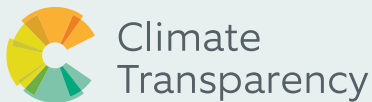


 **CLIMATE POLICY IMPLEMENTATION CHECK**




ELECTRICITY GRID EXPANSION POLICIES IN GERMANY

IMPLEMENTATION, PARTICIPATION AND ACCEPTANCE





Climate Transparency is a global partnership with a shared mission to stimulate a “race to the top” in climate action in G20 members through enhanced transparency.

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Cover photo: Workers assemble a high voltage electricity transmission tower near wind turbines in Klockow, Germany, in April 2022.

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EXECUTIVE SUMMARY

Electricity grid infrastructure is a crucial bottleneck in the German energy transition. Balancing different forms of renewable electricity generation, as well as the distribution of electricity between northern and southern Germany, mandates the establishment of additional high-voltage transmission lines with the capacity to transport electricity across extended distances. Policymakers have addressed this issue with a series of legislative packages, including NABEG, the Grid Expansion Acceleration Act – Transmission Grid (“Netzausbaubeschleunigungsgesetz Übertragungsnetz”).

This paper presents an assessment of NABEG using the Climate Transparency Climate Policy Implementation Check, a tool that enables a quick evaluation of the implementation status of policies in the categories of Legal Status, Resources, Institutions and Governance, and Oversight. The Climate Transparency Implementation Check finds that the NABEG has a strong policy design and is generally well set up for the effective implementation of fast-tracking the transmission grid expansion. The only category of the Implementation Check in which NABEG does not score “strong” is Oversight. An official evaluation of the implementation of NABEG is planned for 2026, but details on the governmental evaluation process remain unclear. The assessment presented here offers an analysis of the obstacles to swift implementation and highlights public participation as a key solution area.

Despite the good policy design, the speed with which the physical infrastructure is being built has been too slow, with significant delays of construction projects. Drawing from the example of “SuedLink”, a major transmission construction project that has been postponed for years and finally started construction in 2023, this paper examines reasons why the German government’s ambition and governance of the national grid expansion has not led to rapid infrastructure development.

The most prominent reasons for the delays are the protracted permitting processes, which are stalled, among others, by public opposition towards transmission grid construction projects, as well as lengthy court cases. These can hinder implementation, even if the underlying policy has been set up well. This paper addresses a number of these challenges and outlines solutions on how to make the implementation of grid infrastructure both fast and fair. One successful example of public participation is the garden project in “Agenda Hürth”, which showcases how benefits can be generated for the local community and, thereby, increase public acceptance of the construction of transmission lines. With this case study, this paper contributes important learnings for similar processes in other major-emitting countries, and offers ideas for setting up effective Joint Energy Transition Plans that communities can support.

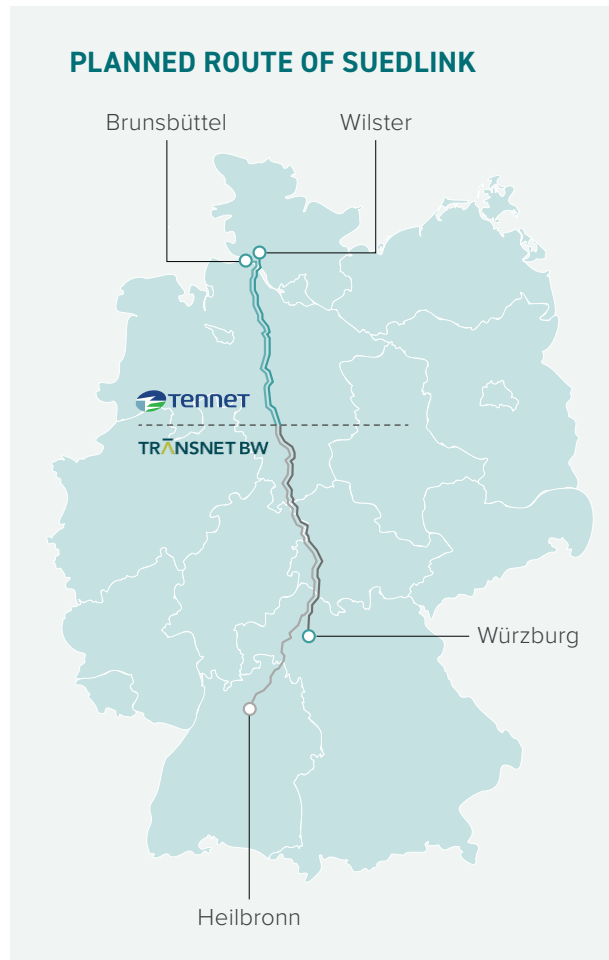
INTRODUCTION

“We are doomed to succeed”, commented Robert Habeck, German Federal Minister for Economic Affairs and Climate Action, on the expansion of power grids in September 2023, when he visited the construction site of “SuedLink”.¹ SuedLink is an enormous construction project of a new 700 km electricity transmission line with underground cable. The project is a crucial puzzle piece in the German energy transition; it is supposed to provide the necessary infrastructure to transmit renewable wind energy from northern Germany to the southern parts of Germany, where households and industry have a high energy demand.

Why is the SuedLink project so important for the energy transition? A successful shift towards sustainable energy, as outlined in the Renewable Energy Act (“Erneuerbare-Energien-Gesetz” or EEG), demands more than just speeding up the advancement of renewable energy sources. It also necessitates the enlargement of power grid infrastructure to accommodate the projected rise in electricity usage due to increased electrification, e.g., in the transport and building sectors (for instance for electric vehicles and heat pumps). Consequently, there is a dual requirement to increase renewable energy production and expand power grids. The task is to effectively utilise renewable and decentralised energy sources, which can fluctuate or experience interruptions, without compromising the security of the electricity supply. Balancing different forms of renewable electricity generation, as well as the distribution of renewable energy resources between northern and southern Germany, mandates the establishment of extra high-voltage transmission lines with the capacity to transport electricity across extended distances.

The paper opens with the results of the Policy Implementation Check of the NABEG, and presents summaries of the four assessment categories. The Policy Implementation Check provides a concise framework to find out, from an early stage, whether policies are being implemented from the policy-maker side. It serves as an assessment tool for civil society stakeholders and is undertaken as a complement to the policy evaluation cycle that governments should perform. The methodology is outlined in more detail in the Annex of this paper.

The electricity grid expansion in Germany is governed by a series of laws and policies. These include, among others, the Federal Requirements Plan Act (“Bundesbedarfsplangesetz”), the Energy Industry



Act (“Energiewirtschaftsgesetz”), the NABEG and the Environmental Impact Assessment Act (“Gesetz über die Umweltverträglichkeitsprüfung”). NABEG is a legislative framework aimed at facilitating and expediting the expansion of the country’s electricity transmission network.

The main goal of NABEG is to address the challenges arising from the energy transition, particularly the integration of renewable energy sources into the grid, as well as ensuring the security and reliability of the power supply. The policy originally entered into force in 2011. Since then, the NABEG has been changed numerous times to reflect the shifting realities of the energy transition, with major revisions and amendments made in 2019 to simplify permitting procedures. The law governs network expansion planning and permitting. It addresses procedures for establishing route corridors, conducting environmental impact evaluations, and making planning approval decisions.

NABEG holds a prominent position as a policy instrument for various reasons. Firstly, the electricity grid consists of transmission and distribution grids that serve different voltage levels. While all grids need attention, transmission grids, which are covered by NABEG, constitute the major bottleneck in the system. Transmission congestion has a dominant influence in terms of volume and is, thus, of the highest relevance.² Secondly, NABEG specifically aims to accelerate and coordinate network expansion in the context of the energy transition. The landscape of laws and policies for network expansion in Germany is complicated, and NABEG has many interlinkages with other legal frameworks and decisions. This paper zooms in on NABEG wherever possible and considers the wider legal context wherever needed.





In reality, it becomes apparent that even with good policy design, fast implementation is not guaranteed.

The paper next addresses the obstacles to swift implementation, with a focus on public opposition.

The example from the large-scale grid expansion project SuedLink demonstrates how public protests and citizen and community resistance can contribute to delaying the implementation of policy plans.^{3,4} The public participation process in this case has not led to a sense of ownership among citizens, but rather to delays and much higher costs. However, engaging the public in decision-making processes and encouraging their active participation in shaping the projects is an inevitable step and can ideally foster a sense of ownership. The inherent difficulty to overcoming resistance when citizens are directly affected by the construction of infrastructure to expand electricity transmission lines is that the national benefit is hardly evident locally. But, creative solutions can be found to ensure benefits for the local community. **The paper concludes by shedding a light on solutions, with a best practice example from public participation in the context of transmission grid expansion.**

ABOUT THE CLIMATE POLICY IMPLEMENTATION CHECK

To meet the challenges of climate change, policies need to be both ambitious and implemented in a way that realises ambition as a matter of urgency. To assess the status and quality of implementation, Climate Transparency has developed the Climate Policy Implementation Check. It assesses the implementation of policy instruments along several basic questions:

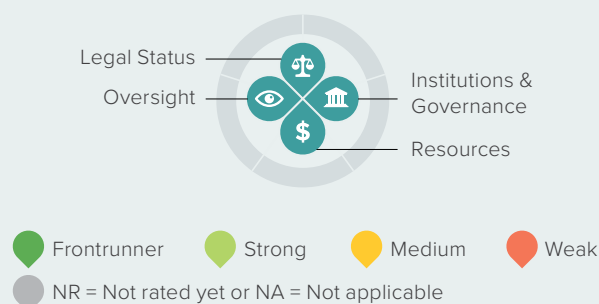
-  Does the instrument have a basis in law?
-  Has a suitable organisation been given the responsibility to implement the instrument?
-  Has the institution been given the resources to implement the instrument?
-  Is implementation being appropriately monitored to ensure success?

Accordingly, the assessment is grouped into four categories: Legal Status, Institutions and Governance, Resources, and Oversight. The framework can be applied to any policy in any country. This early check is important as policy outcomes and impacts on greenhouse gas (GHG) emissions are typically only measurable several years after implementation, leaving little time for course correction if implementation of the policy is weak.

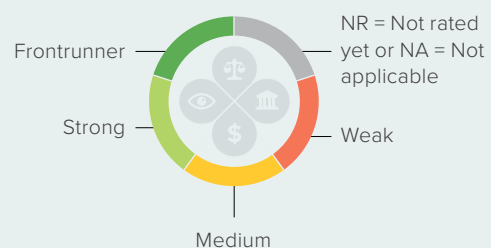
For each of these categories, the framework includes specific questions that are designed so that the results are comparable across different countries. Depending on answers to the specific questions, the implementation of the relevant policy instrument in each category is rated as Weak, Medium, Strong or Frontrunner. These ratings are combined to produce an overall rating for the policy implementation. For more information, please visit our website:

www.climate-transparency.org/implementation-check.

The four categories



Policy assessment rating (overall)

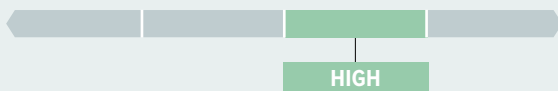


IMPLEMENTATION CHECK OF NABEG

This chapter presents the results from the Implementation Check of the NABEG policy. For more information on the Policy Implementation Check methodology, please consult the Annex of this paper or the Climate Transparency website.⁵

AMBITION CHECK

Renewable Energy Transition in Germany



On 7 July 2022, the German Parliament passed several bills of the so-called Easter package, increasing renewable generation targets to 80% of the electricity mix by 2030, with 2035 as the target for 100% renewable energy.

To promote the expansion of renewables, the package contains simplifications of permitting procedures for on- and offshore wind, as well as rooftop solar. The Easter Package also contains new provisions for the expansion of the German electricity grids as a necessary precondition for the increase in renewable electricity generation.⁶ Notably, the Easter Package designates the expansion of renewables and electricity grids formally as being in the “overriding public interest”, in line with the EU’s stipulations in the REPowerEU package.⁷

Source: <https://www.climate-transparency.org/wp-content/uploads/2022/10/CT2022-Germany-Web.pdf>



LEGAL STATUS

STRONG

There is a solid legal basis for the implementation of NABEG. NABEG is a federal law that was passed by the German Bundestag (Federal Parliament) and Bundesrat (Federal Council), and subsequently signed into law by the President of Germany. It was first enacted in 2011, and major amendments were made in 2019. As a federal law, it applies uniformly across the entire territory of Germany.

The primary legal basis for NABEG is the German Constitutional Law (“Grundgesetz”), which grants the federal government authority over energy and infrastructure policy. Specifically, NABEG is based on Article 74, Section 22 of the German Constitutional Law, which grants the federal government legislative powers over “the interconnected system of energy supply, including the power industry.”



INSTITUTIONS & GOVERNANCE

STRONG

There are institutional bodies tasked with the implementation of the policy instrument and its laws and regulations. According to Section 5 of NABEG, the institutional body tasked with the implementation is the Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railway (Bundesnetzagentur – BNetzA). The BNetzA is a federal authority that oversees the energy and telecommunications sectors in Germany.

The rules and regulations specified in the NABEG policy instrument are clear and can credibly meet the policy objective, which is to expand the grid infrastructure in Germany. NABEG lays forth specific procedures for planning, permitting, and carrying out grid expansion projects. Specifically, it regulates a two-stage planning and approval procedure for grid projects that have been designated by law (in the so-called Federal Demand Plan or “Bundesbedarfsplan”) and which cross country or federal state borders: The first stage is federal spatial planning, and the second stage is the planning approval process. Together with the Federal Requirements Plan Act (“Bundesbedarfsplangesetz”), the Energy Industry Act (“Energiewirtschaftsgesetz”), and the Environmental Impact Assessment Act (“Gesetz über die Umweltverträglichkeitsprüfung”), the legislation is comprehensive, and the policy instrument’s processes are sufficiently transparent.



RESOURCES

STRONG

The expansion of the electricity grid has immense budgetary implications. The cost requirements for the transmission level alone (excluding offshore connectivity) are estimated at EUR 28-43 billion by 2030.⁸ NABEG does not indicate a clear budget for the implementation of the forecasted plans; however, the cost recovery mechanism is clear as the grid expansion in Germany is generally financed by all consumers. This is effective because the electricity bills contain network fees (“Netzentgelte”), which are paid to the grid operators. In addition, the grid costs of the four Transmission System Operators (TSOs) are partially covered by public money. In 2023 the subsidy totals EUR 12.84 billion.⁹

There are four Transmission System Operators (TSOs) of the German transmission grid with control area responsibility in Germany: Tennet TSO GmbH, 50Hertz Transmission GmbH, Amprion GmbH, and EnBW Transportnetze AG. They are officially tasked with the construction of grid expansion projects. The four TSOs are only responsible for transmission grids. Regarding distribution grids, there are 856 different operators in Germany that deliver electricity to households.

The BNetzA, as the institutional body tasked with implementation, is well-resourced. It receives a share of 0.06% of the federal budget, which is around EUR 263 million yearly.¹⁰ However, the actual implementing bodies are the TSOs. In 2022, they invested around EUR 5.5 billion¹¹ in the transmission system infrastructure (a slight increase from 2021, which was EUR 4.7 billion).¹²



OVERSIGHT

MEDIUM

Detailed monitoring results on grid expansion projects are publicly available online.¹³ The BNetzA is required to submit regular reports on the state of “Bundesfachplanung” and “Planfeststellung”. Additionally, the TSOs are required to publish regular performance record reports.^{14, 15} The latest one is from September 2022.

Unfortunately, results indicate that the implementation of grid construction projects is lagging.

A comparison of measures in the 2018 and 2022 implementation report of the TSOs reveal that the planned commissioning dates for some projects were postponed. In the case of delays, there are no penalties; therefore, the TSOs face no direct consequences when forced to postpone projects.

Currently there are 14,000 km of transmission grids in planning, permitting or construction processes, of which around 2,500 km have been built.¹⁶ The circuit length of the transmission system today is approximately 37,000 km.¹⁷ At the present rate of expansion, the need is unlikely to be met in the planned time frame.

An evaluation of the implementation of NABEG is planned for 2026, but it remains unclear if the quantitative outcome of the policy instrument will be assessed. There is criticism from the Federal Audit Office (“Bundesrechnungshof”) to the federal government about insufficient monitoring of success of measures in their agencies. “In 87 percent of the projects”, the report said, “there were no checks on whether the measures were working”.¹⁸

WITH THREE OUT OF FOUR CATEGORIES RATED AS “STRONG”, THE NABEG POLICY IS RATED WITH THE SECOND-BEST SCORE.

INSTRUMENT SUMMARY

Grid Expansion Acceleration Act – Transmission Grid (NABEG) policy

RATING

STRONG



EVEN WITH GOOD POLICY DESIGN OF NABEG, FAST IMPLEMENTATION IS NOT GUARANTEED

Even though the Implementation Check rates NABEG legislation as “strong”, the implementation is lagging as construction projects keep getting postponed and finalisation dates are not met. Why is that?

The complexity of translating good policies into swift actions is often characterised by an “implementation gap”. This disparity is particularly evident in the realm of infrastructure development, where a policy does not automatically translate into tangible, physical results. The acceptance of a law by the public or stakeholders does not inherently guarantee the acceptance of the intended infrastructure. Thus, while good policies lay the foundation, the journey from policy on paper to the physical manifestation of infrastructure is a multifaceted process that demands time, patience, and persistent efforts to bridge the implementation gap. The implementation of NABEG is not entirely unsuccessful; it is just not fast enough. It is important to note, however, that this issue is not specific to NABEG, but often occurs in large-scale construction projects in Germany.

The implementation gap in the large-scale grid infrastructure project, SuedLink, is particularly striking. Plans for the SuedLink grid connectivity line have existed for more than a decade, but public opposition against the construction as well as logistical issues have resulted in massive delays. One compromise has been to construct part of the transmission project as underground cables, which is substantially more expensive than overhead lines. Approval procedures for the construction are lengthy and taking longer than expected. The finalisation of SuedLink is now only foreseen for 2028 (initially 2022).

SuedLink is the most prominent example of delayed grid expansion efforts in Germany. However, there are many more examples, and Germany has a track record of delaying large construction projects, not only for those related to electricity grids. The TSOs, which are responsible for construction projects of the transmission grid, have published three implementation reports in total (in 2018,¹⁹ 2020,²⁰ and 2022²¹). A comparison of the implementation reports shows that commissioning of several important grid projects has been delayed by two years and more.

The Implementation Check methodology looks at four categories: Legal Status, Institutions and Governance, Resources, and Oversight. The categories outline

the factors that good policy design considers and, by doing so, enable public stakeholders to evaluate the implementation status of policies and hold governments to account. In the case of NABEG, the policy is evaluated to be well-designed and well-implemented. And yet, even if the policy is well designed and implemented, the underlying goals of the policy instrument may still not be met, as the case of postponed transmission line construction projects highlight.

Consequently, there are factors apart from the scope of policy design that are relevant enough to cause such massive delays. The process for grid expansion projects in Germany is lengthy (up to 10 years from the planning stage to commissioning) and complicated. A multitude of smaller factors add up to long delays.

These factors include:

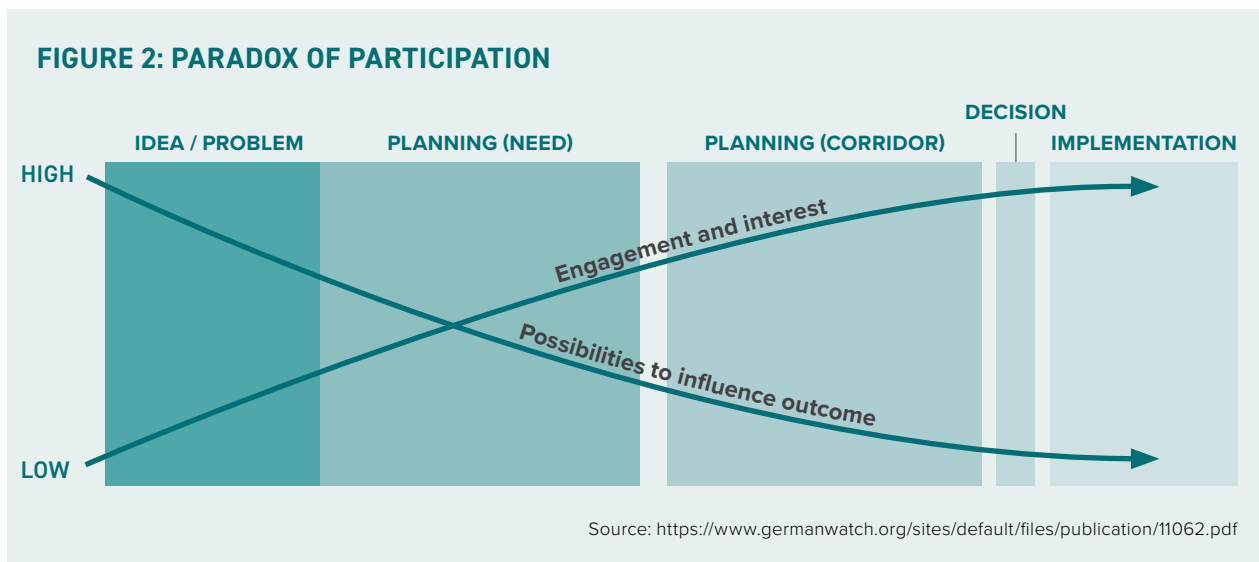
- **Coordination** of federal, state and local levels with different competencies in the permitting process
- **Lack of uniformity** in the depth of review, especially for assessments of alternate routes
- **Massive paperwork** for the TSOs to file for permitting and construction applications
- **High procedural costs** for projects that aim to increase the capacity of existing grids
- **Lack of digitalisation** due to legal requirements (e.g., data protection)
- **Lack of qualified personnel**, from the planner to the building owner, especially in the planning authorities at the state level
- **Stringent requirements** for environmental impact assessments with time constraints for data collection
- **Lengthy legal proceedings** (and personnel shortages to proceed them)
- **Lack of support** on the ground and public opposition

The government has already undertaken several measures to tackle some of these issues, including digital consultation possibilities, reduction of environmental assessment requirements, and shorter permitting deadlines. For this paper, extra attention shall be given to public opposition as a main obstacle to swift implementation.

PUBLIC OPPOSITION AS A MAIN OBSTACLE TO SWIFT IMPLEMENTATION

Even though public support for the energy transition as a whole is strong, transmission line construction projects face a “not-in-my-backyard” (NIMBY) mentality. It is increasingly recognised by the government that a just energy transition must involve stakeholder engagement and citizen participation. Public consultations are part of every phase of the planning and permitting stages of grid expansion projects. A challenge to meaningful public participation is that the engagement and interest

of individuals tend to be highest towards the later stages of the project, when construction has started or is about to start and the first visible or tangible changes occur. In contrast, the possibilities to influence the outcome of projects are highest at the beginning, when plans are easier to adapt, and details are still open to discussion. It is a paradox, therefore, whereby public interest and engagement peaks when the possibilities to influence the outcome have already decreased significantly.



The BNetzA has outlined their approach to public participation as striving to strike a balance between the claims of various stakeholders:

“All interested parties can and should be involved in fundamental decisions. In participation procedures and consultations, affected parties, experts and the public can comment on plans and drafts. The Federal Network Agency takes these comments into account in its decisions. When it comes to specific construction projects, those personally affected have even more extensive rights.”²²

However, the current participation processes of the BNetzA only occur within the permitting process, thus being able to counter the “Participation Paradox”. It has proven to be extremely difficult to engage stakeholders early in spite of many efforts.

The large-scale transmission line construction project SuedLink has faced major public opposition, leading to significant delays. There is a Federal Association of Citizens’ Initiatives against SuedLink²³ that was founded in protest against the planned direct current transmission lines in Germany. According to their website, the primary goal of their association is the nationwide networking of the various citizens’ initiatives in order to give the protest against SuedLink a strong voice. They advocate for decentralised and citizen-friendly energy planning and want politicians to reconsider the planned electricity transmission lines.

Concerns include health and environmental aspects, loss of income in agriculture, forestry and tourism, but also questions of necessity. The landscape of arguments and potential counterarguments is complex,²⁴ making it a challenging topic to discuss for all stakeholders.

GOOD PRACTICES FROM PUBLIC PARTICIPATION AS SOLUTIONS

Just as there are a multitude of factors leading to delays, there are a multitude of solutions that can address these obstacles. Improvements include revised legislation, acceleration through parallel permitting processes, and streamlined environmental assessments. Moreover, specialised courts and judges can prioritise these cases that have been designated as being of “overriding public interest”. Increased digitalisation and open access databases for environmental data would also benefit the planning and approval processes.

Besides these legal and procedural measures, the other area for improvement is citizen participation. Giving citizens opportunities for early engagement and the chance to influence the outcome can alter the impact of the “Participation Paradox” (page 7). Doing so helps to build trust, enables meaningful influence, and improves the projects by incorporating local knowledge. It also prevents lengthy court proceedings after planning approval is granted, as citizen concerns are heard early on and can feed into grid plans, often making the projects themselves better.

Measures to inform and engage the public are taking place in different fora, most notably in the public dialogue forum “Bürgerdialog Stromnetze”,²⁵ funded by the federal government. The BESTGRID Project, for example, has outlined many recommendations that address local stakeholders as well as TSOs and planning authorities in their Handbook for Public Participation and Transparency in Power Grid Planning.²⁶ The BESTGRID project concluded in 2015, but the recommendations and lessons learned remain highly relevant.

Local multipliers can also help bridge the gap between governments or public authorities and individual citizens. Municipal parliaments or mayors can serve as mediators to foster citizen participation. Additionally, socio-political actors like trade unions, social or welfare associations, or other local organisations can assist with public education and access. If the groups they represent are affected by the impacts of grid expansion, they can help mobilise their members to participate in consultations and public hearings through their independent communication channels. Additionally, if locally known and trusted actors can give credibility to the planned grid expansion, it can help counter the fact that those who oppose expansion and infrastructure development are usually louder and more visible than those who silently support it.

This, then, could be a task for socio-political actors: to voice support, make positive cases and counter public opposition.

Giving the public a credible stake in the process early on is important to address opposition. Citizens’ initiatives against grid expansion projects such as SuedLink have legitimate concerns that have to be addressed. Actively integrating these concerns as early as possible into the planning process and entering into a dialogue can help turn citizens’ opposition into a positive force for effective implementation.

MUNICIPAL DEVELOPMENT COUNCILS (“KOMMUNALE ENTWICKLUNGSBEIRÄTE”)

A format for public participation

Municipal development councils facilitate inclusive policy-making through a multi-stakeholder approach. The councils provide a positive space for dialogue, contributing to the development of community-supported policy solutions, crucial for addressing complex challenges such as grid expansion projects. For more details, visit: www.governance-platform.org

Despite all efforts, it is important to note that even best public participation practice by the government and official bodies would not entirely meet the full challenge. The Participation Paradox remains strong and the “not-in-my-backyard” (NIMBY) mentality is not easy to resolve.

There are different pieces of the puzzle to meet the challenge of public opposition. In this ongoing and dynamic process, no policy amendment can potentially be a single fix. One successful example is the garden project in “Agenda Hürth”, which showcases how challenges around public participation can be met by generating a benefit for the local community and, therefore, help increase public acceptance of the construction of transmission lines.

We need more good practices to showcase **how public participation can be a solution, not an obstacle. The challenge, after all, is for implementation to be both fast and fair.**

CASE STUDY

Local citizens initiative “Agenda Hürth” in North Rhine-Westphalia

One example of a public participation project with benefits created for the local community affected by a transmission grid construction project can be found in North Rhine-Westphalia in western Germany. A local citizens initiative, called Agenda Hürth,²⁷ has repurposed the unused space underneath their local transmission grid for a citizen garden project. The garden gives local residents the opportunity to grow their own vegetables and engage with other residents, often from socially precarious backgrounds. It has brought a diverse group

of people together and increased local biodiversity. The garden project has had a notably positive impact on the view that citizens have of the power lines. Where there was strong local opposition before, the visible local benefits have changed the narrative not only for the users of the garden but also for the wider public. It was crucial to its success that local multipliers, including the mayor, were strong proponents of the project and provided the initiative with the land that is rented out to the local TSO.



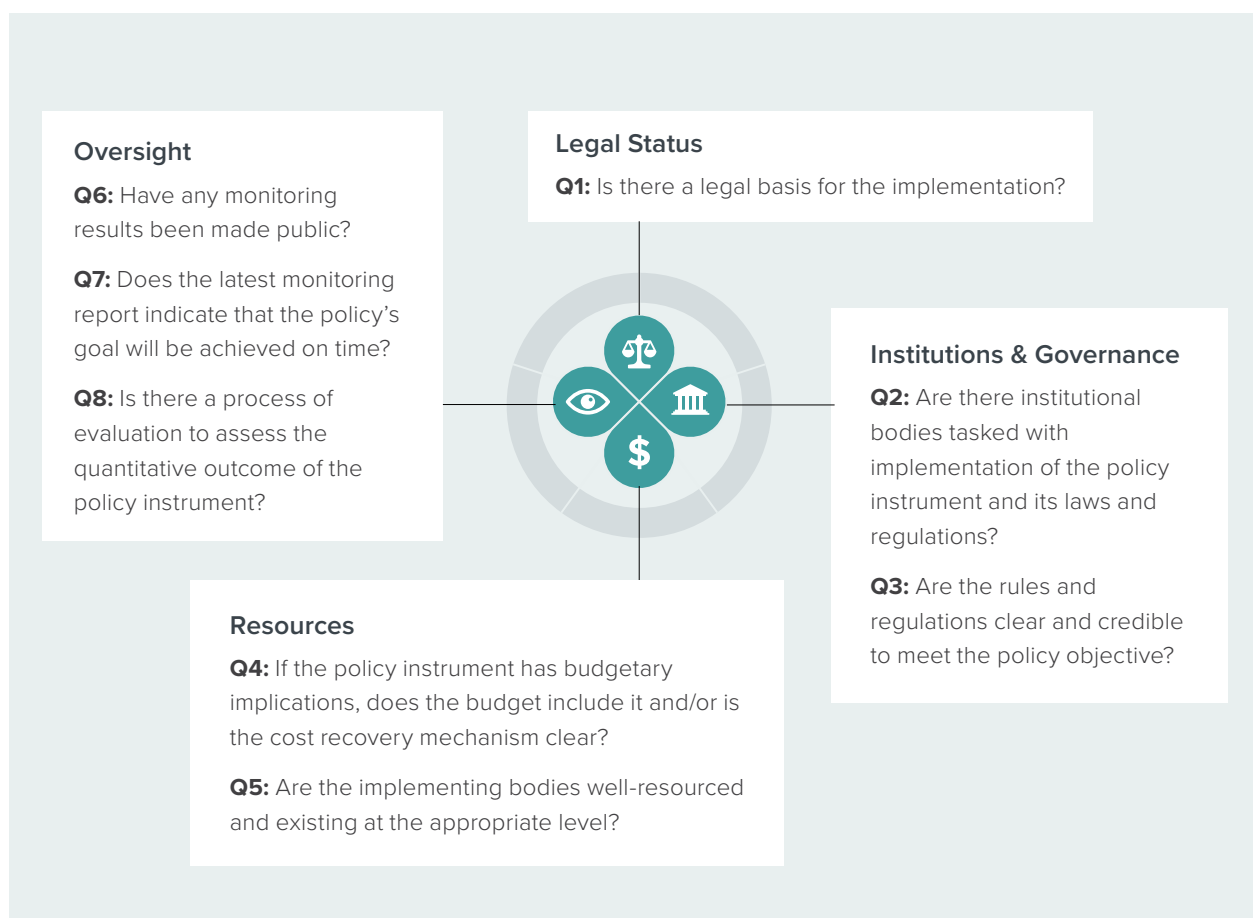
ANNEX: CLIMATE POLICY IMPLEMENTATION CHECK METHODOLOGY

The Climate Policy Implementation Check provides a concise framework to check from an early stage whether policies are being implemented from the policy-maker side. Therefore, it can serve as an evaluation tool for civil society. This early check is important, as policy outcomes and impacts on greenhouse gas emissions are typically only measurable several years after implementation, leaving little time for course correction if implementation of the policy is weak.

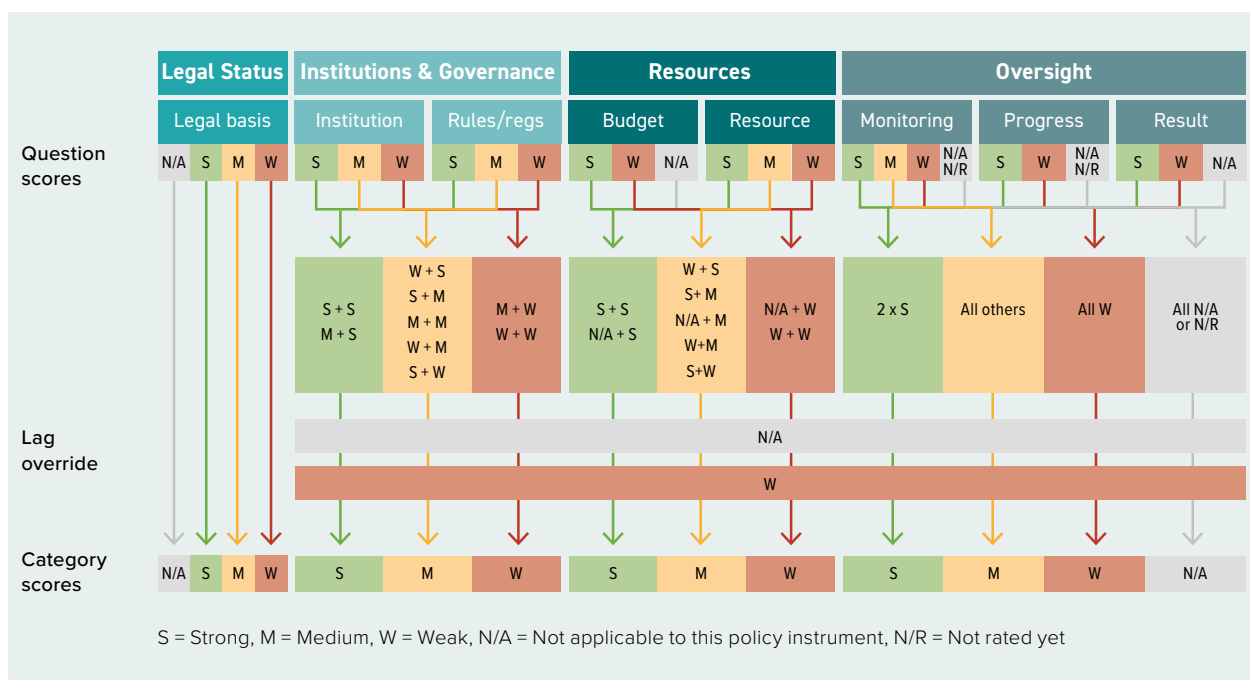
This Implementation Check is a tool that enables stakeholders to evaluate the implementation status of policies, engage in the exchange of good practices, and hold governments to account. Multiple tools

and assessments already exist to evaluate ambition, but few assess implementation. These independent assessments are especially valuable in the run-up to the Global Stocktake, given that formal processes under the UNFCCC are not set up to fulfil this remit.

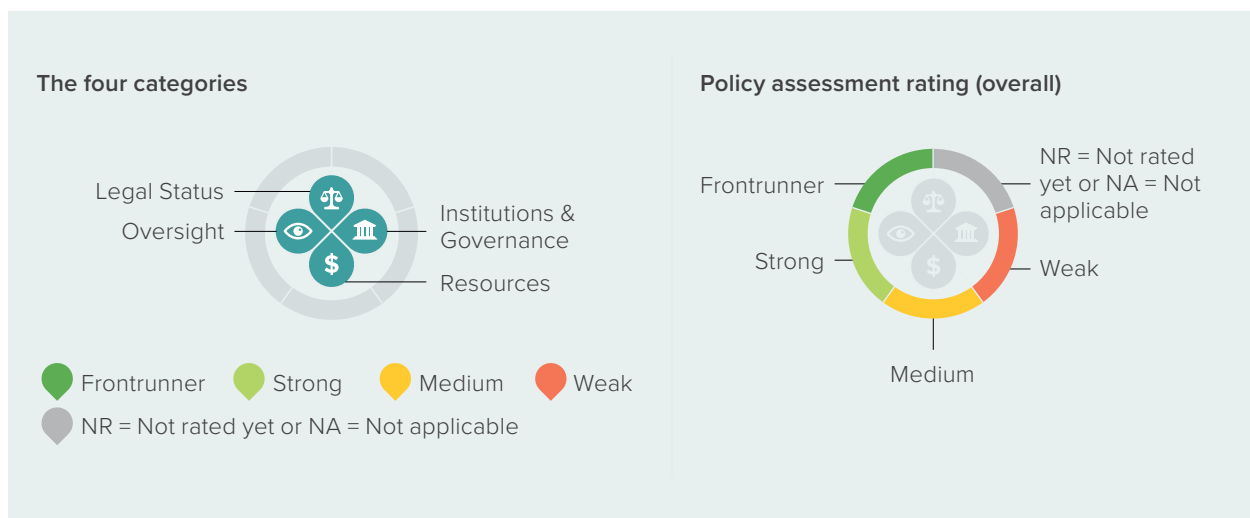
The framework checks different characteristics of policy implementation which can be grouped into four categories: Legal Status, Institutions and Governance, Resources, and Oversight. For each of these categories, the framework includes specific questions that are designed so that the results are comparable across different countries.



Depending on answers to the specific questions, the implementation of the relevant policy instrument in each category is rated as Weak, Medium, Strong or Frontrunner.



These ratings are combined to produce an overall rating for the policy implementation in the format below.



ENDNOTES

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CLIMATE POLICY IMPLEMENTATION CHECK

Science demands urgent focus on effective, fair and fast implementation of climate policies, to keep the global temperature limit of 1.5°C. The UNFCCC's Global Stocktake has clearly shown that the current ambition and implementation of climate policies and measures will not suffice to reach that goal.

This paper is one in a series of national papers that analyse various aspects in the implementation of energy transition policies in Colombia, Germany, India, Indonesia and South Africa. With support by the Climate Emergency Collaboration Group, the papers seek to activate political dialogues in and between countries, and with engaged civil society organisations on energy transition policies and pathways.

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