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Institute for Advanced Sustainability Studies (IASS)

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A Future Fund for Germany

Promoting climate-friendly infrastructure
and commerce

This policy brief was prepared by David Löw Beer (IASS), Hans-Joachim Schellnhuber (Potsdam Institute for Climate Impact Research/University of Potsdam/IASS) and Claus Leggewie (Giessen University/Institute for Advanced Study in the Humanities (KWI)/IASS).

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Core Elements of the Future Fund

Significant investment is required if Germany is to meet the challenges of caring for its aging population, overhauling its data and power transmission infrastructure, managing the coal phaseout and transition to renewable energies, and modernising outdated industrial machinery. Yet for many years, public- and private-sector investment activity in Germany has been considerably below the OECD average.¹ The targets of the energy transition alone (increasing the share of renewables in the power and heat sectors, expanding the grid, upgrading the energy performance of buildings, integrating renewables into the energy system) call for an annual investment volume of 31–38 billion euro (Blazejczak et al., 2013).

Investment in the aforementioned areas can increase prosperity and improve overall quality of life. While there have been some positive developments – the growth in renewable capacities, for example – Germany has not yet embarked on a path to an all-encompassing socio-ecological transformation.

With the Future Fund, we are proposing a market-based instrument that will help set the course for such a transformation and provide the substantial resources required to effect real change.

The Future Fund meets three essential criteria for transformations to sustainability: It is underpinned by a socially and ecologically sustainable finance model; investments made through the Future Fund reflect the priorities of a socio-ecological transformation; and part of its resources and possible returns are used to reduce social inequalities in the transition to sustainability. Figure 1 illustrates the basic principles behind the Future Fund.

■ Message 1

Establish a transformative sovereign wealth fund to invest in companies with the capacity to foster sustainable development

Strict investment criteria will ensure that the fund is only used to finance companies that contribute to the achievement of ecological and social goals. The process of developing these investment criteria and overseeing the investment process must be democratic.

■ Message 2

Support sustainable infrastructure

State financing of the expansion and modernisation of sustainable infrastructure (e.g. transportation, power grids, sustainable social and technological innovations) needs to be significantly increased.

■ Message 3

Apply an equitable and environmentally sound financing model

In the model we propose, the financing of the Future Fund is based on the polluter-pays principle: Current emissions are taxed via a carbon-pricing system and historical emissions via an estate tax (a tax on inheritances). Beyond the Future Fund, this income is also used to finance a reduction in VAT as well as other social and cultural policy measures.

¹ Compared to GDP, Germany's average investment ratio has been consistently below that of the 36 countries in the Organisation for Economic Cooperation and Development (OECD) since 2001. The investment gap for 2013 alone is estimated to be 3 per cent of economic output (Fratzscher, 2016).

The case for a new, ambitious and market-based policy instrument

At the Paris Climate Summit in 2015 the international community pledged to limit anthropogenic global warming to well below 2°C above preindustrial levels. A Special Report by the International Panel on Climate Change (IPCC, 2018) examines the impacts of average global warming of 1.5°C and outlines possible pathways to achieving that limit. But even warming of this magnitude poses considerable climate-related risks to human and natural systems, for example in the form of an increase in extreme weather events. Key subsystems of the global climate system, like the polar icecaps or the Amazonian Rainforest, can still be preserved in this scenario. Yet the current emissions trajectory poses the threat of global warming of up to 8°C (IPCC, 2014). It is still possible to change course, but that will necessitate a clear and continual reduction in emissions in the coming years (Figueres et al., 2017; IPCC, 2018).

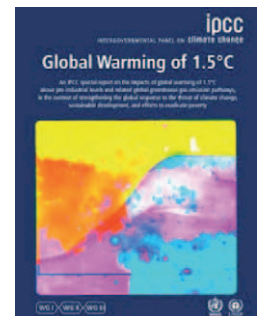
While environmental policy measures have contributed to preventing emissions (BMUB, 2016), Germany has not yet set out on a path to a radical and sustained reduction in greenhouse gas emissions. Instead, policymakers appear to be paralysed by indecision in the face of the perceived trade-offs between ecological, economic, and social factors. This despite the dire economic consequences of inadequate climate protection measures (Edenhofer et al., 2009; Stern, 2007) and the fact that a rapid transformation would incur only minimal additional costs and would in all likelihood deliver cost savings over the longer term (IEA, 2016).

It is important to note that we do not claim that the Future Fund is the best possible instrument in a world of economic models. Rather, it is intended to facilitate a rapid and lasting reduction in greenhouse gas emissions and to stimulate change on a scale necessary to initiate a process of transformation towards sustainability (Leggewie & Messner, 2012). As a market-based

instrument, the Future Fund creates incentives and an enabling environment for change without determining every last detail.

By promoting environmentally-friendly patterns of production, the Future Fund generates an ecological added value. Furthermore, investments made through the Future Fund contribute to the modernisation of private and public capital stocks. The long-term focus of these investments will serve to stabilise the financial system. Finally, investments made through the Future Fund will create new employment opportunities, and the financing model on which it is based will help to reduce wealth inequality. The Future Fund can therefore be expected to significantly advance the ecological, economic and social dimensions of sustainable development. And beyond its direct impacts, it will foster further investment in a low-carbon future by sending a clear signal about the direction of government policy (Faehn & Isaksen, 2016).

The cornerstone for this IASS Policy Brief was laid in a special report by the German Advisory Council on Global Change (WBGU, 2016 a). The concept of a transformative sovereign wealth fund was then developed further in papers by Löw Beer, Schlüter, Vinke and Farrell (2018) and Farrell and Löw Beer (2019) and discussed at a workshop at the IASS in Potsdam, which was attended by 25 experts and over 40 other participants. The insights gained at that workshop helped to refine the concept (in particular the criteria) and highlighted the need to consider the issue of public investment in infrastructure alongside the overall requirements of a sustainable sovereign wealth fund.



Intergovernmental Panel on Climate Change: *Special Report on Global Warming of 1.5°C*

In the following, we present the three key components the Future Fund: a transformative sovereign wealth fund, investment in sustainable infrastructure, and a sustainable financing model. For the sake of brevity, the proposal outlined here is tailored to the

situation in Germany: A Future Fund at the European level would be based on a similar concept and deliver additional economic, ecological and social benefits. Figure 1 outlines the three pillars of the Future Fund.

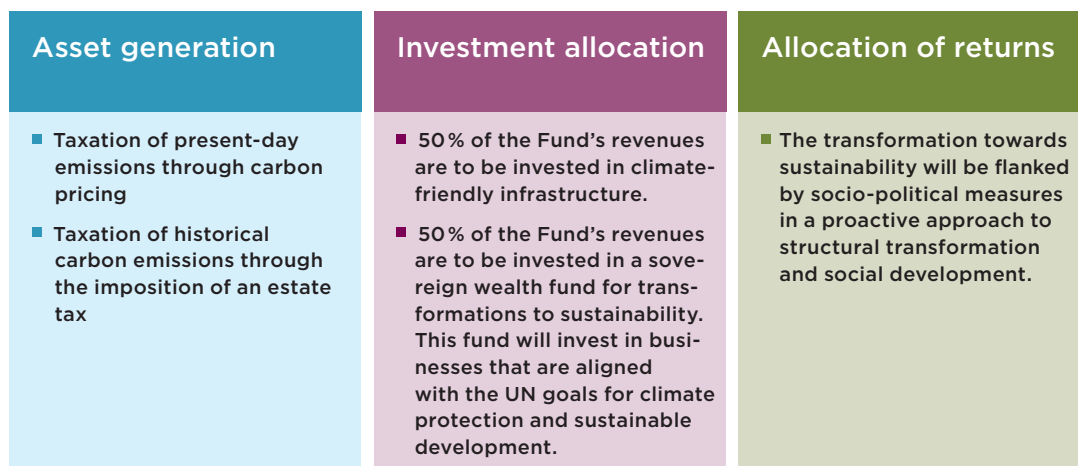


Figure 1:
The three pillars of the Future Fund

Source:
IASS/David Löw Beer



An enormous amount of energy is consumed in the production of cement- and steel-based building materials. Their production will account for nearly the entire global emissions budget unless new materials are adopted in future urban development projects. The know-how already exists to build safe and stable housing and even skyscrapers using wood and other natural building materials. The Future Fund could promote their use by making them more affordable to produce.

Establish a transformative sovereign wealth fund to invest in companies with the capacity to foster sustainable development

Investors are typically drawn to investment opportunities that promise high or at least secure yields. They tend to shy away from investing in sustainable companies, because they associate such investments with high levels of risk (Wüstenhagen & Teppo, 2006), large investment volumes (Ghosh & Nanda, 2010), and particularly lengthy time horizons (Cumming, Henriques, & Sadorsky, 2016). That's why even in the case of established climate-friendly technologies like renewable energies, the current volume of investment is still too low to cover the financing requirements of the energy transition. Private financial institutions are typically averse to risks associated with pricing (e.g. due to fluctuating CO₂ prices) and scaling up (Hartley & Medlock III, 2013) in this sector.

We propose the establishment of a transformative sovereign wealth fund to ensure that companies that contribute to sustainable transformation are reliably financed in the longer term. By pooling many different projects in such a fund, risk is spread, and the resulting efficiency gains can be shared among public contractors and investors. A fund of this kind needs to be oriented on democratic standards and the goals of sustainable transformation. A multi-tiered investment process in which political actors, experts, and representatives of civil society organisations are involved will vouch for the legitimacy of the fund while also ensuring that its resources are invested in sustainable rather than politically opportune enterprises. Figure 2 presents the different steps in the

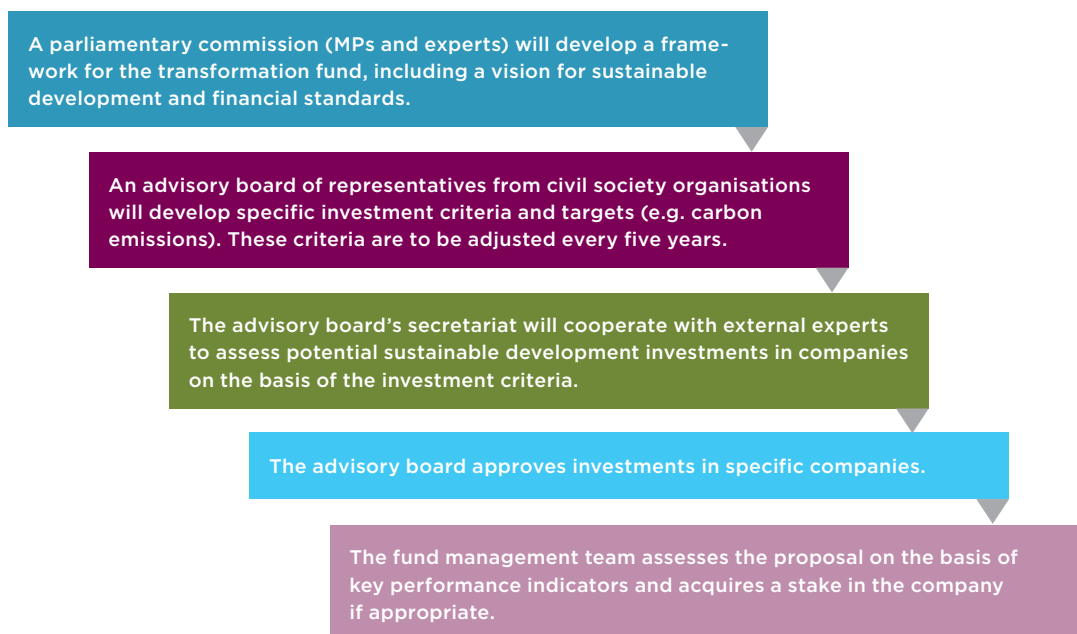


Figure 2:
The investment process

Source:
IASS/David Löw Beer et al.
(2018)

investment process. Further investment criteria for the fund can be derived from the Generally Accepted Principles and Practices (“Santiago Principles”) of the International Working Group of Sovereign Wealth Funds (2008).

Suitable companies will be selected on the basis of investment criteria. These criteria should be in line with state requirements for sustainable business practice and the criteria set by ambitious private sustainability funds. They should clearly define the sectors where investment is permitted (e.g. energy efficiency) as well as those where it is not. The fund can be used to invest in both start-ups and more established companies.

Any returns on the fund’s investments should be used to finance “action on structural change and support for the ‘losers of change’, e.g. fossil energy industry employees, to prevent or minimize social upheaval or dispel resistance to the transformation resulting from such upheavals” (WBGU, 2016 a).

A transformative sovereign wealth fund would be a game changer in two important ways: It would open up sustainable companies and sectors to private investment in the medium term, and it would demonstrate that the state is actively working to achieve climate protection and sustainability targets.



Achieving climate protection targets in the building sector will require the fundamental transformation of building heating and insulation technologies. The Future Fund could accelerate this process through targeted investments. In Potsdam, an entire suburb converted to green district heating following the construction of a thermal energy storage system coupled with an electrode boiler. This innovation reduced carbon emissions by 10,000 tons annually.

Support sustainable infrastructure

A sustainable infrastructure is a prerequisite for climate-friendly development, since it determines the scope for action in business and society as a whole. For example, the shift to e-mobility can only succeed when charging stations become available across the board (IEA, 2018). Given the fact that investments in infrastructure usually only yield returns in the longer term and often concern natural monopolies (there would be no point in constructing a second train network, for example), the financing of infrastructure should be a matter for the government.

Even in the short term, the additional costs of ensuring that infrastructure is sustainable are reasonable. The OECD estimates that as things stand, global infrastructure investment (in energy, transportation, water and sanitation, digital infrastructure) of 6.3 trillion US dollars annually is required in the period from 2016 to 2030. Additional investment of 0.6 trillion US dollars annually (less than 10 per cent more), would allow these investments to be configured in a way that would make the achievement of the 2-degree limit likely. Reduced energy costs and the use of low-emission technologies and infrastructure would more than compensate for these extra investment costs (OECD, 2017).

In the IPCC report on the 1.5-degree limit, the expansion of renewable energies is highlighted as the most important and cost-intensive measure towards sustainability (IPCC, 2018, p. 22). Taking 2012 as a baseline, Blanco et al. forecast that in the years leading up to 2050, additional investment of up to one billion US dollars per year will be required to finance energy efficiency measures and a low-emission energy supply (Blanco et al., 2014). These costs could be reduced by 10 (McCollum et al., 2018) to 50 per cent (Grübler, 2018) if additional regulatory measures were taken to reduce energy demand. In addition to protecting the climate, more concerted efforts to limit emissions would bring many other advantages such as a reduction in poverty and inequality, health benefits, and cleaner oceans (IPCC, 2018, p. 24).

The resources of the Future Fund need to be used efficiently if they are to benefit the environment and society to the greatest possible extent. To ensure that this is the case, we can draw on the various methods economists have developed for determining the value of environmental goods and services (Umweltbundesamt, 2012) in order to compare different infrastructure policies in terms of their efficiency. It is, however, essential that the criteria underpinning such evaluations are clearly defined and democratically legitimised. Furthermore, since climate protection is a long-term task that contributes significantly to inter-generational justice, a low discount rate should be applied, i.e. estimated future costs and benefits should be valued similarly to current costs and benefits. This is also justified by the fact that the value of environmental goods and services is likely to increase in the future as they become more scarce (Drupp, 2018).

In addition, we know from other processes of structural transformation that resources need to be provided to ensure a socially equitable transition and foster the necessary cultural changes and civil society development. In the cultural sphere, regional actors should be able to determine how resources are distributed in simple and transparent decision-making processes (Agora Energiewende, 2016).

Apply an equitable and environmentally sound financing model

The Future Fund also intends to have a climate-friendly steering effect on the revenue side. In our proposal, which is largely in line with a previous proposal by the WBGU (2016a), current carbon emissions are taxed via a carbon-pricing system and historical emissions via a flat-rate estate tax with a basic tax-free allowance. This is consistent with the polluter-pays principle, not only with regard to current emissions but also with regard to accountability for past emissions.

Specifically, we are proposing a price of 30 US dollars per ton of CO₂ in 2020, which will be doubled every ten years until 2050. Such carbon pricing has the potential to generate average annual revenue of approximately 17.3 billion euro (WBGU 2016 a). Fifty per cent of the income generated in this way will be directly redistributed to households to increase public acceptance of this ecological tax and avoid overly burdening low-income households. The remaining 50 per cent of the income will flow into the Future Fund, with half earmarked for the financing of sustainable infrastructure and the other half for the transformative sovereign wealth fund.

Our financing model also foresees a tax rate of 25 per cent on inheritances in excess of 500,000 euro. Since inheritances of less than 500,000 euro will not be taxed, approximately 98,5 per cent of all legacies will be exempt from taxes. Unlike the current regressive inheritance tax, where the percentage tax burden is lower for larger inheritances (L ow Beer et al., 2018), the estate tax we recommend would only apply to particularly large inheritances. According to estimates by the German Institute for Economic Research on the basis of today's legacies (Tiefensee & Grabka, 2017), this estate tax would yield revenues of approximately 33 billion euro annually.

If we assume that the total value of large inheritances will remain constant in the thirty years from 2020 to 2050, then a total of 1.13 trillion euro will flow into the Future Fund in that period. Figure 3 provides an overview of our proposed financing model.

Part of the income generated by the Future Fund in Germany could be used to finance a European Future Fund. However, since the value and nature of assets vary considerably from one European country to another, a harmonisation of tax regulations and rates – as opposed to standardisation – is advisable as a way of minimising tax avoidance strategies. ■

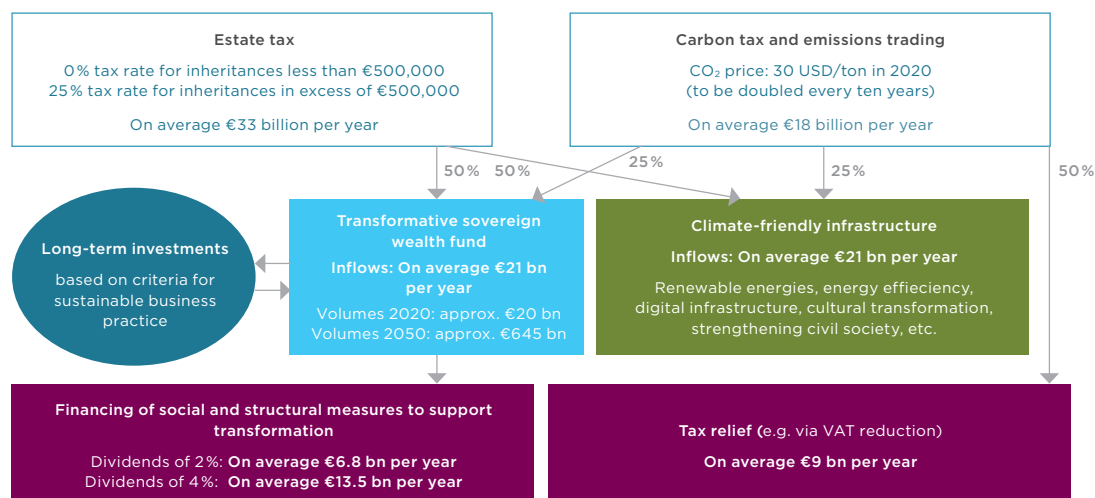


Figure 3:
A Future Fund for Germany: Acquisition and allocation of funds

Source:
IASS/David L ow Beer

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Institute for Advanced Sustainability Studies (IASS) e. V.

Funded by the ministries of research of the Federal Republic of Germany and the State of Brandenburg, the Institute for Advanced Sustainability Studies (IASS) aims to identify and promote development pathways for a global transformation towards a sustainable society. The IASS employs a transdisciplinary approach that encourages dialogue to understand sustainability issues and generate potential solutions in cooperation with partners from academia, civil society, policymaking, and the business sector. A strong network of national and international partners supports the work of the institute. Its central research topics include the energy transition, emerging technologies, climate change, air quality, systemic risks, governance and participation, and cultures of transformation.

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