** Responses to climate change may take the form of mitigation (e. g., reducing the emissions of greenhouse gases) and adaptation measures (reducing societies' vulnerability to the effects of climate change)	**Policies, Practices, Resource Flows** *Policies:* Governmental, institutional and organisational rules, regulations, and priorities that guide the entity's own and others' actions *Practices:* Established procedures of institutions, networks, and other entities in the pursuit of social and environmental objectives, as well as the methods, guidelines, or informal shared habits that structure their work *Resource flows:* The allocation and distribution of tangible and intangible assets like money, people, knowledge and information
Equity, Diversity & Inclusion Recognising and addressing the power imbalances resulting from historical legacies and ongoing impacts of structural inequalities (e. g., racism, sexism, ableism)		

Table 1: Component Level Indicators

10 Kania, J., Kramer, M. & Senge, P. (2018). *The Water of Systems Change. FSG.* https://www.fsg.org/publications/water_of_systems_change#download-area

natural world from our assessment was greater than indicated in the DNSH assessment[11]. In addition, like with all frameworks, there is always an element of subjectivity in the qualitative assessment of documents. We worked to counter this by having a horizontal (by sector) and vertical (by country) approach to the assessment process. In addition, every component was reviewed by at least two people.

Finally, on the outcomes of our analysis: our approach does not facilitate a straightforward ranking of the plans from best to worst, because countries have different starting points, different levels of national funding, and different funding available to them through the Resilience and Recovery Facility. We instead present the visualisation in Figure 1 to show the multiple dimensions of our analysis and how plans can offer strong potential in some areas while showing less potential or even risks in other areas. In this way we highlight strong and weak elements across the 13 plans we assessed, as well as country profiles. The core of our analysis is qualitative, broken down by sectors, and this breakdown can be found in Table 1.

Overarching results

In our analysis we found that none of the countries we assessed have submitted a National Resilience and Recovery Plan which fully delivers the kind of deep transformation needed to redirect Europe towards a sustainable future. We observed three common problems across all plans: a general lack of rigorous application of the DNSH principle; the lack of longer term, overarching vision and an eye for what kind of future is being built; and finally the lack of integration of different ways of working (such as integrating gender equality or participatory practices across all measures).

In the following section, you can find an overview of the scoring of all countries. We do not rank countries, as countries submitted plans of vastly different length and level of detail and also had differences in funding available. Many of these are touched on in the Sector Analysis, where we discuss examples of good practice, and opportunities for improvement across each sector covered in the plan. Country profiles will be available on the ZOE Institute website following publication of this report, and further analysis of each of these plans can be downloaded there as well. In the graphic below, the scores of each country are visualised. Here, how countries score against natural world and just transition criteria can be seen on the axes, and the size of the bubble related to the contribution to systemic change and the overall transformative potential of the plan.

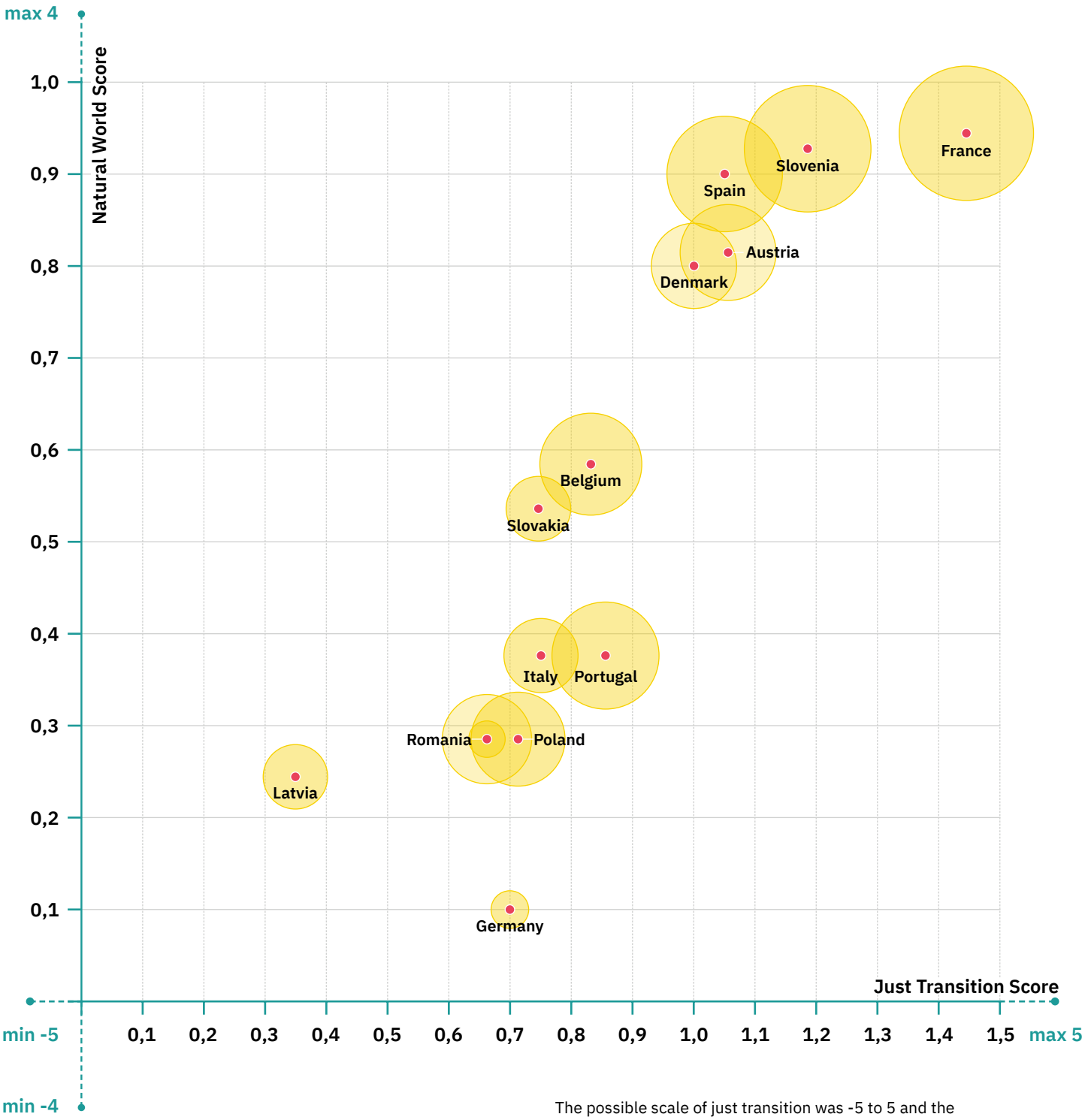
As was explained in the methodology section, we divided the components into sectors. In Table 2, these sectors have been mapped against the pillars and flagships to clearly illustrate how this aligns with the strategic guidance.

Sectoral Analysis

In the following sectoral analysis of the plans, we outline what an ideal scenario looks like, reflecting across the plans we analysed, and include specific examples which stand out as either good practice (⭐) or that need improvement or adjustments (⚡). In the following table, our sector breakdown is aligned with the corresponding EU Pillars and Flagships. In the analysis below, we clustered together biodiversity with culture and sea and marine as they were often interconnected in the plans.

None of the countries we assessed have submitted a National Resilience and Recovery Plan which fully delivers the kind of deep transformation needed to redirect Europe towards a sustainable future.

11 This issue is discussed in more detail in the Reflection Section.



The possible scale of just transition was -5 to 5 and the possible scale of natural world was -4 to 4.

- *Just transition score* illustrates how well the plans met our criteria for a just transition in their recovery.
- *Natural world score* illustrates how well the plans met our criteria for protecting the natural world in their recovery.
- The diameter of the yellow circle illustrates how well the plans delivered *systemic change*.

Figure 1: Overall comparison of country scores

The graph below shows an excerpt of the country profile for the Italian NRRP. The dashboard illustrates at a glance that the plan, like all the others in this assessment, had strengths and weaknesses. With regard to the width of change, the proposed measures offer relatively strong opportunities in areas such as sustainable agriculture and circular economy, but there are significant risks connected to intermodality and integrated logistics.

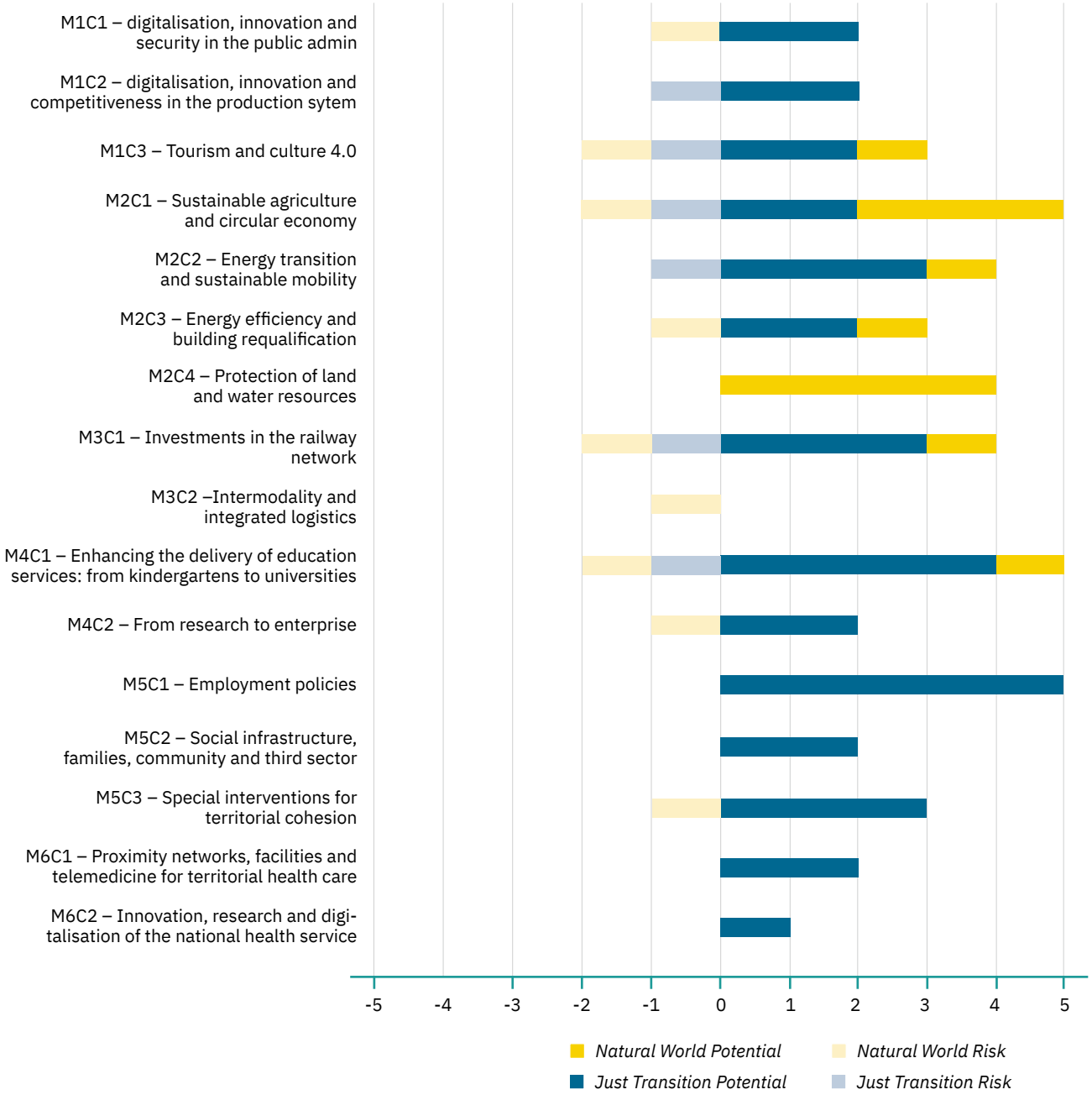


Figure 2: Italy RRP dashboard overview

Social Policy, Education and Employment

Investments and reforms related to social policy, education and employment are a key pillar of the recovery and resilience process. These measures are essential to maintaining social support systems necessary for building community and economic resilience. Investments should resource, expand, or develop social support systems for vulnerable populations, disadvantaged groups and those most affected by the transition. They should work towards inclusive education, and expanding access, particularly to digital tools and resources, needed for modern education practices. They should also expand support structures for those out of work, and particularly build additional support systems and measures for those whose employment will be impacted by broader societal transitions, such as the sustainability transition. It is crucial that all of this involves not just financial support, but also community structures and lifelong learning and training opportunities.

All the plans contain, in one form or another, measures to improve skills, strengthening qualifications of workers and unemployed people as well as (re) training programmes. In particular, many of the plans include reforms and investments for improved and expanded vocational training, dual education or apprenticeships, reduced school drop-out and improved early childhood education, including Spain, Slovakia, Poland, Romania, Germany, Italy, France, Portugal and Slovenia. Some Member States, such as France, Spain, Italy and Germany, also use these programmes to counteract youth unemployment and strengthen social inclusion and regional cohesion, as well as cooperation with the business sector.

Sector	Corresponding EU Pillar	Corresponding EU Flagship
Energy	Green transition	Power up
Mobility	Green transition	Recharge and refuel
Built environment & material use	Green transition	Renovate
Biodiversity, bioeconomy, agriculture	Green transition / Smart, sustainable and inclusive growth	
Digitalisation	Digital transformation	Connect, scale-up
Administrative & fiscal reform	Health, economic, social and institutional resilience / Digital transformation	Modernise
Health	Health, economic, social and institutional resilience	Modernise
Innovation, business & industrial policy	Smart, sustainable and inclusive growth	Scale-up
Social policy, education & employment	Health, economic, social and institutional resilience / Policies for the next generation, children, youth	Reskill and upskill
Culture & tourism	Smart, sustainable and inclusive growth	
Sea & marine	Green transition	

Table 2: Sectoral analysis and corresponding EU frameworks

This multi-dimensional approach is good practice for addressing multiple aspects of social challenges. In particular, the Slovenian plan offers an example of this interconnected approach in their education measures and reforms: They aim to strengthen skills for the digital and green transition, successfully integrate young people into technologically advanced environments, provide an inclusive education infrastructure and strengthen the transition from education to the labour market. However, only the German plan includes strong measures to tackle long-term unemployment, and this is an area that could be improved on across all plans.

The expansion and the improvement of social services, reforms and investments to strengthen long-term care and to prevent institutionalisation of elderly people through community-based services are for example outlined in the Austrian and Belgian plans.

Social housing is another recurring factor in many NRRPs (France, Portugal, Latvia, Spain, Slovenia, Poland, Romania). For example, the Slovenian plan aims to increase the stock of public rental housing while facilitating access to housing for young, elderly and disadvantaged people by making non-profit rental housing available through public tenders.

Our analysis reveals that delete all plans are using this opportunity to deepen active labour market policies. However, this can be both a risk and an opportunity. Some good examples include cases where NRRPs include reforms to adapt the legal framework to the pandemic-related changes in working patterns and to improve the protection of workers, such as remote working or more flexible working hours (as in Spain and Poland). In addition, expanded training is another positive example of active labour market policies being strengthened across all plans. In particular Italy and France are investing in mentoring, councelling and career guidance; Portugal, Latvia, Slovenia, France and Belgium included employment programmes for people with disabilities. However, this can also deliver negative social outcomes, as seen in the Polish example below.

★ Belgium: Digibanks to strengthen social inclusion and digitalisation

The Belgian project "Digibank" in Flanders offers a good example in the way that it aims to reduce the risk of digital exclusion and ensure the participation of vulnerable groups in the transition to digitalisation. In doing so, it has three objectives: a) the material provision of laptops and other digital devices; b) the strengthening of digital skills, both personal and technical (e. g. repairing computer equipment); c) support through better digital access to key services through so-called physical hubs[12]. Moreover, the project takes a bottom-up approach. Digibank partnerships are to be established as innovative collaborations between different partners such as governments, businesses, educational institutions and civil society organisations. The Belgian plan also has specific programmes to improve equal opportunities for disabled people through measures to improve accessibility and employment programmes aimed at the inclusion of disabled people. This is also present in the plans from Romania, Slovakia, Portugal, Latvia, France, and Slovenia.

★ Spain: Establishment of a mechanism for internal flexibility, stability in the employment and transition support

The Spanish plan provides a mechanism to protect employment, prioritise a reduction in working hours to stabilise labour relations in the face of economic shocks, and promote investment and human capital in the context of structural change caused by economic crises. The aim is to provide companies with permanent alternatives to lay-offs. In addition to a reduction in working hours, there is discussion of increasing investment in worker training during periods of lower activity. A system for retraining workers is also to be introduced, specifically to serve companies affected by green and digital transitions that entail permanent adjustments to the workforce.

↯ Poland: Labour and Retirement

Poland's component on "Solutions for prolonged employment of people at middle age and older (50+)", is an example of active labour market poli-

12 Cabinet du Secrétaire d'Etat à la Relance et aux Investissements Stratégiques, en charge de la Politique Scientifique. (2021). *Plan National Pour la Reprise et la Réslience.* https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en

cies delivering negative social outcomes. This component promotes the development of competencies of workers approaching retirement age and foresees income tax reductions for people who have reached retirement age but choose to continue their employment[13]. However, the envisaged gradual extension of the retirement age risks exacerbating inequalities and is insufficient with regard to the goal of ensuring a dignified life for the ageing population. It can especially give raise to future calls to decrease pensions as people can continue to work. Similarly, the Romanian NRRP aims towards an extension of careers to ensure pension insurance contributions, although the details are lacking.

Mobility

Best practice in the mobility sector would incorporate social objectives (inclusive of health, community cohesion, inclusion and equality), environmental objectives (inclusive of climate and nature) and economic objectives (specifically around local economic resilience building). New infrastructure should not only be focused on enhancing and expanding public transport, as seen in Italy and Austria, but also making it more accessible for disadvantaged groups, improving active travel infrastructure, as in Romania, and incorporating biodiversity protection and emissions reduction as explicit goals in infrastructure planning. The mobility of the future also needs to anticipate and design systems which facilitate smooth mixed-mode transportation connections. This is particularly important to not exclude rural communities from sustainable transport systems. This should particularly include a focus on smaller cities and rural hubs, and on active travel particularly in denser population hubs.

There were no plans which incorporated adequate biodiversity and nature protections into their mobility infrastructure projects. This kind of cross-cutting, integrated assessment of impact should have been done through the DNSH process, but was largely insufficient. While there are some examples of this, as referenced below, this has not been systematically integrated into infrastructure development.

In addition, many plans focused too heavily on the transition to low-emission or zero-emission cars, and not enough on expanding the network, access to the network, and incentives in favour of public transport. This large investment into car transportation limits the future potential of public or active travel to become a cultural norm and an accessible infrastructure and mobility option. Plans needed to incorporate reforms for phasing out reliance on individual car travel. An example of such disincentive is present in Poland with the creation of clean transport zones in urban areas.

★ Austria: Public transport incentives

The mobility component of the Austrian plan approaches mobility strategically by orienting measures and reforms around emissions reduction goals, while also targeting specific measures which instigate a mobility transition. Overarching reforms, such as the Mobility Master Plan, represent strong guidance and a vision which also include well-established frameworks for behavioural change[14]. The component also introduces two new schemes to improve public transport access: the first, a multi-mode booking platform; the second, more significant, annual passes for use of all public transport which offer a fixed price for unlimited travel and reductions for particular groups.

In addition to this consideration of consumer access and behaviour, there is investment in zero-emission vehicles (specifically business and commercial vehi-

13 Ref polish plan, page 172 Ministerstwo Funduszy I Polityki Regionalenej. (2021). Krakowy Plan Odbudowy I Zwiekszania Odpornosci. https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en p. 172

14 Bundesministerium Finanzen. (2021). Österreichischer Aufbau- und Resilienzplan 2020-2026. https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en

cles) and investment into new railways and electrification of existing lines. However, these are focused on existing heavy traffic routes and do not offer solutions for regional or local train infrastructure. While all of this takes a multi-modal approach to shifting the mobility system in Austria, there are still some places for improvement. First, while the Mobility Master Plan incorporates cycling and walking, there are no related infrastructure investments or incentives. The Koralm Railway is one of very few examples of biodiversity measures being implemented alongside infrastructure, however this doesn't change the need to do a deeper analysis of the environmental impact of the new infrastructure on all measures across the plan. Finally, the plan currently only incentivises sustainable mobility rather than complementing this with the phase-out of unsustainable mobility for certain places like city centres.

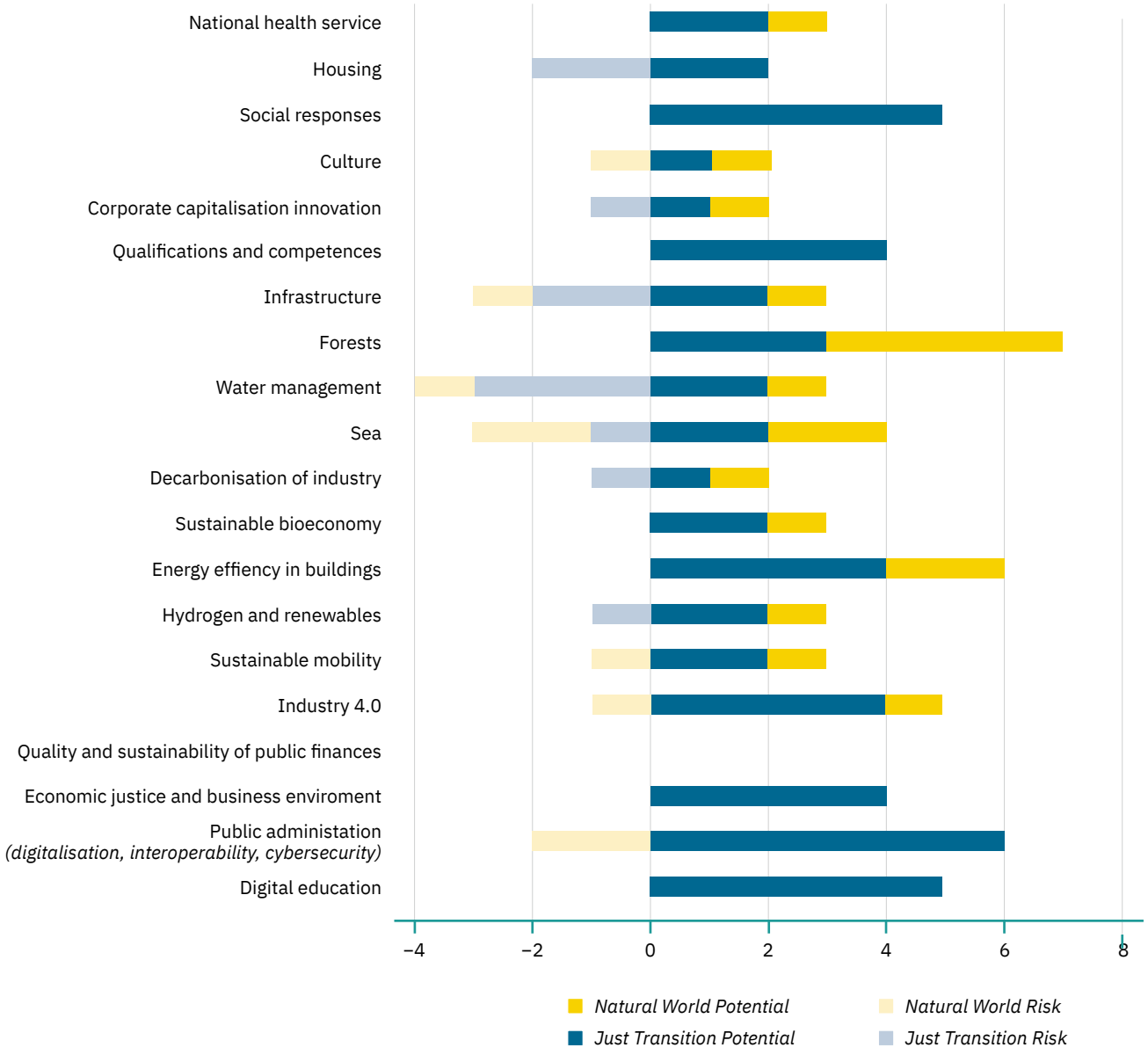


Figure 3: Portugal NRRP dashboard overview

★ Italy: Mobility for regional cohesion

Italy's approach to mobility represents a further example of how mobility investment can be used to work towards social and territorial cohesion outcomes. The investment of EUR 24 billion into the rail network represents a significant investment in improving inter-regional mobility and modernising the transportation system, specifically the addition of high-speed lines connecting to the south of the country, which are for both passenger and freight transportation. Improvements to transnational rail connections are included alongside domestic rail changes. This is also paired with investment in urban transportation, including buses, cycle lanes, metro and trams. The emphasis on public transport systems to drive social and economic connections between the regions is a notable difference from many other plans which place emphasis on greening private car travel and infrastructure, such as Germany, Belgium and Portugal.

Portugal: Road network expansion

Across many of the NRRPs there is a strong emphasis on transforming car infrastructure and usage to be zero-emission or low emission. This can be seen across many plans which focus mobility investment in electric or hydrogen vehicle infrastructure and incentives, but it can also be seen in plans like Portugal's, where solutions to needed interregion and rural mobility come in the form of expanding the road network and not through a strengthened mixed-modal transport network. In contrast to Italy's approach, Portugal plans to invest EUR 580 million for a massive expansion of roads as part of their infrastructure component. As can be seen in the graph below, the plan attempts to counterbalance this with the installation of large-scale roll out of electric vehicle charging stations and adding conditions to the tendering of these infrastructure projects (such as that they must include EV charging, solar panels, fire protection, 5G, etc.)[15]. However, the addition of renewables to this road project as an add-on to a large-scale road building project risks greenwashing this component. The addition of EV charging and solar panels to the tendering conditions makes it possible to tag this measure as a climate measure, and therefore a thorough DNSH assessment for the additional roads is not required. This component also lacks the necessary consumer incentives to improve the accessibility of the EV market, and instead just focuses on physical infrastructure. Equally, there is little thought given to ensuring the infrastructure projects would conserve or promote biodiversity and be constructed with sustainable methods. There is extensive research indicating that additional roads do not improve congestion, but instead lead to more traffic and more emissions[16]. In addition, it is also widely understood that more than half of emissions from road traffic come from tyres, brakes and the road surface rather than combustion engines[17]. Therefore, this measure does not comply with the DNSH.

Energy

Investment from the RRF presents an opportunity to future-proof the EU's energy infrastructure by not only installing new renewables, but also doing so in a way that the social and economic benefits of this are spread across society to build economic resilience, community and regional cohesion and protect biodiversity. This funding also offers an opportunity to focus on re-skilling and the energy transition by not just offering new jobs related to infrastructure construction, but also by supporting communities and workers in regions of transition through protection, skills development, and other support schemes.

15 Ministério do Planeamento. (2021). *PRR – Recuperar Portugal, Construindo o Futuro.* https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en

16 García López, M.-À., Pasidis, I., Viladecans Marsal, E. (2021). *Congestion in highways when tolls and rail-roads matter: evidence from European cities.* EB Working Paper N. 2020/11. https://ssrn.com/abstract=3785888

17 Air Quaility Expert Group. (2019). *Non-Exhaust Emissions From Road Traffic.* https://uk-air.defra.gov.uk/library/reports.php?report_id=992

Generally, there is an over-reliance on hydrogen research and implementation as an energy source across all plans. While no infrastructure is risk-free, the devil is in the details in how and which hydrogen technologies are used, how this fits into the existing energy mix, and what it replaces. To be truly transformative and realise climate objectives, plans need to be bold about not just increasing capacity of renewables, but also including reforms for the planned closure of heavy-emitting energy sources. To address the climate crisis, large scale investment in new renewables coming into the energy grid mix will be needed. However, this needs to be coupled with energy efficiency measures and energy consumption reduction reforms that ensure that efficiency gains effectively translate into carbon emissions.

★ Spain: Planned transition

Spain's NRRP includes some of the most challenging but also most ambitious aspects of a just transition in its energy system, strongly synthesising social and environmental outcomes. Through four interconnected components on energy, Spain addresses the closure of coal mines and coal and nuclear power plants while transitioning to renewable energy sources and converting from grey hydrogen (which uses natural gas and produces GHG emissions) to green hydrogen (which uses water electrolysis from renewable energy sources and does not produce emissions)[18].

Beyond the climate change action that the transition to renewable energy sources provides, the plan also includes measures to rehabilitate and decontaminate land and water for the recovery of the environment and biodiversity in the territories affected by coal plant closures. This includes actions for landscape and biodiversity protection; revegetation processes, afforestation and reforestation; waste management measures; and the conversion of contaminated land into carbon sinks with renewable energy installations in many of these areas.

On a social and just transition level, the transition includes training, capacity-building and reskilling initiatives across all four components and the plan describes the intention to promote synergies and carry these actions out jointly. All all four components include public participation or consultation processes. Furthermore, the plan uses a gender lens to promote women's participation in the energy sector and includes a regional focus on non-peninsular parts of the country to mitigate territorial disparities to fight energy poverty and exclusion and avoid rural depopulation. Finally, the plan contains a reform for the development of energy communities to promote new actors and forms of citizen participation in the energy transition. This reform includes a public consultation to gather the opinions of interested groups, awareness-raising to demonstrate the benefits of these organisations, and training and capacity-building measures.

Similar community energy schemes are also included in Poland and Slovakia's plans.

↯ Slovenia: biodiversity and climate tensions

Slovenia's plan includes many very good examples of a systemic approach to their energy transition including: planned closure of coal plants and the use of circular principles in the construction of new energy infrastructure. However, their plan includes and acknowledges the risks that hydroelectric and geothermal energy sources pose for nature and biodiversity, which is one of the key tensions between a holistic perspective on sustainability and pursuing emissions reductions alone. The plan includes discussion of new hydroelectricity, which according to other analysis, refers to a widely contested site[19]. While it offers an alternative if this is not approved, a deeper engagement in the negative impacts of this plan, and whether it complies with the DNSH criteria, is required.

18 Gobierno de España. (2021). *Plan de Recuperación, Transformación y Resiliencia*. https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en

19 Euronatur. (2021). *Building Back Biodiversity: How EU Member States fail to spend the recovery fund for nature.* https://www.euronatur.org/fileadmin/docs/umweltpolitik/RRF/Building_Back_Biodiversity_Recovery_Funds_Analyse_20210519.pdf

Romania: natural gas

Romania's energy component manifests a key tension in the energy transition: the use of natural gas as a bridge in decarbonisation of the energy supply. While there are some key measures related to new renewable energy capacity, this plan continues investment and infrastructure expansion of natural gas. Being aware that guidance on DNSH from the commission states that natural gas is in line with the DNSH principle, there are not enough details in the plan to understand whether Romania uses gas only as a bridge technology, but rather promotes a lock-in of high-emitting energy sources.[20]

Biodiversity and bioeconomy (including agriculture, sea and marine, tourism)

While many plans had sections specifically related to the bioeconomy to incorporate specific measures around forests, agriculture, tourism, or the marine environment, best practice would have also been to thoroughly integrate nature-based solutions, the bioeconomy, and sustainability into each section with climate mitigation and adaptation strategies. Any components which relate to the bioeconomy should have incorporated biodiversity, conservation and sustainability objectives into these measures. More broadly, plans should recognise the interconnectedness of social and economy outcomes and those for nature holistically and across strategy objectives. The DNSH assessment offers a key tool and vehicle for this kind of cross-cutting assessment. This was consistently under-utilised, and while many components across all countries had opportunities to integrate sustainability practices more deeply, these were not embedded.

Portugal: Resilient Forests

The Portuguese plan takes a landscape approach to their component on Resilient Forests. This means that the role of forests was approached from a diversity of perspectives including: climate risks, biodiversity, bioeconomy jobs, nature-based solutions, collective and local management and participation, and enhancing the population's connection to and participation in landscape management[21]. The component explores and incentivises new participation and ownership models, as well as new living models involving greater participation and collective responsibility for the landscape. There are risks in how local actors are engaged in this process. Developing local economies with nature and with the landscape remains a priority for local economic development and resilience.

Romania: water management[22]

Integrated river basin management, the core principle behind the water management component in Romania's plan, is an approach that is widely seen as a positive, interdisciplinary, holistic and systemic approach to water management. However, without elaboration on how this will be developed, there are many risks for the natural environment, local communities and the resilience to climate change of measures included. In particular, vague language about the kind of structures that will be built leaves open questions like whether this will result in small-scale hydroelectric plants, or other new infrastructure which would be particularly damaging to the ecosystem and community with few climate benefits. Integrated river basin management often includes a catchment approach to managing a river, including considerations like ground water health (for drinking or agriculture), sustainability of the water supply, pollutants or contamination, nature-based solutions for climate resilience and adaptation, and local community involvement in management and decision making. If all of these aspects are implemented, this component could be an exemplar for river

20 Guvernul Romaniei. (2021). *Planul National de Redresare si Rezilienta.* https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en

21 Reference Portugal plan Ministério do Planeamento. (2021). *PRR – Recuperar Portugal, Construindo o Futuro*. https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en

22 At time of release, Romania had just released an updated plan. This analysis is not based on the revisions.

basin management in eastern Europe. However, the plan also refers to upgrading dams, water storage capacities, and additional hydro-technical nodes. All of these could build the resilience of the river infrastructure, but they could also lead to increased flooding risks and water mismanagement, leading to negative impacts on the community, in particular sectors which rely on water, like agriculture. This component has been heavily criticised by nature experts, and in its implementation would need to comply with environmental and social impact assessments, local consultations and local, national and EU environmental regulation[23]. There are risks that if not implemented in this way, this measure causes environmental degradation not compliant with the DNSH principle.

Water management also includes development and modernisation of wastewater and sanitation, which is an important investment to communities currently left behind in sanitation developments.

Digitalisation

Digitalisation in the recovery plans should be a cross-cutting theme interwoven with all the various aspects of the recovery. However, few countries identified this opportunity, with Poland as a notable exception. Digitalisation should have also embedded clear inclusion practices, resourcing not just training and capacity building, but infrastructure which focuses on the "last mile" and rural communities like in Latvia, as well as specific approaches to gender, disability, and other disadvantaged groups. In addition, very few countries engaged with the just transition challenges associated with increasing automation or mechanisation, both from an emissions and from a job loss perspective. Finally, nearly all plans missed the opportunity to connect between circular economy approaches, green procurement processes, e-waste regulation and digitalisation, with very few including any reference to increased waste, energy use, or the environmental impact of building new digital infrastructure. Many, including some that have generally done well on sustainability transition like France, Austria, and others, explicitly state that there is no impact from the digital transition on climate mitigation or circular economy, neglecting energy consumption and material use. There is an important difference between adhering to waste regulation which currently exists at the local, national or EU level, and adhering to circular economy principles: adherence to circular economy principles in the digitisation of society is largely absent.

Our analysis also shows the majority of Member States didn't conduct sufficiently rigorous DNSH assessment of the impact of their digitalisation plans. What can be seen here is a good understanding of the potentials of digitisation to the future of the economy but a worrying lack of depth in understanding of the risks[24]. Finally, there is also box-ticking related to gender inclusion, and a real lack of specific measures to address digital access for people with disabilities and their specific technological or learning needs. While some offer digital training programmes which consider inclusion aspects by specifically targeting women and girls, this was often in the context of education rather than vocational training, employment or a digital transition in the workplace or the economy.

The provision of digital devices for educational purposes, the modernisation of digital equipment in schools and public administration as well as the improvement of digital competences of teachers, students, and public administrators are part of many plans as well, though often appearing in different sections depending on where this was perceived to be embedded and how it connected to other reforms and investments.

23 Bankwatch & Euronatur. (2021). *Building Back Biodiversity: How EU Member States fail to spend the recovery fund for nature.* https://www.euronatur.org/aktuell/detail/news/missed-opportunities-for-biodiversity-conservation/

24 WBGU. (2021). *Towards our Common Digital Future.* https://www.wbgu.de/en/publications/publication/towards-our-common-digital-future

★ Portugal: digital inclusion

Digitalisation in the Portuguese plan comes in three aspects: education, public sector and government services and the future of industry and business. This breakdown is similar to many other plans, however key aspects of this stand out. First, the Portuguese plan goes beyond skills development for public sector digital skills, which is common, and employs a multi-dimensional approach to ensure digital skills are future-proofed in the public sector, in SMEs, in education, and specifically with under-represented groups and women. This programme has the ambition to reach 10% of the population. However, at time of publication there was no DNSH assessment publicly available and the plan did not engage in the environmental issues associated with this large-scale shift.

★ Latvia: "Last Mile" Policy

Latvia's RRP recognizes the importance of bridging the digital divide between urban centres, and particularly the capital and more rural communities as a key priority for digitising the economy. The specific investment in developing the "last mile" infrastructure, to connect rural communities to broadband infrastructure needed to participating in a digital education system and economy is one such example of how they are addressing this challenge[25]. This divide is particularly stark in Latvia, and crucially they also situate this development as being essential to realising aspects of their Sustainable Development Strategy and connection to the SDGs. In addition to this, they will also develop computer libraries in rural locations to increase access to equipment necessary for economically disadvantaged students and young people to participate in online education, skills development and the digital economy. However, while Latvia recognises the need for integrating digitisation strategies with inclusion practices to ensure a digital economic transition includes everyone, the same kind of interconnected perspective hasn't been included on the green transition. While Latvia's DNSH assessment is quite rigorous in some areas, particularly related to infrastructure development, they only draw connections to green procurement policies and equipment purchasing and don't address increased energy consumption or a need for a circular approach to electronic equipment in the digital transition.

↯ Germany: economic embeddedness

Digitalisation in the German government's recovery plan includes a massive investment to modernise many aspects of society and the economy with digital elements. This is wide-reaching and cross-sectoral: from government internal processes and public administration, to citizen digital platforms, education, internet access, use of data, and digitising transport systems. While these have the potential to radically transform society, access to government services, education, and access to the internet across the country, without provisions to manage the environmental impact of this, or embedding inclusive practices, this risks increasing the digital divide. In addition, they do not address the existing cultural resistance to concentration of private citizen data in the hands of any company or government body.

Crucially, massive infrastructure investments do not recognise their environmental impact, both in the building of infrastructure and in the purchasing of equipment and associated local environment, energy consumption, and waste impacts. This is a common trend across all plans. This is tackled in some way in localising supply chains as it brings them within the boundaries of EU environmental regulation. However, this doesn't recognize that by localising these industries, these measures also localise the environmental or energy impact. Finally, while there are some inclusive practices embedded in the digital elements of the plan, there are no safeguards or protections for workers who will be squeezed out in the demand for new skills in a digital economy, or in the automation or mechanisation of jobs (particularly in the transport industry). Safeguards for the natural world or a just transition are largely tokenistic and not sized to match the scale of the transformation in which this measure invests.

25 Finanšu Ministrija. (2021). *EIROPAS SAVIENĪBAS ATVESEĻOŠANAS UN NOTURĪBAS MEHĀNISMA PLĀNS LATVIJA.* https://www.esfondi.lv/

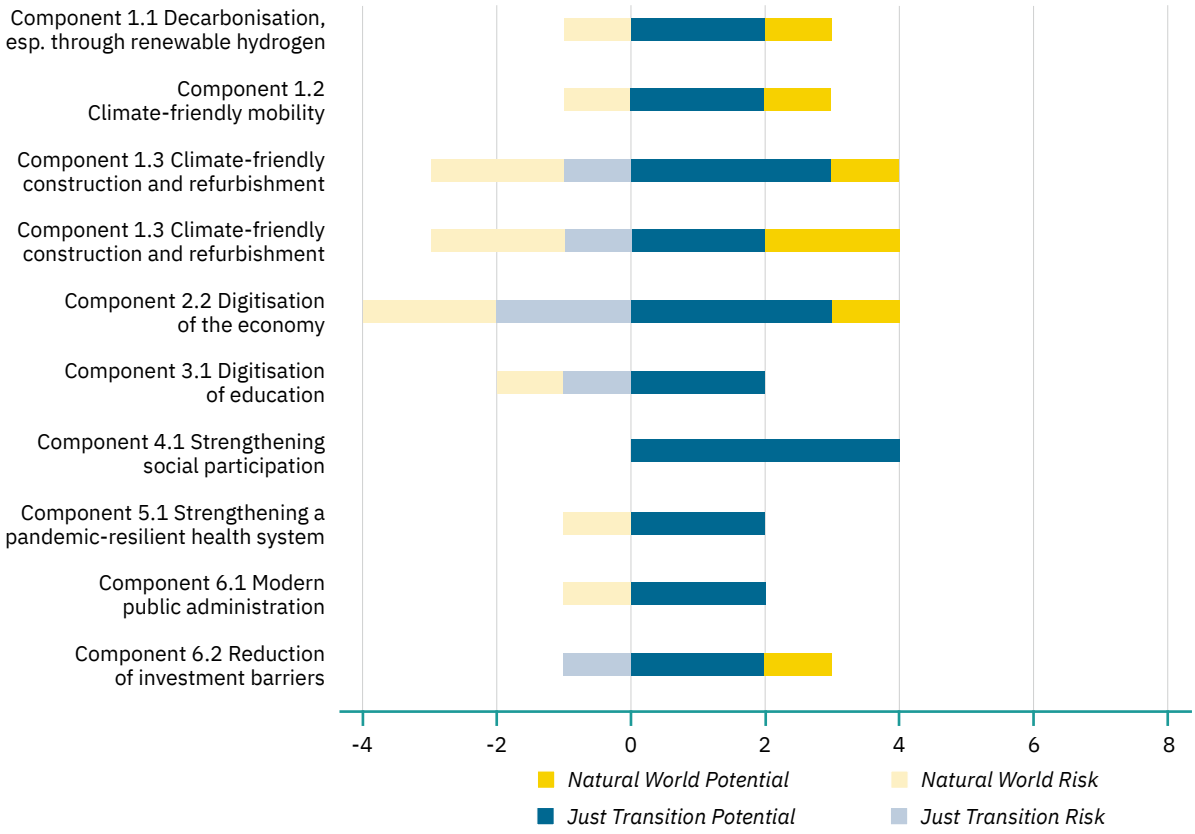


Figure 3: Germany NRRP dashboard overview

Built environment, material use, circular economy

Investment and reform to the built environment relate strongly to multiple priorities of the RRF including renovation for energy efficiency, circular economy, employment, and a number of social objectives related to access to quality housing. Plans should have approached renovation and the built environment with the following climate and sustainability objectives: increasing energy efficiency and realising energy consumption reduction, application of circular economy principles in all renovation and construction projects, using nature-based approaches where possible (such as green roofs, water storage, etc.). Plans should also have approached renovation and the built environment with the intention to realise social objectives, including: attention to reducing energy poverty in low-income households, inclusive and participatory planning and development processes, improving the accessibility of buildings to people with disabilities, and a focus on expanding low-income or social housing.

There was strong agreement across the plans on the environmental goals of retrofit, which was seen as an important component of emissions-reduction strategies in many Member States. Investments were typically targeted at public buildings such as government offices and schools, social housing and privately-owned homes. The plans varied in their chosen delivery mechanism for funding – some countries offered tax breaks for home retrofit and others provided grants to households – with implications for whether support is likely to reach those on lower incomes. Although job creation in construc-

tion and its supply chain was frequently mentioned, few plans recognised the opportunity to use retrofit investment to promote systems change in the construction sector (e. g. through efforts to improve job quality or introduce circular practices or nature-based solutions in the retrofit process). In addition, embedded circular economy approach to the disposal of construction waste, and the integration of green roofs across the built environment are two important missed opportunities across all plans. These could have been mainstreamed across measures for the built environment to ensure a more integrated and systemic approach to the sector's recovery.

★ Slovenia: Circular economy and the built environment

The Slovenian plan takes a systemic approach to the introduction and embedding of circular economy principles. Moving beyond the built environment, this approach is cross-cutting and multi-dimensional with an emphasis on transforming the relationship with material use across all aspects of society. This includes combining additional regulation and strategies relating to industrial policy, climate, material use and waste, and energy oriented towards shifting the economy towards a circular approach. Embedded in this is education, development and training, as well as policies and practices. This component lacks further concrete aspects of what is specifically constrained or incentivised in these new policies, but set a direction that is cross-cutting.

★ France: Circular Economy Roadmap

The French plan contains exemplar policies for promoting the circular economy. Procedurally remarkable, the Circular Economy Roadmap was devised under extensive consultation of relevant stakeholders and the wider public. The roadmap contains ambitious measures such as a ban on advertisement of unsustainable practices, as well as the promotion of the conditions and innovations that facilitate reuse practices, rather than only focusing on recycling. The resulting decrease in material use has the potential to reduce greenhouse gas emissions and water consumption significantly. The measures additionally offer strong job creation potential, particularly at local level, covering the full range of qualifications in the sectors of reuse, repair and recycling, as well as in the new services linked to the economy of functionality. Overall, the component fosters sustainable business and innovation and provides alternative consumption opportunities, while embedding fundamental concepts of circular economy into society.

Italy: Uneven renovation

Renovation and retrofitting of homes are essential energy-efficiency measures for the green transition. However, the broader societal benefit of this depends on how it is designed, implemented and specifically, who benefits. In the Italian plan, home retrofit support comes through a tax credit, which is problematic in the way it is structured because it is likely that those who earn the most will derive the greatest benefit. In addition, the benefit can be used towards the cost of buying a new house, which also contributes towards the benefits of this measure being less for those with less wealth. A more inclusive and equal approach would have been to offer subsidies rather than tax credits, tailored to the affordability of the home-owner.

Innovation & business & industrial policy

Components in this sector include industrial policy and business activity support, as well as policies for research, development and innovation. Industrial, innovation and business reforms and investments should not solely be focused on growing industries with high economic potential or for developing prestige projects. They should support the green and digital transition of industries through the promotion of innovation and new ways of working on the one hand, but also dismantling of unsustainable practices on the other.

With regard to business activity support, the focus of the recovery should lie in cushioning the negative impact of the pandemic on local economies and SMEs in particular, with funding being explicitly tied to social and environmental conditions. Busi-

nesses that receive support through an NRRP measure should also be required to comply with the Do No Significant Harm principles at least, but ideally actively contribute to the green and digital transition. In both industrial policy and business activity support, measures should generally aim at mainstreaming the reduction of emissions and material use by businesses, as well as the promotion of equity, diversity and inclusion. Finally, research and development policies should ideally fund projects that develop new solutions for a green and just transition. Such policies would preferably exhibit an orientation toward the long-term development of a well-funded and effective research and development ecosystem, rather than short-term prestige projects. Here, the model of the "knowledge triangle" between research, business and innovation serves as an ideal scenario for fostering knowledge-based economies[26].

The range of measures covered in this sector is diverse. Regarding industrial policy and business activity support, recurring themes in the plans are the reduction of regulatory burdens on businesses, dedicated funding for SMEs, as well as the digitalisation of the economy with the goal of increasing productivity and competitiveness. In the area of research and innovation, many plans aim at funding public and/or private research entities, facilitating cooperation between science and business, as well as supporting R&D into solutions for the green and digital transition. Furthermore, several plans included policies for the circular economy. Social goals, however, are only pursued to a limited extent in this section. Among the few exceptions are Italy and France. Italy, for example, includes provisions for increasing the proportion of female researchers with fixed-term contracts from 34 % to 40 % as a notable yet rather unambitious target.

★ France: Gender equality requirements for business recovery funds

The French plan requires entities that benefit from RRF funds to be more transparent about their efforts to comply with the French Professional Equality Index that has been issued in 2018. While companies are currently only required to publish their overall score on said index, those which receive RRF funding will be required to publish their performance on every sub-indicator of the index. Businesses that don't comply will have publish improvement targets and remedial measures for each sub-indicator they fall short on, which was previously only mandatory if the minimum threshold for the overall score had not been reached. In light of the increased accountability and stricter enforcement, this measure is a positive example of how NRRP measures can be used to advance gender equality.

★ Denmark: Green R&D

The Danish recovery plan was notable for its consistency in embedding green goals across many measures of the plan. An example is the component on green research and innovation that received a high score in the sector at hand. A sizeable portion of the Danish recovery funds are allocated to research and development for the green and digital transition, specifically green fuels for transport and industry, climate- and environmentally-friendly agriculture and food production, the circular economy, and a boost to R&D in the private sector. The investments are made under the ambitious umbrella goal of reducing greenhouse gas emissions by 70 percent by 2030. Notably, funds will only be allocated to newly-formed public-private partnerships between research institutions, private businesses and public authorities that contribute to solutions in one of the four above priority areas.

⚡ Poland: Automation without reskilling

In the manufacturing sector, the Polish plan prioritises industrial growth and economic competitiveness over developing businesses practices that contribute to the sustainability transition and offer good jobs. An example of industrial policy that is mainly aimed at productivity growth considering socio-economic consequences are the investments in industrial automation. The measure proposes financial support for the purchase of industrial machines to promote the automation of manufacturing as means of

26 Allinson, R., Izsak, K., Griniece, E., (2012) *CATALYSING INNOVATION IN THE KNOWLEDGE TRIANGLE Practices from the EIT Knowledge and Innovation Communities.* Technopolis Group. https://eit.europa.eu/collaborate/documents/catalysing-innovation-knowledge-triangle-practices-eit-knowledge-and

accelerating the transition to the industry 4.0. However, the plan does not include provisions for the social protection or reskilling of manufacturing workers whose jobs are likely to be lost due to automation. It also fails to direct the investments to industries that are of particular importance for a green economy.

Health

Components related to health in the NRRPs should incorporate both responses and investment needed to cope with the ongoing pandemic and related public health challenges, as well as addressing long-term, systemic challenges of the country's health system and other public health challenges. This means measures should incorporate topics such as hospital capacity, technology or equipment upgrades, address staffing and capacity shortages, as well as longer term issues such as mental health care, women's health, access to primary care, digitisation and administrative modernisation. In addition to this, measures should also include an approach which focuses on social inclusion and access, as well as energy efficiency and green measures in hospital and health infrastructure. Alongside investments, reforms should be introduced which target full and equal access, affordability of health care for socially disadvantaged groups, social and health insurance, and other barriers to access and use of quality health care.

Many of the plans included measures for territorial cohesion to address regional disparities in access to care, which is a necessary component of systemic change in the health sector. Many also included infrastructure upgrades such as construction or renovations of hospitals and other health facilities, including for energy efficiency, and digitisation for a more consistent flow of information between medical facilities and between service providers and their patients.

★ Austria: Health care inclusion and access

The health component of the Austrian plan focuses on increasing inclusion and access to health care. This is done through increasing access to primary care and establishing local primary care networks with strong involvement of municipalities, specifically in rural communities. The plan also includes measures specifically targeting socially disadvantaged groups, such as women or families with children during pregnancy, or offering translation of services for families with limited German. The component also includes energy efficiency renovations with green facades and other environmental measures. To ensure the sustainability of the reforms and to establish a common understanding among all those involved, the relevant stakeholders and decision-makers are actively involved in the further development of primary care.

↯ Slovakia: Long term mental health care

Slovakia's three health components include reforms and investments to ensure quality, accessible and efficient inpatient and generalist care and timely geographical availability for individual specialities which reflect regional needs. The management of the hospital system will be centralised, and hospitals will be modernised, digitised, renovated and constructed. The components for mental health care and long-term social and health care broadly seek to de-institutionalise care, with an emphasis on community-based solutions.

However, there is an important exception: After outlining the intention to humanise and de-institutionalise mental health care, the plan proposes to invest in detention facilities for offenders with mental illness who have already served their prison sentences. This measure is based on an outdated understanding of mental care that is prone to cause considerable harm to the individuals in care. It is described through a prejudicial frame, which posits that mentally ill people are threats to society, rather than addressing and understanding mental health care needs.

Finally, the investments and reforms related to mental health care are not aligned with building mental models which facilitate positive systemic change, such as valuing inclusion and wellbeing for all. The focus of this description is on the economic value lost for the Slovakian economy through mental health problems rather than focusing on the improvement of the health and wellbeing of the population. Instead of looking at preventative care or rehabilitation, there is an approach of increasing institutionalisation of people with severe mental illnesses.

The plan also includes a measure to reduce the number of hospital beds which implies a risk of prioritisation of the productivity of the economy and the workforce over the health and wellbeing of the population. However, the measure explains that the space created from this will be used for aftercare, long-term, outpatient and community care. The impact of reducing the number of hospital beds needs to be mitigated with increasing outpatient services and other care alternatives. It is not clear that these two aspects are coupled together adequately. These are both examples of an approach which explicitly prioritises the productivity of the economy and the workforce over the health and wellbeing of the population. In addition, reducing hospital beds risks decreasing the resilience of the healthcare sector for future health crises.

Fiscal reform, pricing shemes and public administration

Many NRRPs place a heavy emphasis on modernising public administration with bureaucratic efficiencies and digitisation, however, fiscal reform is also an essential part of the recovery and resilience process. Modernising the state should also be about modernising fiscal policy to facilitate the green and digital transitions and build a resilient economy and society in the aftermath of the pandemic. This means that fiscal policy reforms should be incentivising environmental, wellbeing and resilience activities and behaviour across the economy while also constraining or disincentivising practices which are exploitative, extractive or externalising negative impacts for both people and the environment. In addition, Pigouvian environmental taxes and other pricing shemes like the Emissions Trading System (ETS) are an important tool to put a limit to environmental degradation and emissions. If implemented in a way where prices or taxes dynamically adjust, policy can effectively limit rebound effects from public and private investment that otherwise risk to eat up efficiency-related reductions in carbon emissions and material use.

Recognising that many countries are trying to adhere to the advice received from the European Semester process to reduce public debt to GDP ratio, decreasing taxes as part of an effort to grow GDP does not take the kind of long-term perspective that is needed. Instead, the signaling effect of taxes should be acknowledged. Taxes should be shifted from valuable economic activities (like labour) to harmful activities (like carbon emissions). Tax exemptions and subsidies should be evaluated on the basis of whether they promote or hinder a systemic transformation.

In addition, public administration modernisation should include not just digitisation of citizen services, business relations, and judiciary processes, but it should also work to reduce barriers to accessing citizen services and government processes. Digitisation is a means to an end, the end being greater inclusion, access and citizenship.

★ France: Embedding Green Budgeting

The French plan outlines their Green Budget reform, which was first introduced in October 2020. This is an approach to cross-sector, cross-department assessment of the budget based on environmental and climate commitments. They employ the Taxonomy of Sustainable Finance, and report publicly on this assessment. This is an example of the way in which the DNSH and the Taxonomy can be employed in national government budgeting processes, which can lead towards a coherent and integrative approach to addressing climate change.

Overall: Relationship to Taxes

Every plan includes reforms which provide tax cuts to incentivise some kind of behaviour, whether this is at the business- or individual-citizen-level. While this might lead towards more home retrofitting, public transport use, etc., it also instills unhelpful values and mental models for the longer-term transition. Instead of building a narrative wherein taxes enable the state to invest in something better for the future, it builds a narrative that taxes are prohibitive or burdensome. Instilling a mental model where we see taxes as a way to support delivering particular activities, projects or reforms is essential to our ability to make long-term and large-scale investments that we need to reach longer term goals of economic resilience and the European Green Deal. In addition to our underlying mental model about taxes and the role of this in addressing root causes, taxes also offer two other important aspects: enabling the state to invest resources, and sending signals about what is important to nurture and what is important to restrict. Some tax reform can even do both at the same time: for example, carbon tax can send a signal about the need to reduce emissions while also providing resources for the green transition.

Given the scale of investment needed to realise the ambitions of the green and digital transition, the European Green Deal and the SDGs, all countries need to build a different narrative about private and public investment and taxes. Instead of investment bring an economic burden, it needs to be recognised as an essential tool to realising long-term goals.

Reflections

Looking across all of the 13 plans that we assessed, it is clear that every plan had strong points and weak points as we have explored in the analysis above. Overall, plans put too much emphasis on what they encouraged, invested in or incentivised and not enough focus on reforms which constrained the practices of citizens, companies, or governments which need to be shifted for the recovery process to put Europe on a pathway towards sustainable prosperity. This refers to environmental taxes just as social protections or constraints on investments. In a deep and systemic transformation, it matters just as much what reforms and investments enable as it does what they constrain or stop.

Collectively, plans missed two clear opportunities for policy coherence: most plans included items like gender equality as a strategic priority and a DNSH assessment, both of which were requirements from the RRF guidance. However, the integration of social issues (such as inequality reduction, economic convergence promotion, inclusion mainstreaming, for gender equality, disabilities, disadvantaged groups, etc.), and the integration of sustainability across all suitable measures was still missing. While efforts were made to meet the DNSH, particularly considering this was an innovative, new approach for Member States to deliver on a short time scale, the way this was implemented in plans by Member States was not rigorous enough to offer thorough integration and policy coherence or a systemic approach. In addition, many cross-cutting social challenges were not embedded in measures, and perhaps either a socially-oriented DNSH, or a DNSH which considers sustainability holistically, for its social and environmental aspects, would have supported this coherence.

Connected to this, **Member States have largely missed the opportunity to connect new reforms with investments to deliver on the social and environmental aspects of a green and just recovery.** Many countries do well to connect their plans into their existing strategies, action plans and policies, but there are limited examples of new or additional policies or regulation developed as part of the recovery. Guidance from the Commission also suggested that climate measures tagged 40 % that are paired with a new reform could count as 100 %[27]. This could incentivise a systemic approach by introducing investment to support a new technology with regulation or action plans to phase out another, but it is not clear that Member States used this opportunity.

27 Regulation (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility 2021 (EU) (OJ L57/22, 18.2.2021, p. 5).

Looking across 13 plans, across all regions in the European Union it is clear that some trends will appear in the coming years. First, **the investment and associated projects which will be delivered through these plans represent an important injection into the green and digital transition.** In particular, the extent of renewable infrastructure and low-carbon mobility which is invested plays an essential role towards realising EU and global climate objectives, as well as the ambitions of the European Green Deal.

With this will likely be a huge scale-up of hydrogen and low-emission vehicles. While this may have been encouraged by guidance from the RRF and political trends creating a narrative that hydrogen is an essential replacement for fossil fuel-based energy, it remains a technology with risks. As with any technological solution, it can also be implemented in a way that is good; good for communities around it, offering good jobs, and using renewable energy with relatively little local environmental impact. "Green" hydrogen uses water and renewable energy sources for the electrolysis process and its production creates no emissions except for waste heat. This is the only form of hydrogen fully compatible with the Paris agreement. However, the majority of current production methods use fossil fuels in their processes; "grey" hydrogen, which accounts for 95 % of current production, is produced using natural gas and therefore emits CO_2[28].

In addition, while **low-emission vehicles** may be an essential part of the mobility future for rural areas, they are an incremental adjustment of the status quo of a car-dominated Europe. The EU needs to prioritise shifting to other modes of transportation as emission levels are not the only problem with car infrastructure dominating European landscapes and cities. Emissions from combustion engines are only a portion of the emissions from road traffic, and electric vehicles have high demands for other materials with substantial impacts on biodiversity. Other issues such as social inclusion, unequal access to low-emission vehicles, the relationship between car infrastructure and the natural environment and biodiversity, and benefits of active travel for health co-benefits haven't been considered. These two examples point to a serious problem: if one only thinks about emissions-reductions, other essential needs and potential co-benefits are neglected.

Furthermore, unless drastic measures are taken in the design and implementation process, **we will witness a significant step backwards in current efforts towards protecting biodiversity.** As is clear in the report "Building back biodiversity: How EU Member States fail to spend the recovery fund for nature"[29] from Bankwatch and Euronatur and Vivid Economics' forthcoming report "Can't see the wood nor the trees"[30], plans have not prioritised or integrated biodiversity and nature in investments or reforms. Taking one country in isolation, this is already a problem, but looking at what this means collectively, the EU is on a damaging trajectory. According to recent publications from IPCC, IPBES and the Dasgupta Report, the planet is already at dangerous tipping points on nature, biodiversity and climate[31]. Without full consideration of the impacts of new infrastructure and new industries on biodiversity, Europe will neither reverse this trend, nor meet objectives like the SDGs or EU Biodiversity Strategy, and more importantly threaten the natural foundation essential for life.[32]

28 EEB. (2021). *Face to Face with Hydrogen: the reality behind the hype.* https://mk0eeborgicuypctuf7e.kinstacdn.com/wp-content/uploads/2021/05/EEB-Hydrogen-Position-Paper-FINAL.pdf

29 Bankwatch & Euronatur. (2021). *Building Back Biodiversity: How EU Member States fail to spend the recovery fund for nature.* https://www.euronatur.org/aktuell/detail/news/missed-opportunities-for-biodiversity-conservation/

30 Vivid Economics. (2021). *Can't see the wood nor the trees: Nature is largely missing from the National Re-covery and Resilience Plans.* Unpublished manuscript.

31 Dasgupta, P. (2020). *The Dasgupta Review. Independent Review on the Economics of Biodiversity. UK Treasury Interim Report.* Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/882222/The_Economics_of_Biodiversity_The_Dasgupta_Review_Interim_Report.pdf

32 In section 1.C (Annex p. 99) of the EU-Aufbauplan (oesterreich.gv.at) the example of how this was done in the Austrian plan can be seen.

In addition to this, the restoration economy is worth USD 25 billion per year and directly employs more than the coal, mining, logging and steel industries combined, and at its broadest the environment is linked to around 21 million jobs in the EU[33]. Its not just that this is damaging to the natural world, human social and economic needs are deeply intertwined with the health and resilience of this natural world. Taking a systemic approach would have a more nuanced understanding of nature and biodiversity as interconnected to social and economic objectives, as well as the essential synergies of the natural world linking nature and climate mitigation and adaptation. Given the urgency, it would be necessary for public funds to be used to ensure that ecosystem degradation is reversed and nature, biodiversity, and climate are not only protected, but also enhanced, actively shaping the long-term health, sustainability, and resilience of ecosystems and societies.

Finally, with large-scale investments in digitisation, **the recovery process will kick-start a digital transformation in Europe.** This is very clear, **but what is less clear is how inclusive and sustainable this transition will be.** While this represents an important step forward for ease of access to government services, modernising the way businesses work, opening up possibilities for new and cross-European collaborations in research, teaching, business and culture, it also comes with important risks which haven't been adequately addressed. Very few plans have considered inclusion and access in the context of the digitisation of culture, society, the ecocomy, participation, education, etc. Without specific reforms and investments in access for disabled people or economically disadvantaged groups, digitisation of Europe is going to exacerbate inequalities. This needs to come in the form of investment in equipment for disabled groups, funds for access to digital infrastructure and equipment for those who can't afford it, target-group specific training for elderly people to utilise digital services, and mainstreaming of gender equality and gender inclusion in the digital economy. Very few plans included any such measures[34].

The plans also fail to present sound and in-depth strategies on how to deal with the tension between achieving the digitalisation of society on the one hand and the green goals on the other. While many rely on the digital transition to reduce transport emissions, support platforms for smart energy or mobility, or reduction of material use, in most cases the fulfilment of the DNSH criteria remains insufficient. For example, the purchase of digital equipment for educational purposes is in most cases not accompanied by re-use policies, green procurement policies, or measures to address increase energy use.

Related to multiple aspects outlined above but particularly poignant for the digital transition is the embedding of a circular economy practices and principles in Member States through the investment and reforms in national plans. There was a clear opportunity to strategically combine investments and reforms or regulation with capacity building, new jobs, and new practices in the built environment, digital transition, culture and other sectors to orchestrate an economy-wide transition to a circular approach. **With the notable exceptions of Slovenia and France, Member States largely miss the opporunity to transition their economy towards a circular economy.**

Recommendations

As Europe moves forward in the recovery process, the European Commission and Member States need to focus on four key aspects entering the phase of implementation:

1. **The Do No Significant-Harm principle (DNSH) needs to be more rigorously applied and adhered to during implementation.** We recommend that all Member States conduct a more thorough, evidence-based assessment of their measures prior to or during implementation. While the introduction of DNSH guidance is an important step forward by introducing

33 BenDor, T., Lester, T. W., Livengood, A., Davis, A. & Yonavjak, L. (2015). *Estimating the Size and Impact of the Ecological Restoration Economy*. PLoS ONE 10(6). https://doi.org/10.1371/journal.pone.0128339

34 Examples of this are referenced in the Analysis Section above.

innovative multi-criteria guidance influencing how policy is made, in a number of cases the DNSH principle was not sufficient. It is not only important that such a framework exists, but also how countries comply with it. There are some examples where the process was not true to the guidance. For example, new infrastructure construction includes the addition of solar panels, making it a climate-tagged measure and therefore the impact of cement does not need to be assessed. DNSH can be an important, innovative and novel tool for how the EU invests and scrutinises investment and designs policies in the future, but it needs to be more rigorously adopted and not seen as a box-ticking exercise.

2. **The devil is in the details.** Moving forward from here, how plans are operationalised and implemented matters. Many measures can be designed in a way which either further increases negative side effects or increases policy coherence and co-benefits: Member States now need to do the latter. To do that, it is important that monitoring and evalution frameworks from Member States and in the scrutiny from the Commission include a systemic perspective that takes interconnections between different policy areas into consideration. Along these lines, the 13 Member States we analysed here can make use of the country profiles we produced to see where they have existing weaknesses to address during implementation.

3. **Europe needs new ways to understand what economic recovery looks like.** The integration of the Country Specific Recommendations of the European Semester into the NRRPs is one of the conditions for Member States to unlock the allocated RRF funding. Hence, the goal of GDP growth is clear in every plan as not just an indication of a recovered economy, but also as the goal of the recovery process. However, the frameworks provided by the Commission for the recovery plans, such as the flagships or the DNSH principle, send signals that it is not just GDP growth that matters for the future of Europe. This process offers us an important opportunity for reflection on what economic recovery looks like. Resilience as a goal for the economy is one such solution. This discussion calls for the inclusion of more holistic and cross-cutting indicators for economic progress. However, neither the frameworks of the European Commission nor the plans of the Member States show sufficient and stringent reflections on this issue.

4. **The level of investment through the RRF comes at a crucial time, but this isn't enough to deliver systemic transformation, to limit temperature warming to 1.5 degrees, to realise a just transition, or to achieve the SDGs.** According to estimates, between €349 billion and €883 billion of additional investments are needed to realise the climate and environmental targets set by the Commission alone[35]. Just transition targets are however not entailed in these calculations at all, so it is very clear that the investments so far are not sufficent. One crucial stepping-stone towards this is to reframe the RRF investment: this investment is the foundation for building the future of Europe. Future investments can learn from some of the important progress taken as part of the RRF, for example by applying the DNSH to all future public investment. In addition, a solution might be to develop multi-criteria analysis to the DNSH for social issues to connect environmental and social sustainability more deeply. Any future investment mechanisms need such scrutiny and rigour and need additionally to take a systemic appproach to creating change.

35 The European Commission estimates a yearly investment need of €470 billion to reach the old 2030 climate and environmental targets that included a CO2 emission reduction target of 45%. Thus, it excludes the higher costs of the new 55% reduction target. Based on the same 45% emission reduction target Agora Energiewende estimates that €349 billion yearly of climate related investments are necessary to reach the 2030 climate and energy targets. McKinsey concludes that additional €28 trillion are needed until 2050 to reach net zero-emissions. However, with the NRRPs only 37% of the €672.5 billion over 5 years are invested into the green economy, which amounts to roughly €50 billion yearly.

Through this assessment process, we analysed 13 specific plans. However, when we begin to cross-country sectoral components into a broader picture, they start to show us a glimpse into the future of Europe. Putting these pieces together, it becomes very clear that this won't be enough to realise longer-term, overarching goals for Europe to thrive, such as the European Green Deal or the Sustainable Development Goals, among others. The pandemic has shown how quickly the current way life can change, but now humanity needs to apply this rapid responsiveness to longer-term challenges and goals, and not just in the face of an immediate crisis.

During the research for this analysis, a representative from a ministry told us in relation to their recovery and the opportunity for systemic transformation: "The long term and the short term start on the same day." It is because of this sequencing that a systemic transformation to sustainable prosperity cannot wait until after the recovery, it must start with it, run in parallel to it and go deeper.

A systemic transformation to sustainable prosperity cannot wait until after the recovery, it must start with it, run in parallel to it and go deeper.

	Just Transition Score	Natural World Score	Systemic Change Score
Austria	1.06	0.81	2.25
Belgium	0.82	0.59	2.41
Denmark	1.00	0.80	2.00
France	1.44	0.94	3.17
Germany	0.70	0.10	0.90
Italy	0.75	0.38	1.75
Latvia	0.35	0.24	1.53
Poland	0.71	0.29	2.21
Portugal	0.86	0.38	2.52
Romania	0.67	0.29	0.86
Slovakia	0.74	0.53	1.53
Slovenia	1.19	0.94	3.38
Spain	1.05	0.90	2.71

Annex 1: Overall comparison of country scores