



## SDG7 Energy Compact of Germany on Green Hydrogen

### A next Decade Action Agenda to advance SDG7 on sustainable energy for all, in line with the goals of the Paris Agreement on Climate Change

*As part of the High-Level Dialogue on Energy in New York in September 2021, Germany contributes to SDG7 with the presentation of the German Energy Compact. As a Global Theme Champion for the Energy Transition, Germany is committed to adopting a national Energy Compact to contribute positively to the SDGs and the Nationally Determined Contributions to achieve the Paris Agreement.*

*The Energy Transition – the transformation of the energy supply in Germany from fossil and nuclear energy sources to renewable energy sources and energy efficiency – is our basis for a safe, sustainable, secure and affordable energy supply, which is essential for all our lives. By adopting the 2030 Climate Action Programme, the Federal Government has paved the way for meeting its climate targets for 2030. With the revision of its Federal Climate Protection Act in 2021, however, the climate targets for 2030 and beyond have substantially been increased. To help achieve the new targets, the Federal Government has passed an immediate climate action programme for 2022. Its long-term goal is to achieve climate neutrality in line with the objective agreed under the Paris Agreement, which seeks to hold global warming well below 2 degrees and pursue efforts to limit it to below 1.5 degrees above pre-industrial levels. In addition, Germany has committed itself to achieving greenhouse gas (GHG) neutrality by 2045. Apart from phasing out coal-fired power, for which Germany has already taken the relevant decisions, this means a decarbonisation of the whole energy system and preventing emissions which are particularly hard to reduce such as process-related GHG emissions from the industrial sector, amongst other necessary steps.*

*A successful energy transition combines security of supply, affordability and environmental compatibility with innovative and smart climate action. This means that the fossil fuels we are currently using need to be replaced by alternative options, namely renewables and energy efficiency, in accordance with our energy and climate goals. This applies in particular to gaseous and liquid energy carriers, which will continue to be a part of Germany's energy supply in the future. Against this backdrop, hydrogen will make an important contribution to enhancing and completing the Energy Transition.*

*For Germany to become greenhouse gas neutral and meet its international obligations under the Paris Agreement, hydrogen needs to be established as a decarbonisation option. This applies in particular to those areas that cannot be decarbonised with the direct use of renewable electricity. The Federal Government considers only hydrogen that has been produced using renewable energy (green hydrogen) to be sustainable in the long term. The Federal Government therefore seeks to use green hydrogen, promote its rapid market rollout and establish the necessary value chains. The Federal Government expects that both a global and European hydrogen market will emerge in the coming ten years and that, in the short run, carbon-neutral (for example blue or turquoise) hydrogen will be traded on this market. Given Germany's close integration in the European energy supply infrastructure, carbon-neutral hydrogen will be relevant for Germany and, if available, will be temporarily used. The funding framework for the areas transport and application technologies must therefore not exclude a priori the use of non-green hydrogen. However, only the production of green hydrogen should be eligible for funding and funding for transport infrastructure and application technologies should be excluded in cases where its clear main objective is on hydrogen that is not green.*

*Considering the status quo, it is unlikely that the large quantities of hydrogen that will be needed for the transition can be produced in Germany alone, as Germany's renewable energy generation capacity is limited. This means that Germany will import much of its hydrogen from abroad. We will therefore foster and intensify international cooperation and partnerships on hydrogen. Germany also aims to systematically develop production sites in other partner countries, for example as part of development cooperation. In developing countries in particular, it is vital to ensure that the export of hydrogen will not be detrimental to possibly inadequate and/or scarce energy supply systems in countries concerned and thus incentivise local investment in even more fossil fuels. Therefore, the production of green hydrogen is to act as a stimulus for these countries to rapidly expand their capacities for generating renewable energy – these will, after all, also benefit local markets. Moreover, the purchase of water must be sustainable in terms of potential effects on ecosystems depending on the water source, and must not reduce the affordability, quality and accessibility of water to the local population. In addition, sustainability criteria should be applied with regard to transport routes.*

## SECTION 1: AMBITION

### 1.1. Ambitions to achieve SDG7 by 2030. [ Please select all that apply, and make sure to state the baseline of each target]

(Member States targets could be based on their NDCs, energy policies, national five-year plans etc. targets for companies/organizations could be based on their corporate strategy)

7.1. By 2030, ensure universal access to affordable, reliable and modern energy services.

Target(s):

Time frame:

Context for the ambition(s):

<input type="checkbox"/> <b>7.2.</b> By 2030, increase substantially the share of renewable energy in the global energy mix.	<p>Target(s):</p> <ul style="list-style-type: none"> <li>The Federal Government expects that around 90 to 110 TWh of hydrogen will be needed by 2030. In order to cover part of this demand, Germany plans to establish up to 5 GW of generation capacity including the offshore and onshore energy generation facilities needed for this. This corresponds to 14 TWh of green hydrogen production and will require <b>20 TWh of renewables-based electricity</b>. Germany plans to increase the proportion of total electricity consumption covered by renewable energy sources to 65% by 2030 and to achieve an overwhelmingly decarbonised power system in the 2030s.</li> </ul> <p>These renewable energy targets are subject to changes in light of the amended Federal Climate Change Act.</p> <p>Time frame:</p> <ul style="list-style-type: none"> <li>see above / ongoing</li> </ul> <p>Context for the ambition(s):</p> <ul style="list-style-type: none"> <li>Green hydrogen, both as a fuel and a feedstock, will be a key sector coupling technology, allowing Germany to increasingly use renewable energy in hard-to-abate sectors <b>where direct electrification is challenging</b>, in particular parts of the industry and transport sector. In order to satisfy the growing domestic demand for green hydrogen, Germany will need to facilitate imports and support the development of a well-functioning international market. To achieve this, Germany initiated the project H2Global. H2Global will support the ramp-up of green hydrogen (H2) and green PtX products. Under the concept, the gap between the purchasing and sales prices for green H2 and its derivatives would be temporarily offset in order to incentivise long-term investments in H2-projects. Moreover, Germany will, through its energy partnerships, deepen collaboration on renewable energy and hydrogen and will establish strategic measures through a consistent scientific approach, e.g. with the Hydrogen Atlas Africa. This work paves the way for solid investments in a climate-proof and green economy. Beyond that, Germany will intensify the dialogue with the current exporters of fossil fuels in order to promote stability and ensure a participation of these countries in scaling up a global hydrogen market.</li> </ul>
<input type="checkbox"/> <b>7.3.</b> By 2030, double the global rate of improvement in energy efficiency.	<p>Target(s):</p> <ul style="list-style-type: none"> <li>Increase the energy efficiency and decarbonisation of buildings, cities and transportation.</li> </ul> <p>Time frame:</p> <ul style="list-style-type: none"> <li>now - ongoing</li> </ul> <p>Context for the ambition(s):</p> <ul style="list-style-type: none"> <li>The Federal Ministry of Education and Research promotes targeted research to increase the energy efficiency of various applications, easier integration of renewable energies and optimisation of energy distribution in an energy system, including through intelligent sector coupling. This also acts as a contribution to the implementation of the federal government's building energy efficiency strategy.</li> </ul>
<input type="checkbox"/> <b>7.a.</b> By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.	<p>Target(s):</p> <ul style="list-style-type: none"> <li>Establish joint projects and trialling of hydrogen technology in the area of the North Sea and in southern Europe, in the context of the Federal Government's energy partnerships and cooperation with partner countries in German development cooperation.</li> <li>Systematically support ambitious partner countries in developing and implementing green hydrogen policies based on renewable energies to protect the climate.</li> <li>Facilitate access to clean energy and green hydrogen research and technology along the entire value chain through international hydrogen cooperation and the long-term networking of the German research landscape.</li> <li>Development and support of a common hydrogen market by establishing common regulations.</li> </ul> <p>Time frame:</p> <ul style="list-style-type: none"> <li>now - ongoing</li> </ul> <p>Context for the ambition(s):</p> <ul style="list-style-type: none"> <li>Within the framework of German international development cooperation, the Federal Ministry for Economic Cooperation and Development supports developing countries and emerging economies through technical as well as financial assistance (TA and FA) in their energy transitions and green hydrogen. The TA lays the foundation for the transformation of energy systems based on hydrogen by providing policy advice on conducive administrative, legislative, political and financial frameworks and building local capacity. FA is provided through a branch of the German state-owned development bank KfW called "KfW Entwicklungsbank" which supports the energy transition in partner countries worldwide with preferential loans.</li> <li>The establishment of research projects, networks and partnerships between Germany and partner countries along the entire hydrogen value chain is supported by international cooperation projects of the Federal Ministry of Education and Research. In the long term, this will enable access to knowledge and hydrogen technologies on the one hand and contribute to the advancement of existing technologies on the other.</li> </ul>

	<ul style="list-style-type: none"> <li>Standardisation and certification form the basis for proof of climate friendliness and are fundamental building blocks for tradability and acceptance. Clear regulations, evidence and certifications are required for joint cooperation. Germany therefore supports initiatives to develop a standardisation and certification system on a European and international level. For example, the EU project CertifHy has developed a certification system for green hydrogen with German participation. It is currently in pilot operation.</li> <li>In the framework of the International Climate Initiative (IKI) the Federal Ministry for Environment, Nature Conservation and Nuclear Safety supports the development of sustainable hydrogen/PtX markets as a building block for the energy transition in the transport sector in Africa, Asia and Latin America. Project activities may include policy implementation, policy advisory, capacity building, developing financial instruments and identification of business cases in the respective partner countries and pilot plant demonstrating the PtX value chain and paving the way for technology uptake and capacity development.</li> </ul>
<p><input type="checkbox"/> <b>7.b.</b> By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programs of support.</p>	<p>Target(s):</p> <ul style="list-style-type: none"> <li>In order to be able to import and develop sales markets for hydrogen and its downstream products, the right transport and distribution infrastructure must be in place. Germany has a well-developed gas infrastructure consisting of a tightly knit natural gas network and gas storage units connected to it. This infrastructure will be available for stepwise repurposing for dedicated hydrogen use. In parallel, additional new networks for H2 will have to be created for the transport of hydrogen in the partner countries of the German development cooperation.</li> </ul> <p>Time frame:</p> <ul style="list-style-type: none"> <li>Now - ongoing</li> </ul> <p>Context for the ambition(s):</p> <ul style="list-style-type: none"> <li>Within the framework of German international development cooperation, the Federal Ministry for Economic Cooperation and Development supports developing countries and emerging economies through technical as well as financial assistance (TA and FA) in their energy transitions and green hydrogen. The TA lays the foundation for the transformation of energy systems based on hydrogen by providing policy advice on conducive administrative, legislative, political and financial frameworks and building local capacity. FA is provided through a branch of the German state-owned development bank KfW called "KfW Entwicklungsbank" which supports the energy transition in partner countries worldwide with preferential loans.</li> </ul>

**1.2. Other ambitions in support of SDG7 by 2030 and net-zero emissions by 2050. [Please describe below e.g., coal phase out or reforming fossil fuel subsidies etc.]**

<p>Target(s):</p> <ul style="list-style-type: none"> <li>Reducing greenhouse gas emissions by at least 65% by 2030 compared to 1990 levels and further to at least 88% by 2040, and becoming climate neutral by 2045</li> <li>Phasing out the use of coal for power generation by 2038 at the latest, with reviews regarding whether a phase out can already be achieved by 2035.</li> <li>Phasing out the use of nuclear energy for power generation by 2022.</li> <li>Ensuring a socially just transition towards a GHG-neutral economy.</li> </ul> <p>Time frame:</p> <ul style="list-style-type: none"> <li>see above</li> </ul> <p>Context for the ambition(s):</p> <ul style="list-style-type: none"> <li>The Federal Climate Change Act (2019, amended in June 2021) codifies the GHG reduction targets into law and specifies (annual) maximum emissions by sector between 2020 and 2030 (for energy, industry, buildings, transport, agriculture, waste and others). The various federal ministries are obliged to make sure that the annual emissions targets for their respective field are met.</li> <li>The conditions for the phase-out of coal are created by the Act on Structural Change in Coal Mining Areas, which inextricably links structural development and coal phase-out.</li> <li>Carbon pricing of GHG emissions from fuels, where these emissions are not covered by EU emissions trading, is codified by the German Fuel Emission Allowance Trading Act (BEHG), which was passed in 2019 and is designed to help reach national climate targets, including the long-term target of greenhouse gas neutrality. The National Allowance Trading for Fuel Emissions took effect as of 1 January 2021.</li> </ul>
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**SECTION 2: ACTIONS TO ACHIEVE THE AMBITION**

2.1. Please add at least one key action for each of the elaborated ambition(s) from section 1. *[Please add rows as needed].*

7.a.1: Germany provides approximately EUR 2.5 billion for international development cooperation in the energy sector annually. For the realisation of target 7.a. this funding amount will be maintained or increased, according to the nationally available funds (future financial allocations depend on parliamentary decisions).	Now - 2030
7.a.1: Support of partner countries in the production of green hydrogen and green hydrogen-based products ( <i>Power-to-X, PtX</i> ) for the decarbonisation of hard-to-abate sectors (e.g. chemical, steel and cement industry; aviation and shipping). To this end, Germany will drive forward the construction of PtX production facilities on a near-industrial scale in some partner countries via several funding programmes and via auctions for green hydrogen and its derivatives via the "H2 Global" scheme.	Now - 2030
7.b: Support of partner countries in the development of hydrogen and PtX. To this end, Germany will drive forward the construction of PtX infrastructure facilities on a near-industrial scale in some partner countries via several funding programmes and via auctions for green hydrogen and its derivatives via the "H2 Global" scheme.	Now - 2030

**SECTION 3: OUTCOMES**

3.1. Please add at least one measurable and time-based outcome for **each** of the actions from section 2. *[Please add rows as needed].*

Action 7.a.1.: <ul style="list-style-type: none"> <li>Construction of a PtX reference plant with around 100 MW electrolysis capacity for the production of green hydrogen in Morocco.</li> <li>Successful auctions commissioning long term contracts to supply green hydrogen derivatives from international hydrogen production sites to Germany on a near-industrial scale (ca. 500 MW).</li> </ul>	Now - 2033 (TA and FA)
Action 7.b: <ul style="list-style-type: none"> <li>The necessary regulatory basis for the construction and expansion of hydrogen infrastructure will be prepared.</li> </ul>	Now - 2033 (TA)

**SECTION 4: REQUIRED RESOURCES AND SUPPORT**

4.1. Please specify required finance and investments for **each** of the actions in section 2.

With its National Hydrogen Strategy, the Federal Government adopted a 'package for the future' which makes available 7 billion euros for speeding up the market rollout of hydrogen technology in Germany and another 2 billion euros for fostering international partnerships. The precise amounts available for each of these programmes depend on the budget estimates made by the responsible ministries.

4.2. [For countries only] In case support is required for the actions in section 2, please select from below and describe the required support and specify for which action.

*[Examples of support for Member States could include: Access to low-cost affordable debt through strategic de-risking instruments, capacity building in data collection; development of integrated energy plans and energy transition pathways; technical assistance, etc.]*

<input type="checkbox"/> Financing	Description
<input type="checkbox"/> In-Kind contribution	Description
<input type="checkbox"/> Technical Support	Description
<input type="checkbox"/> Other/Please specify:	Germany welcomes the exchange of experiences with countries worldwide on policies, regulations and supporting measures facilitating green hydrogen as part of the energy transition. One important forum for this exchange is the annual Berlin Energy Transition Dialogue (BETD) hosted by the Federal Foreign Office and German

International Exchange and Partnership	Federal Ministry for Economic Affairs and Energy , which brings together decision-makers from governments and the energy sector involved in the energy transition from across the globe. Furthermore, the Federal Ministry for Economic Affairs and Energy and the Federal Foreign Office are engaged in “energy partnerships” with more than 20 countries in order to further accelerate the global energy transition and to make it economically viable and socially attractive for everyone. These partnerships consist of a high-level intergovernmental dialogue on energy policy, combined with thematic working groups. The trustful and regular dialogue and mutual exchange of experiences taking place in these partnerships are a key pillar of the continued expansion of renewable energy, the dissemination of efficient technologies and the development of global hydrogen markets.
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## SECTION 5: IMPACT

5.1. Countries planned for implementation including number of people potentially impacted.

- National and global level
- The energy transition in Germany is a long-term overall strategy, which embraces all sectors of the economy and is embedded within the overall goal of achieving a GHG-neutral economy by 2045. It aims to restructure the energy supply to make it secure, economic and environmentally compatible. For the energy transition to be successful, security of supply, affordability and environmental compatibility need to be combined with innovative and smart climate action. This means that the fossil fuels we are currently using need to be replaced by alternative options. This applies in particular to gaseous and liquid energy sources, which will continue to be an integral part of Germany’s energy supply. Against this backdrop, green hydrogen will play a key role in enhancing and completing the energy transition.

5.2. Alignment with the 2030 Agenda for Sustainable Development – Please describe how **each** of the actions from section 2 impact advancing the SDGs by 2030.

*[up to 500 words, please upload supporting strategy documents as needed]*

The Agenda 2030 for Sustainable Development as well as the Paris Agreement are guiding frameworks for Germany’s international cooperation in the energy sector. Actions in the field of energy are aiming at a climate-neutral coverage of the energy demand while working towards a complete decarbonisation of the energy sector, thus promoting the achievement of SDG 7 (ensure access to affordable, reliable, sustainable and modern energy for all) as well as SDG 13 (take urgent action to combat climate change and its impacts). The positive effects of a demand-driven energy supply are essential for economic and social development and thus go even beyond the climate goals and the SDG 7 target.

5.3. Alignment with Paris Agreement and net-zero by 2050 - Please describe how **each** of the actions from section 2 align with the Paris Agreement and national NDCs (if applicable) and support the net-zero emissions by 2050.

*[up to 500 words, please upload supporting strategy documents as needed]*

See 5.2.

## SECTION 6: MONITORING AND REPORTING

6.1. Please describe how you intend to track the progress of the proposed outcomes in section 3. Please also describe if you intend to use other existing reporting frameworks to track progress on the proposed outcomes.

Framework for monitoring progress with regard to German energy transition targets and the National Hydrogen Strategy

The Federal Climate Change Act creates a new legally binding framework for climate protection in Germany and combines emission targets, a monitoring system and immediate remedies in case of non-compliance. If emissions exceed the permissible sector budget (for energy, industry, buildings, transport, agriculture, waste and others), the federal ministry responsible for this sector has to present an immediate action programme to get the emission reductions back on track. An expert council reviews the underlying assumptions to ensure a robust assessment of the anticipated impact. Each year, accurate emission data for the various sectors are collected by the Federal Environment Agency and published in March of the following year. This is to ensure the transparency and continuity of successful monitoring. Furthermore, the Federal Ministry for Economic Affairs and Energy has been appointed as the lead ministry for the monitoring process for the German Energiewende “Energy of the Future”. At the heart of the monitoring system is the annual Energy Transition Monitoring Report providing a fact-based overview of the current status of progress regarding the implementation of the energy reforms in Germany. Every three years the Monitoring Report is supplemented by a strategic Progress Report on the Energy Transition with deeper analysis on whether or not Germany is on track to achieve its targets and recommend additional measures to be taken if necessary.

**SECTION 7: GUIDING PRINCIPLES CHECK LIST**

Please use the checklist below to validate that the proposed Energy Compact is aligned with the guiding principles.

**I. Stepping up ambition and accelerating action** - Increase contribution of and accelerate the implementation of the SDG7 targets in support of the 2030 Agenda for Sustainable Development for Paris Agreement

*I.1. Does the Energy Compact strengthen and/or add a target, commitment, policy, action related to SDG7 and its linkages to the other SDGs that results in a higher cumulative impact compared to existing frameworks?*

Yes No

*I.2. Does the Energy Compact increase the geographical and/or sectoral coverage of SDG7 related efforts?* Yes No

*I.3. Does the Energy Compact consider inclusion of key priority issues towards achieving SDG7 by 2030 and the net-zero emission goal of the Paris Agreement by 2050 - as defined by latest global analysis and data including the outcome of the Technical Working Groups?* Yes No

**II. Alignment with the 2030 agenda on Sustainable Development Goals** – Ensure coherence and alignment with SDG implementation plans and strategies by 2030 as well as national development plans and priorities.

*II.1. Has the Energy Compact considered enabling actions of SDG7 to reach the other sustainable development goals by 2030?* Yes No

*II.2. Does the Energy Compact align with national, sectoral, and/or sub-national sustainable development strategies/plans, including SDG implementation plans/roadmaps?* Yes No

*II.3. Has the Energy Compact considered a timeframe in line with the Decade of Action?* Yes No

**III. Alignment with Paris Agreement and net-zero by 2050** - Ensure coherence and alignment with the Nationally Determined Contributions, long term net zero emission strategies.

*III.1. Has the Energy Compact considered a timeframe in line with the net-zero goal of the Paris Agreement by 2050?* Yes No

*III.2. Has the Energy Compact considered energy-related targets and information in the updated/enhanced NDCs?* Yes No

*III.3. Has the Energy Compact considered alignment with reaching the net-zero emissions goal set by many countries by 2050?* Yes No

**IV. Leaving no one behind, strengthening inclusion, interlinkages, and synergies** - Enabling the achievement of SDGs and just transition by reflecting interlinkages with other SDGs.

*IV.1. Does the Energy Compact include socio-economic impacts of measures being considered?* Yes No

*IV.2. Does the Energy Compact identify steps towards an inclusive, just energy transition?* Yes No

*IV.3. Does the Energy Compact consider measures that address the needs of the most vulnerable groups (e.g. those impacted the most by energy transitions, lack of energy access)?* Yes No

**V. Feasibility and Robustness** - Commitments and measures are technically sound, feasible, and verifiable based a set of objectives with specific performance indicators, baselines, targets and data sources as needed.

*V.1. Is the information included in the Energy Compact based on updated quality data and sectoral assessments, with clear and transparent methodologies related to the proposed measures?* Yes No

*V.2. Has the Energy Compact considered inclusion of a set of SMART (specific, measurable, achievable, resource-based and time based) objectives?* Yes No

*V.3. Has the Energy Compact considered issues related to means of implementation to ensure feasibility of measures proposed (e.g. cost and financing strategy, technical assistant needs and partnerships, policy and regulatory gaps, data and technology)?* Yes No

**SECTION 8: ENERGY COMPACT GENERAL INFORMATION**

8.1. Title/name of the Energy Compact

SDG7 Energy Compact of Germany on Green Hydrogen

8.2. Lead entity name (for joint Energy Compacts please list all parties and include, in parenthesis, its entity type, using entity type from below)

Federal Ministry for Economic Cooperation and Development (BMZ)

8.3. Lead entity type

- |  |   |  |
|--|---|--|
| <input checked="" type="checkbox"/> Government               | <input type="checkbox"/> Local/Regional Government        | <input type="checkbox"/> Multilateral body /Intergovernmental Organization |
| <input type="checkbox"/> Non-Governmental Organization (NGO) | <input type="checkbox"/> Civil Society organization/Youth | <input type="checkbox"/> Academic Institution /Scientific Community        |
| <input type="checkbox"/> Private Sector                      | <input type="checkbox"/> Philanthropic Organization       | <input type="checkbox"/> Other relevant actor                              |

8.4. Contact Information

Federal Ministry for Economic Cooperation and Development (BMZ) | Germany | Division 422 | Energy; Hydrogen; Raw Materials; Infrastructure | [RL422@bmz.bund.de](mailto:RL422@bmz.bund.de)

8.5. Please select the geographical coverage of the Energy Compact

- Africa  Asia and Pacific  Europe  Latin America and Caribbean  North America  West Asia  Global

8.6. Please select the Energy Compact thematic focus area(s)

- Energy Access  Energy Transition  Enabling SDGs through inclusive just Energy Transitions  Innovation, Technology and Data  Finance and Investment.

**SECTION 9: ADDITIONAL INFORMATION (IF REQUIRED)**

Please provide additional website link(s) on your Energy Compact, which may contain relevant key documents, photos, short video clips etc.

[BMWi - Federal Ministry for Economic Affairs and Energy - The National Hydrogen Strategy](#)