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Innovation Policy for Sustainable Development

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Innovation Policy for Sustainable Development

Executive summary

Innovation holds the **key to successfully transforming society and the economy**. Innovations can provide answers to global issues, including climate change, biodiversity loss, resource shortages, social inequality and political fragility. But to overcome these hurdles, the **transition** needs a **turbo-boost** to deliver **innovations for sustainable development**.

Innovation policy has a central role to play here and must be realigned – along the lines of the Sustainable Development Goals (SDGs). We need a **holistic understanding of innovation grounded in sustainability**. We need technological, social, institutional and cultural innovations, clear division of responsibility, willingness to change, openness to innovation, and integration in European and international innovation work. We need **all stakeholders** from government, business, research and society to **engage responsibly** with innovation policy for sustainable development. Finally, we need to remain optimistic.

We call on the **government** to provide both direction and a regulatory framework. Further to this, we need a mix of instruments, including regulation, incentives and research funding, aligned with the SDGs. Accordingly, the German Council for Sustainable Development (RNE) advocates a **cross-ministerial innovation strategy**. **Clauses stipulating an openness to innovation** should be written into law, while innovation funding should be reviewed with an eye to its **efficacy** and attainment. That said, innovations are not in and of themselves sustainable, and the German Sustainable Development Strategy urgently needs an **innovation indicator** to measure the real-world impact of innovation work on sustainable development. In addition, government **administration** must also be **reformed** with coherent, agile, open and mission-oriented structures. Equally, we need honest **communication** that encourages everyone to engage with the transition by openly addressing both its necessity and challenges.

The **business community** must take much of the responsibility for sustainable structural change. More incentives must be created to encourage **sustainable innovation markets**, while **private capital** must be mobilised in addition to public infrastructure funding to finance sustainable innovation.

With regard to **science**, there needs to be significantly greater financial support for both **inter- and trans-disciplinary research**, and funding conditions must be updated. Career paths, research institutions and design, and funding criteria must be geared more closely to the SDGs. Furthermore, if we are to meet the **demand for skilled workers** for the socio-ecological transition, we must promote **equal opportunities** and **training initiatives** within the **education sector** and develop research- and project-based learning that encourages creativity.

Society and its citizens, too, must take on a more significant role in **shaping** innovation processes. Accordingly, innovation policy must also address consumer behaviour as well as **new ways of achieving widespread support**. **Living labs**



should be further supported and developed into ‘field tests’ for the transition, while **social innovations** must be **promoted as a matter of course**.

Global challenges can **only be solved at global level**. As such, new **trade agreements** should include **innovation clauses** geared towards hitting the UN Sustainable Development Goals, and **European policy** should fall more closely in line with **action for innovation**. We recommend leveraging global collaboration across academia and research to empower **developing and emerging economies** to play their part in the global innovation landscape. This is the only way to guarantee the success of their respective socio-ecological transitions.

1. Why sustainable development needs innovation policy

The world we live in is facing challenges that threaten the very natural basis of our existence, our prosperity and our right to live in peace. We can no longer ignore warnings from the scientific community that we are on course for failure in achieving the SDGs in time. The war in Ukraine and ongoing heightened tensions threaten to upstage these persistent crises: the climate crisis, biodiversity loss, resource shortages and mounting inequality. This cannot be allowed to happen. It is high time to take decisive action in holistically transitioning our economy and our society: we need to turbo-charge the transformation. Sustainable development and climate action with real-world impact must become the primary yardsticks for shaping our social and economic habits and coexistence. In just a few years’ time, we need to have given our structures and culture a thorough shake-up, resulting in the successful broad-scale restructuring of our entire economy. Here, innovation policy is set to be a key player.

What is needed now is a drive in innovation for sustainable development, not least in climate neutrality, natural resource conservation and social justice. But for this to succeed, we need to supercharge capacity to innovate among business and society alike, aligning it with sustainability targets including the UN Sustainable Development Goals and the objectives set out in the Paris Agreement. The German Council for Sustainable Development also welcomes the German government’s innovation policy measures, as detailed in the Coalition Agreement. Government spending on research and development currently stands at over three percent of total spending, with the goal of raising this to three and a half percent by 2025, leaving the German research sector, broadly speaking, in a solid financial position. However, current innovation policy is largely fixated on promoting solely technological innovations, such as energy storage or hydrogen technology. Yet technological innovation alone stands little chance of catalysing the depth of change that is needed. Instead, we need an innovation strategy grounded in both sustainable development and a holistic understanding of innovation that encompasses social and institutional innovation alongside the technological. For this to succeed, we need all ministries on board as well as a coherent policy backed by culturally-ingrained, agile cooperation.

The global perspective and international cooperation also have a particularly important role to play in this context. We are currently facing a whole spectrum of



global challenges, including biodiversity loss and the climate crisis, digitalisation, inequality on various levels and the drastic decline in social coherence, mounting political fragility, which the war in Ukraine has only exacerbated, and the effects of the Covid-19 pandemic. Only solutions that take the global interrelationships behind these issues into account will be able to counter the hurdles successfully. Furthermore, we must include developing and emerging economies in innovation policy – only together are we capable of shaping a global innovation landscape with impact. At the same time, major advances in innovation are needed within Germany and Europe to sever geopolitical dependencies. Here we must target the growth of new areas of innovation and technology with a focus on sustainable future markets as a pathway to increased economic strength and independence. In fact, new regulations related to the EU Green Deal alone have seen the creation of more than 140 new markets with growth rates of between three and 35 percent.¹ Such innovations include key tech relating to the circular economy, renewable energies, resource-efficient products and sustainable transport, as well as climate change solutions with uses across construction, agriculture and industry.

Further to this, we cannot underestimate the potential of industrialised economies to act as role models in innovation for developing and newly industrialised economies. As such, turbo-charging the socio-ecological transition is also a lever for sustainable development at global level.

Baseline and challenges

The UN Sustainable Development Goals, the Paris Agreement, the EU Green Deal and, at national level, the German Climate Change Act and the Sustainability Strategy, by way of example, have all set the right course. Yet even before the Covid-19 pandemic and the war in Ukraine, many of these sustainability targets failed to demonstrate any discernible trend suggesting they would go on to be achieved. There are serious gaps in implementation despite the fact that plenty of scientific findings have long been available.

Accordingly there is a real need to harness new scientific and technical findings systematically for sustainable development across all areas of politics, in companies as well as across administration. Decision-makers in business, politics and administration must be more open to new ideas and have the will and courage to implement the changes we need to see. For their part, the public must show greater acceptance and support for processes of structural change, adapt their behaviour accordingly, ensure a shift in values towards greater sufficiency, and educate themselves on the threat to the very basis of our existence and the resulting need for structural transition processes in light of these new challenges, such as the expansion of renewable energies or a shift towards a circular economy. In addition, many conflicts of objectives and interests still stand in the way of sustainable development, for example between renewable energy expansion and nature

¹ Cf: [Protein reimaged: challenges and opportunities in the alternative meat industry | EY - US](#); [Electric vehicle battery value chain opportunity | McKinsey](#); [For the first time: Growth rate for bio-based polymers with 8 % CAGR far above overall polymer market growth - Renewable Carbon News \(renewable-carbon.eu\)](#)



conservation. Transparent, inclusive processes are the only way to overcome these kinds of conflicts. But we are under huge time pressure for many of these issues.

The time factor is a relentless driving force behind levelling up the framework for innovation at pace. We find ourselves left with only a small window of time in which to set course for sustainable development. The impact of the climate crisis is far from the only consequence: we are teetering on the brink of multiple irreversible crises and will soon fall should we fail to change course, to rethink and to do so quickly. It is high time for far-reaching decisions on our direction.

At present, processes of transformation are often impeded by opposition coalitions agitating against the structural change we so desperately need. Such resistance instrumentalises a fear of transition processes, playing on, for instance, potential job losses or protecting nature and biodiversity. As such, we need active public participation and involvement in the debate on a desirable and sustainable future that encompasses technological, social and institutional innovations in equal measure. As long as “mere” issues of acceptance are at stake, innovations cannot be sustainable, for what is often dismissed as an “acceptance or implementation problem” is actually a lack of social innovation.

2. How to reorient innovation policy

Innovation holds the key to a successful transformation. That said, an innovation is not in and of itself sustainable, but only if it drives sustainable development and socio-ecological change, thereby helping to achieve sustainability goals set by society and politics (in the context of an eco-social market economy). This does, however, also exclude the promotion of any innovations that run counter to those goals. Therefore, a technology impact assessment must play a systematic role in funding policy.

Sustainable innovations are levers and drivers in transitioning the energy sector, agricultural production, mobility and many other industries, providing solutions to major challenges. As such, it is impossible to overstate the role they play in the German and European economies alike. It is innovation that will help determine whether democratically elected governments and market-economy-based national economies will prevail with these solutions in this competition of global competition.

The deciding factors here are how a society accepts sustainable innovation as necessary, with innovation capable of mustering majority support, how obstacles to their implementation are removed, and which types of organisations see changes implemented to greatest effect. Social, cultural, institutional and financial innovations all have a central role to play in this process. It is vital we eliminate bottlenecks in the system of innovation to improve and accelerate how we tap hitherto neglected potential. Further to this, we must systematically harness findings from socio-ecological research in innovation policy and policy-making.²

² Cf. [Society: Social-Ecological Research – FONA](#) (last accessed: 02.05.2022).



To successfully reorient innovation policy in Germany, we must first and foremost conceptualise innovation holistically in line with global sustainability targets, divide responsibility clearly, secure the will to implement innovation across all stakeholder groups, open ourselves up to innovation, be willing to change and finally integrate our work with action for innovation at both European and international level.

Our aim is to consolidate and bolster both the economy's and society's capacity to innovate, as well as to align said innovation with global sustainability targets. This, in turn, must encompass the system of innovation as a whole, that is all different types of innovation, all stages of the innovation process, all institutions and all players. Central here is accelerating implementation, which, in light of the war in Ukraine, takes greater precedence than ever.

A holistic understanding of innovation

Innovation policy needs a new direction. Until recently, innovation has often been conceptualised narrowly in terms of scientific and technological innovation. Yet this understanding only takes one part of the innovation system into account, neglecting social, cultural and institutional innovations. As such, it is imperative we rapidly increase our focus on the potential these facets have to offer. A holistic understanding of innovation demands a conceptualisation of the interplay between the technological, economic, ecological and social changes brought about by an innovation. It focuses less on individual innovations and more on the system of innovations as a whole, including the different stakeholders and institutional structures involved as well as the framework in which innovations are created.³

Holistic innovation policy encompasses all action points and calls for greater collaboration, as all areas of policy have potential for innovation that just needs to be tapped. Industrial and financial policy, distribution policy, transformation policy, sufficiency policy, research policy, education policy, foreign and development policy; this holds true across all areas.

Above all, we need a paradigm shift to meet this broader perspective that fulfils all the needs of the transformation process while staying true to a sense of foresight. This paradigm shift is based on a broad, systemic conceptualisation of innovation that realigns the innovation system with the global challenges raised by recognisably unsustainable development as a matter of course. Only such a mission-oriented innovation policy⁴ has the potential to effectively contribute to at solving challenging problems like decarbonising industry, shifting to

³ Weissenberger-Eibl M. A. (2017): Innovationsforschung – ein systemischer Ansatz. Merkmale, Methoden und Herausforderungen [Innovation research: A systemic approach. Characteristics, methods and challenges], in: Denkströme (17), p. 33–56. Available online at: denkstroeme-heft17_33-56_weissenberger-eibl.pdf (saw-leipzig.de) (last accessed: 18.03.2022).

⁴ Lindner R., Edler J., et al. (2021): Missionsorientierte Innovationspolitik. Von der Ambition zur erfolgreichen Umsetzung [Mission-oriented innovation policy. From ambition to successful implementation]. Fraunhofer ISI: Perspectives. Policy brief. Available online at: [Missionsorientierte Innovationspolitik. Von der Ambition zur erfolgreichen Umsetzung \(Policy Brief 02 / 2021\)](https://missionsorientierte-innovationspolitik.fraunhofer.de) (fraunhofer.de) (last accessed: 18.03.2022).



climate-neutral mobility and the circular economy, or expanding sustainable food production.

3. Stakeholders and (their) responsibilities

Reorienting innovation policy towards sustainable development requires directional guidelines, a clear governmental framework, the responsible engagement of all stakeholders from business, research and society, and the ability to remain optimistic.

Government

In any democracy, it falls first and foremost to democratically elected politicians at the national, Länder and local levels to lay the right groundwork to drive innovation for sustainable development. For implementation to succeed, there must be structural and cultural changes to bolster agility and coherence in federal, Länder and local government administration.⁵

Recommendations

- We first and foremost call upon the government to provide both direction and a regulatory framework. We need a mix of instruments, including regulation, incentives and research funding, that are aligned with the SDGs and focus on providing answers to the major challenges of our time in order to influence innovation habits and thus the opportunities for transformation.
- The UN's 17 Sustainable Development Goals (SDGs) must be the guiding force behind an innovation policy that seeks to coordinate cross-ministerial projects in a coherent innovation strategy with a view to achieving the SDGs and ensuring impact. We advocate for a cross-ministerial innovation strategy that is aligned with the areas of transformation set out in the German Sustainable Development Strategy and that addresses conflicting objectives. In addition, existing federal government strategies and programmes, the High-Tech Strategy, the National Strategy on Biological Diversity and the ProgRes resource efficiency programme as well as future strategies must be more closely attuned to one other and aligned with the sustainability strategy. All government ministries must be guided by sustainability and include it in their strategies.
- This must go hand in hand with reforming the administration, which at present is an obstacle to the sustainable transition. In turn, this necessitates a culture of cooperation and coherent policy as well as agile, open, responsive and mission-oriented structures in all ministries as well as between and with state institutions. There must also be greater investment in modernising administration.

⁵ German Council for Sustainable Development (2021): Recommendations for the Reform of Government Work: Better Governance for Sustainable Development. Available online at: [20211004_RNE-Stellungnahme_Reform-der-Regierungsarbeit-Bessere-Governance-fuer-die-Nachhaltige-Entwicklung.pdf](https://nachhaltigkeitsrat.de/en/20211004_RNE-Stellungnahme_Reform-der-Regierungsarbeit-Bessere-Governance-fuer-die-Nachhaltige-Entwicklung.pdf) (nachhaltigkeitsrat.de/en/) (last accessed: 18.03.2022).



- Public budgets must lead the way in achieving the SDGs as a matter of urgency. This will drive public sector innovation, for example in procurement and logistics, and create markets for private investors. For this to succeed, institutional innovation is also needed.
- Clauses stipulating openness to innovation should be enshrined in law, for instance via the concept proposed by the Federal Ministry for Economic Affairs and Energy (now the Federal Ministry for Economic Affairs and Climate Action) in autumn 2021 for a 'Living Lab' Act. The Act aimed to offer a standardised framework for living labs across Germany to promote innovation and break new ground in testing innovations.⁶ Legislation of this kind must be grounded in a holistic understanding of innovation.
- Greater consideration must be given to the potential impact of innovations in hitting sustainability targets. That said, innovations do not lead to a rise in sustainability per se. As such, innovation indicators should be added to the German Sustainable Development Strategy which, in addition to R&D spending, generate data on the real-world sustainable impact of innovation projects.
- Measures to promote innovation should be systematically monitored to assess where targets are being met and their impact. Analysis should not only take place during and after the fact, but also at an early stage. It should also include acute research findings on impact factors. With regard to target achievement monitoring, the target objectives must be compared to those actually achieved by the innovation measure. Similarly, alongside the measure's suitability for achieving its objective, impact analysis must also consider whether the measure has triggered any rebound effects and what we can expect to see going forward. Auditors must be independent and the results must be published. We recommend appointing an advisory board at project level to promote faster implementation. This board should consist of stakeholders from government, research and civil society and should evaluate findings to formulate recommendations.
- If we are to mobilise large cross-sections of society to engage in structural change, honest communication regarding the need for a sustainable transition as well as the associated challenges is a must. The federal and Länder governments must therefore launch appropriate communication strategies (communication of opportunities).
- Additional provisions must be put in place to support social innovations. The vigorous expansion of rail transport, for instance, is an essential factor in transitioning mobility, as is the increase in the cost of travelling by car.
- The Federal Agency for Disruptive Innovation (SPRIND) should firstly expand its innovation challenges and secondly link the approaches and

⁶ Federal Ministry for Economic Affairs and Energy (BMWi) (2021): Neue Räume, um Innovationen zu erproben: Konzept für ein Reallabore-Gesetz [New spaces for testing innovations: Concept for a Living Lab Act]. Available online at: [konzept-fur-ein-reallabore-gesetz.pdf \(bmwk.de\)](https://www.bmwk.de/SharedDocs/DE/Presse/Media/2021/11/20211115_konzept-fur-ein-reallabore-gesetz.pdf?__blob=publicationFile) (last accessed: 31.03.2022).



ideas that emerge from these challenges to market demand, ensuring that viable innovations are translated onto the market. In one of its most ambitious goals to date, the new federal government plans to establish the German Agency for Transfer and Innovation (DATI). This cannot simply be yet another project management agency. Instead, it should be equipped with appropriate expertise in order to catalyse the socio-ecological transformation in the different regions. In particular, it must include non-profit research institutes with the ability to impart transformative knowledge so as to reach even those groups with no prior relationship with research or science.

Business

Companies of all different sizes and from all different sectors, as well as their employers and employees, are key drivers of process and product innovation, because it is they who translate research findings into innovation. They draw on a high level of responsibility and problem-solving experience to help find sustainable development solutions. In fact, companies are responsible for around two thirds of research and development.

Research and development funding is not necessarily the be-all and end-all in much innovation work. It is important here to rethink existing processes, procedures and perceived necessities and, as with the German Sustainability Code (DNK), to think instead in terms of objectives.

Recommendations

- Companies rely on clear, directional decisions from politicians for their medium- and long-term investment planning. More incentives must be created against the backdrop of a clear regulatory framework and an impact-focused mix of instruments in order to encourage innovations relating to the circular economy, climate neutrality and reduced resource consumption. Equally, we need more market incentives to promote sustainable innovation markets like the circular economy, as well as price incentives for green innovations, for example by raising taxation for products that harm the climate and environment.
- Strategic work needs to be done for areas of innovation, and future markets with innovative, resource-saving products and services must be developed. Energy savings, energy efficiency and renewable energies have a central role to play here. It is high time the German economy capitalises on the opportunities available to shape the field by developing new areas of innovation through targeting the expansion of intellectual property and securing its protection with patents across a wide range of industries.
- Private capital must increasingly be mobilised alongside public funding to finance innovations for sustainable development. As an umbrella for a broader innovation initiative, green bonds could, for example, prove an interesting way of financing SME and industry start-ups in order to



ramp up the pace for the transformation that industry needs and promote new sustainable technologies on a broad scale. Moreover, increased venture capital, for example from pension funds and insurance companies, should be mobilised for German start-ups, while barriers to investment (for instance from Solvency II) must be reviewed and removed.

- There must be greater support in the promotion of innovation for new business models and start-ups that focus on reduced resource consumption, for instance by extending product service life or repair and sharing concepts.
- Companies must centre high reparability, reusability and recyclability as early as the product design phase, not least in the use of composite materials.⁷
- Companies must improve provisions for alternative working models (for instance, working from home, sabbaticals, semi-retirement, time off for voluntary work).

Science and education

Science, that is research and teaching on the one hand and education on the other, lays the groundwork for transformation processes. As the central pillar in the system of innovation, the science system must be better positioned for the sustainable transition.

Not only is the education system the foundation for the science system, it also plays a central role in economic performance and the capacity for innovation by training qualified specialists and creating social stability through equal opportunities and social mobility. The transformation cannot succeed without the teaching and learning of the necessary knowledge, skills and abilities for socio-ecological structural change throughout the entire education chain, from nursery to higher education qualifications, as well as in vocational training and continuing professional development (CPD).

One element of this is education for sustainable development (ESD), which underscores interrelationships and critically analyses consumption patterns. ESD plays a vital role in shaping consumption patterns and lifestyles.

Recommendations for research and teaching

- Even more so than science communication, transfer and citizen science⁸, inter- and trans-disciplinary research is how science ensures authentic societal translation. There needs to be significantly greater financial support for such research, and funding conditions must also be updated. Furthermore, new indicators are needed in the evaluation of

⁷ German Council for Sustainable Development (2021): Circular Economy: Leveraging a Sustainable Transformation. Available online at: [20211005_RNE_Stellungnahme_zirkulaeres_Wirtschaften.pdf](https://www.nachhaltigkeitsrat.de/20211005_RNE_Stellungnahme_zirkulaeres_Wirtschaften.pdf) ([nachhaltigkeitsrat.de](https://www.nachhaltigkeitsrat.de)) (last accessed: 21.03.2022).

⁸ Cf. [Citizen Science - BMBF](#) (last accessed: 02.05.2022).



scientific work, and new stakeholders from outside the realms of science must also be included.

- Trans-disciplinary transformation expertise should play a bigger role in research career paths, especially in the appointment of academic staff.
- Existing research institutions must be geared more closely towards sustainability and transformation research. In addition, a greater focus must be placed on knowledge transfer between research and policy, for instance via ongoing dialogue.⁹
- We must pay closer attention to funding programmes and research design to ascertain whether they generate path dependencies that are conducive to sustainable development. Living labs and experimental spaces as well as experimental learning should also be significantly expanded.
- In addition, funding criteria and assessment instruments for innovation funding should be developed with an eye to sustainability (ex-ante and ex-post).

Recommendations for education

- The education system needs more research- and project-based learning that encourages creativity, as opposed to just the transfer of knowledge. Students must be empowered to pursue education for sustainable development (ESD) to take responsibility, find innovative and complex solutions independently and in a team, cope with risk and uncertainty, withstand conflicting objectives and think laterally.
- Considerable innovation is also needed in the education system, as educational success is still largely contingent on social background. In light of the shortage of skilled workers, this is proving to be an increasing hurdle for economic development.
- If we are to meet the demand for skilled workers for the socio-ecological transition, we must promote training initiatives in dual vocational work-study training. In this context, and especially with regard to in-house training, companies must be prepared to commit to such programmes.
- Existing voluntary service provisions for young people are important educational opportunities that can raise youth interest in projects related to the socio-ecological transformation.

Society

For the overall success of the transformation, we must foster public trust, understanding and acceptance for innovative policy concepts and changes. This holds true both in private households and civil society organisations. All citizens must take on a more significant role in shaping, and sharing responsibility for innovation processes. Overall, we want to enable civil society

⁹ Walz R., Bodenheimer M., Roth F. (2022): Zwei Jahre Corona-Pandemie: Lehren für gesellschaftliche Resilienz und die Nachhaltigkeitstransformation [Two years of the Covid-19 pandemic: Lessons for societal resilience and the sustainable transition]. Berlin: German Council for Sustainable Development. Available online at: [RNEGutachten_gesellschaftliche_Resilienz_und_Nachhaltigkeitstransformation.pdf](https://www.nachhaltigkeitsrat.de/nachhaltigkeitsrat.de/files/2022/04/RNEGutachten_gesellschaftliche_Resilienz_und_Nachhaltigkeitstransformation.pdf) ([nachhaltigkeitsrat.de](https://www.nachhaltigkeitsrat.de)) (last accessed: 01.04.2022).



experimentation (“lifestyle pioneers”) to promote the dissemination of new models of prosperity.

Recommendations

- Citizens, in their various roles, are a central pillar in the societal learning process. Innovation policy must therefore also focus on consumer behaviour, perceptions, habits, barriers to learning, interests, power structures and communication patterns, as well as on new ways to build consensus (civic engagement). Expertise in the natural sciences and engineering is needed, but so too is understanding of social science, for example in renewable energy expansion.
- Living labs can play a role in overcoming crises and building resilience. Not only do they accelerate transition processes, but they also promote, among other things, the social innovations necessary to achieve the transformation, for instance by changing consumption patterns and stimulating the emergence of new social practices. Now, they should be taken one step further and developed into transformation labs, characterised by a more integrative and comprehensive approach as well as a longer duration. The aim here is to develop and adapt new organisational, institutional and social innovations as well as the ability to forecast an innovation’s durability.¹⁰ As such, we should harness the experience gained from the living labs to improve empirical evidence for transformation policy decision-making.
- Social innovation generates new products, services and practices with the aim of solving societal challenges. Open social innovation¹¹ is a method whereby all sectors of society are called upon publicly to join in with developing solutions throughout the entire social innovation process. The call could come from civil society, business or the government. Political decision-makers can help consolidate this method by improving the policy environment, e.g. by leaving scope for exploration and thought in existing systems, by providing financial support or by raising awareness of this type of problem-solving. Companies must also be willing to engage in these processes if these new approaches are to succeed.
- Furthermore, we must establish trans-disciplinary forums as a platform for debate on the objectives of scientific-technological developments

¹⁰ Walz R., Ostertag K., Eckartz K., Gandenberger C., Bodenheimer M., Peuckert J., et al. (2019): Ökologische Innovationspolitik in Deutschland. Bestandsaufnahme und Handlungsempfehlungen [Ecological innovation policy in Germany. Taking stock and recommendations for action]. German Environment Agency (Environment, Innovation, Employment, 01/2019). Available online at: [Ökologische Innovationspolitik in Deutschland - Bestandsaufnahme und Handlungsempfehlungen \(umweltbundesamt.de\)](https://www.umweltbundesamt.de/de/innovation/okologische-innovationspolitik-in-deutschland-bestandsaufnahme-und-handlungsempfehlungen) (last accessed: 21.03.2022).

¹¹ Mair J., Gegenhuber T., Lühsen R., and Thäter L. (2022): UpdateDeutschland: Open Innovation weiterdenken und lernen. Learning Report [UpdateGermany: Thinking and learning about open social innovation. Learning Report]. Available online at: <https://doi.org/10.48462/opus4-4204> (last accessed: 31.03.2022) and Social Entrepreneurship Netzwerk Deutschlands [Social Entrepreneurship Network Germany] (SEND) (2021): Open Social Innovation als agiler gesellschaftlicher Problemlösungsprozess [Open social innovation as an agile social problem-solving process]. Available online at: [PP_OpenSocialInnovation \(send-ev.de\)](https://www.send-ev.de) (last accessed: 21.03.2022).



and ideas for the future regarding the upcoming obstacles in achieving sustainable development. Such forums should exist both for civil society alone as well as with politics and business.

4. The European and international dimension

Today, the major challenges facing us as a society can by and large only be solved at global level. Challenges such as climate change, decarbonising the economy, biodiversity loss, the digital transformation, mounting inequality and the drastic decline in social cohesion in particular require cross-border innovation. We support the ambitions set out in the Coalition Agreement and call for their systematic implementation.

Recommendations

- To ensure a successful transformation, we must join forces with our European partners, for instance with EU-wide innovation initiatives for standardised production standards. European policy, for example the EU's Global Gateway Initiative, should also fall more closely in line with action for innovation.
- The German government should include innovation clauses geared towards hitting the UN SDGs (SDG check) in new trade agreements. This will help address the challenges posed by international supply chains and global environmental interdependencies.
- International collaboration across academia and research must aim to empower developing and emerging economies to play their part in the global innovation landscape. In turn this should bolster their research and innovation systems for the sustainable transition, climate protection and climate change adaptation.
- The German government should move away from funding individual innovation projects and must instead increase investment in building capacity for a holistic innovation system in developing and emerging economies. This includes, for example, the higher education landscape in developing and emerging economies, sustainability planning teams across governments and states, as well as economic support programmes, for instance relating to innovations to combat poverty and tropical diseases.
- We must also find joint innovations for coping with supply chain disruption following the pandemic and as a result of the war in Ukraine. One solution here could be to diversify global supply chains. However in doing so, we must ensure we safeguard the economic development of local production nations. Developing and newly industrialised economies that export energy, for example, cannot suffer worsened local power supplies at the hands of green hydrogen exports.¹²

¹² German Council for Sustainable Development (2020): Making hydrogen a sustainable decarbonisation option Statement by the German Council for Sustainable Development on the Federal Government's National Hydrogen Strategy. Available online at: [RNE-Stellungnahme zur Nationalen Wasserstoffstrategie](#) (last accessed: 31.03.2022).



About the German Council for Sustainable Development

The German Council for Sustainable Development (RNE) advises the Federal Government on issues of sustainability policy. It acts in this capacity as an independent entity, and since 2001 its members have been appointed every three years by the Federal Government.

The Council consists of 14 public figures, comprising individuals from civil society, the business sector, the scientific community and the political arena. It has been chaired since 2020 by Dr Werner Schnappauf and his deputy, Prof. Dr Imme Scholz. The Council also carries out its own projects aimed at advancing the topic of sustainability in practical terms. In addition, it helps shape topically focused momentum within policy and societal dialogue. The Council is supported in its activities by an administrative office based in Berlin.

Imprint

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