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An Ambitious Energy Agenda for the G20

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In 2017, Germany will hold the presidency of the G20. This presents the German government with the opportunity to shape the energy agenda of the group of twenty leading industrialised and emerging economies.

The G20 is a crucial forum for efforts to advance a global transition to sustainable energy. Its member countries are responsible for more than three quarters of global energy demand and 82 per cent of carbon dioxide emissions from the energy sector. At the same time, the most important bilateral donors in energy-sector development cooperation – Germany, Japan, France, and the USA – are all members of the G20. Its members also include leading providers of innovative technologies. The EU, the USA, Japan, China, and other G20 countries all exert considerable influence on the technical and economic development of future energy systems.

There is an important window of opportunity to advance a forward-looking energy agenda. Two historical agreements were adopted by the United Nations in 2015: the Paris Climate Agreement and the 2030 Agenda for Sustainable Development. The success of these agreements depends on a transformation of the global energy system. The G20 has moved to take action on sustainable energy in recent years – especially with regard to reducing subsidies for fossil fuels and promoting renewable energy, energy efficiency, and energy access. But these measures alone are not sufficient to bring about a global energy transition. This policy brief offers three key recommendations:¹

■ **Message 1:**
Advance the implementation of the Paris Agreement.

The G20 should firmly anchor climate protection in its energy agenda. Its members should evaluate emerging energy-sector trends and plans for their compatibility with climate protection goals and should regularly publish progress reports.

■ **Message 2:**
Make sustainable energy a key focus of G20 summits.

The risks and long-term costs associated with investments in fossil fuels and nuclear energy should be included on the agenda at the G20 Meetings of Finance Ministers and Central Bank Governors. This would enhance the ability of decision-makers to forecast and manage impacts on financial markets, economies, and public finances.

■ **Message 3:**
End investment in fossil energy infrastructure.

The G20 should call on multilateral and national development banks to align investment practice with climate protection goals and to report on this annually. As a part of this, all investment in the construction of new coal-fired power plants should cease.

¹ This IASS Policy Brief is informed by discussions at the IASS Workshop “The G20’s potential for advancing a global transition towards sustainable energy”, held in Potsdam on 11 October 2016, and the findings of an IASS Study on the energy policy priorities of key members of the G20: Roehrkasten/Thielges/Quitow (eds): *Sustainable Energy in the G20* (forthcoming).

An opportunity for Germany's international energy policy

Implementing the Paris Agreement and the UN Sustainable Development Goals is an ambitious undertaking – and a challenge for German energy policy – that requires a fundamental transformation of the world's energy system. Fossil fuels such as coal, oil, and gas make up 80 per cent of global primary energy demand, and this share has not decreased over the last 25 years.² More than one billion people are without access to electricity, while almost three billion people, or nearly 40 per cent of the global population, use traditional biomass for cooking.³

Promoting renewable energy and energy efficiency will not suffice to achieve the two-degree target set by the international community. As Rainer Baake, State Secretary at the German Federal Ministry for Economic Affairs and Energy, has made pointedly clear, a global strategy for phasing out sources of energy that harm the climate is required.⁴ The global community – spearheaded by the G20 – must push to phase out fossil fuels and set in motion a global transformation of our energy systems.

Under the German Presidency, the G20 will be led by a country that has pursued ambitious sustainable energy policies both within its borders and beyond. The German energy transition – or *Energiewende* – has sent an important signal to large parts of the world, which have closely observed Germany's shift from nuclear and coal to renewables and more efficient energy use. At the same time, German policies have

had a noticeable impact on sustainable energy across the globe. Its promotion of renewables at home has led to crucial advancements in technology and to significant reductions in the cost of wind turbines and photovoltaic systems.

Moreover, the German federal government has long supported the expansion of sustainable energy in its international cooperation activities. It was the driving force behind the creation of the International Renewable Energy Agency (IRENA) and, in 2014, it was the world's largest bilateral donor of development aid in the energy sector.⁵ With its extensive experience in energy system transformation, and a track record of environmental leadership and success as a highly industrialised economy, Germany enjoys strong credibility in the field of international energy cooperation. The conditions are auspicious then for efforts to promote a global *Energiewende* among the G20 member states.

The transformation of the world's energy system is also an economic imperative, as it enhances the resiliency of financial markets and national budgets. Yes, investment in fossil fuels hurts the climate, but it also results in the stranding of assets. Poor investments like these could jeopardise the stability of international financial markets and ravage government budgets. By contrast, investment in low-carbon energy technologies accelerates innovation and boosts technological advancement.

² IASS calculations based on IEA, *World Energy Outlook 2015*.

³ See SE4All, Our Mission, <http://www.se4all.org/> (accessed 17.11.2016).

⁴ See Baake, R. (2016): Some Like It Hot: Wenn wir die Erderwärmung aufhalten wollen, müssen wir das billige Öl und Gas im Boden lassen, *Die Zeit*, 31 March 2016, available at: <http://www.zeit.de/2016/13/klimaschutz-klimagipfel-paris-massnahmen-umsetzung>.

⁵ See Roehrkasten, S., Quitzow, R., Auktor, G., Westphal, K. (2016): Advancing an International Energy Transition Policy in North Africa and Beyond, *IASS Policy Brief 4/2016* (authors' calculations based on OECD.Stat).

The G20 – driver of a global energy transition?

The G20 is central to the success of a global energy transition.⁶ This international forum brings together the world's leading energy producers and consumers. Its members accordingly carry considerable weight in international energy policy: G20 countries account for more than three quarters of global energy demand and are responsible for 82 per cent of all carbon dioxide emissions from energy production (Figure 1). Yet they are also home to 80 per cent of the world's installed renewable capacity – and also have the largest potential for further expansion through 2030.⁷

G20 member states have much influence on international organisations such as the World Bank, the International Energy Agency (IEA), and IRENA.⁸ The most important bilateral donors in energy-sector development cooperation – Germany, Japan, France, and the USA – also belong to the G20. However, agreeing on joint measures in the G20 is no easy matter, as G20 members have very different energy policy contexts and priorities.

Nevertheless, the G20 has made progress in the transformation towards a sustainable energy system, with all of its member states adopting renewable energy targets and renewable energy capacities growing across the board. Even oil-exporting Saudi Arabia now backs efforts to protect the climate. The G20 member states have also endorsed the Paris Agreement and the UN Sustainable Development Goals. Germany must build on this consensus among G20 members to forge a common energy agenda.

Though the G20 was founded as a forum for preventing financial crises, the promotion of sustainable energy has been on its agenda for several years. Its Energy Sustainability Working Group concentrates on four key areas: phasing out inefficient subsidies for fossil fuels, improving energy efficiency, expanding renewables, and promoting energy access. But the measures currently in place are not sufficient to bring about a global transition to green energy, especially not as long as there is still talk of “clean” fossil fuels.

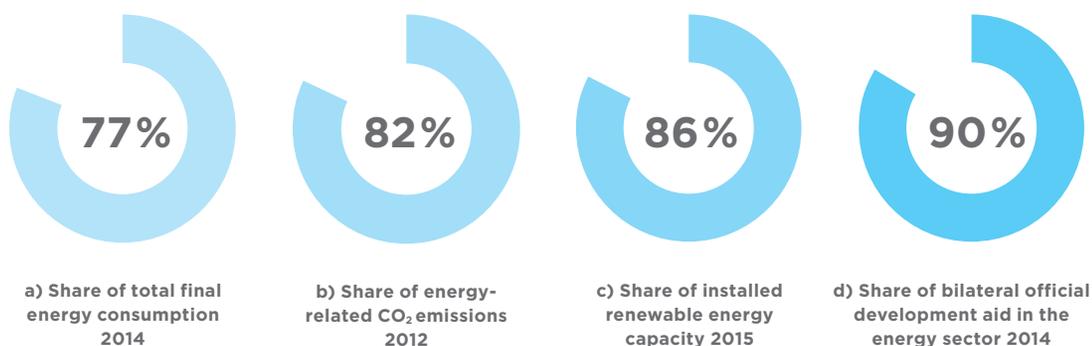
What is certain is that the German Presidency must build on the strengths of the G20. While legally binding goals cannot be expected from a body that operates on the principle of voluntary action, the G20 can set the international agenda and improve knowledge sharing and policy coordination at the international level. Moreover, it can appreciably influence the work of international organisations such as the IEA, IRENA, and the multilateral development banks. In this vein, it has the capacity to ease issue-linkage in international policymaking to break out of today's widespread silo mentality. These strengths give the German federal government the leverage it needs to place the climate compatibility of the global energy system on the international agenda and – utilising the G20's core track, which is focused on economic and financial issues – to push for a comprehensive and accelerated energy transformation.

⁶ The G20 comprises Argentina, Australia, Brazil, China, Germany, the European Union, France, the UK, India, Indonesia, Italy, Japan, Canada, Mexico, Russia, South Korea, Saudi Arabia, South Africa, Turkey and the USA.

⁷ G20 (2015): *G20 Deployment of Renewable Energy*.

⁸ See Roehrkasten, S., Westphal, R.: The G20 and its role in global energy governance, in Roehrkasten, S., Thielges, S., Quitzow, R. (eds): *Sustainable Energy in the G20* (forthcoming).

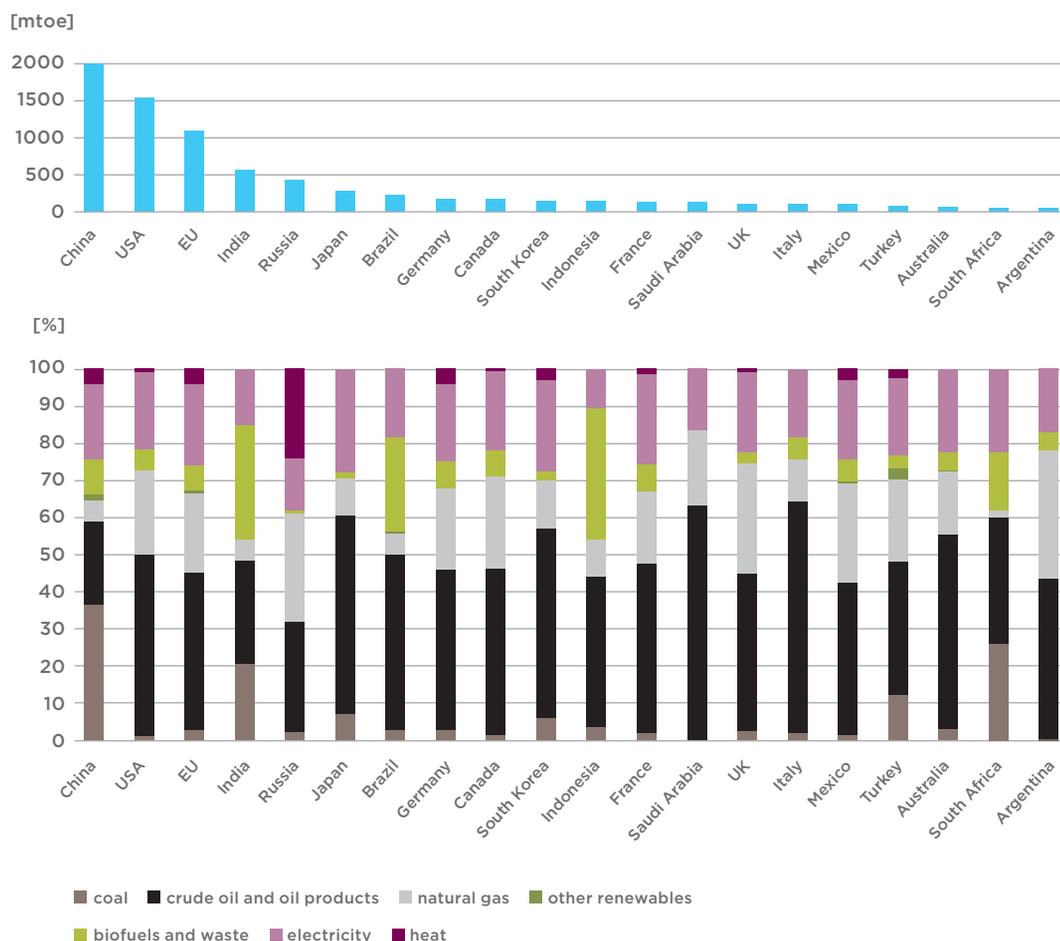
Figure 1: Weight of G20 members in the global energy system



Sources:

- a) IASS based on IEA Country Statistics
- b) IASS based on U.S. Energy Information Administration
- c) IASS based on IRENA Renewable Capacity Statistics 2016
- d) IASS based on OECD.Stat

Figure 2: Final energy consumption of G20 members 2014



Advance the implementation of the Paris Agreement

In Paris, the international community agreed to limit the increase in global average temperature to well below 2 °C above preindustrial levels. To achieve this goal, energy production needs to change profoundly, not only in the electricity sector but also in heating and transportation. Two thirds of the world's greenhouse gases arise from energy production. In light of this, renewable energy sources must replace fossil fuel across the world. This transformation must be accompanied by substantial increases in energy efficiency.

While the G20 energy agenda has paid little attention to climate protection in the past, the time has come to align energy policy with climate protection goals. The passing of the Paris Agreement has brought the long-awaited climate consensus to the global stage. Its swift ratification – the agreement entered into force on 4 November 2016 – testifies to the broad support that it enjoys. All of the G20 members signed the agreement; only Russia and Turkey have yet to ratify it.⁹ At the Hangzhou summit in September 2016, G20 members reaffirmed their commitment to climate protection.

The German Presidency should translate the Paris Agreement objectives into specific energy policy measures. A new energy action plan is not required for this.¹⁰ Many instruments for the development of a sustainable and climate compatible energy supply are already in place under existing action plans – such as the Renewable Energy Action Plan and the Energy Efficiency Leading Programme.

The G20 must carefully examine whether its members' energy sector trends and planning are compatible with the Paris objectives. Analyses must be undertaken to establish how current trends and planning will impact greenhouse gas budgets at both the country level and across the G20, and how much latitude this gives states if the two-degree target is to be achieved. G20 members should also develop targeted decarbonisation scenarios for their energy sectors. These scenarios could identify realistic options for sustainable climate and energy policies. The scope of the associated analyses could subsequently be expanded to cover interested third-party countries.

Last but not least, the G20 should regularly issue progress reports on decarbonisation measures to ensure comprehensive and consistent monitoring. These reports should be adopted by the Energy Sustainability Working Group and be subsequently published, with a view to identifying successes and failures for international climate protection. Sharing knowledge about best practices and hurdles is indispensable for the successful implementation of the Paris Agreement. Given the heterogeneity and global significance of its member states, the G20 is well positioned to push forward in this regard.

⁹ UNFCCC (2015): *The Paris Agreement*, http://unfccc.int/paris_agreement/items/9444.php (accessed 24.11.2016).

¹⁰ For an overview of relevant G20 plans and programmes, see Kraemer (2016): *Energy in the G20 finance track*, *CIGI Policy Brief*, 86.

Make sustainable energy a key focus of G20 summits

Shifting from fossil fuels to renewables entails considerable risks – especially for financial markets.¹¹ International efforts to protect global climate might well render investments in fossil fuel infrastructure worthless. In addition, the falling cost of renewable energy technologies – in particular solar photovoltaic modules and wind turbines – is already calling the economic viability of investments in conventional energy production into question. When the fossil fuel bubble bursts, it will leave behind an enormous number of stranded assets and billions of euros in unsecured obligations. The follow-on costs of an exit from nuclear energy generation are also likely to be substantial, as plants must eventually be closed and dismantled, requiring the construction, maintenance, and securing of nuclear waste facilities over generations.

Potentially dwarfing these expenses are the costs of global warming. As ocean levels rise and slow-moving lowland rivers overflow, industries, communities, and transportation infrastructure around the world will have to be dismantled and relocated. The associated burdens – financial and otherwise – are difficult to calculate, but will prove insurmountable for many countries unless international assistance is provided. Consequently, the global energy transition will feature ever more prominently in G20 discussions of financial and economic policy.

The Energy Sustainability Working Group is not part of the G20's finance track, but rather its 'sherpa track'. The G20 finance ministers and central bank governors discuss energy issues only in passing

ahead of the annual meetings of the heads of state and government. They have, for instance, tasked the Financial Stability Board with drawing up rules for the disclosure of climate-related risks, with a particular focus on the impacts of a collapse in the profitability and values of fossil fuels and energy industry assets. But these aspects represent only a portion of the risks faced by financial markets and government budgets.

Germany should therefore push within the G20's finance track for a rapid and comprehensive transformation of global energy systems. In Paris, the global community promised to align financial flows with the necessities of low-emission and climate compatible development. Doing so requires the analysis of energy-related investment risks for financial markets, national economies, and government budgets. The G20 should share these findings with decision-makers to prevent energy and financial policy mistakes. This could also contribute to an accelerated phase-out of fossil fuel subsidies.

Likewise, the G20 must work to improve the regulatory framework for redirecting investment away from conventional energy infrastructure to renewable energy and energy efficiency technologies. To these ends, G20 finance ministers can provide an impetus that goes far beyond the authority and influence of member states' energy ministers. This would also strengthen the G20's ability not only to respond to financial and fiscal policy crises *ex post*, but also to contain them in advance.

¹¹ See also *ibid.*

End investment in fossil energy infrastructure

New investment in fossil energy infrastructure undercuts G20 efforts to spur global growth through investment in infrastructure. They are a hindrance to effective climate protection and imperil long-term, resilient economic growth. With investment cycles of 30 to 50 years, infrastructure assets create long path dependencies, suppress innovation, and delay cost reductions for low-carbon technologies. Moreover, they put investment capital in the wrong places: any new carbon-intensive infrastructure might soon be abandoned to foster decarbonisation. As it stands, the existing fossil fuel infrastructure is already in conflict with the two-degree ceiling on global warming.

A rapid shift to investment in forward-looking energy technologies presupposes coordinated activities on the part of multilateral and national development banks. In 2014, the G20 called on development banks to create an agenda for promoting high-value infrastructure investment.¹² During China's G20 Presidency in 2016, development banks stressed the importance of infrastructure investments for meeting sustainability and climate targets.

Nevertheless, both multilateral development banks and state development banks continue to support fossil fuel investment. The World Bank alone made available close to three billion dollars for financing coal power between 2007 and 2015.¹³ Against this backdrop, Germany should take the opportunity presented by its presidency to push multilateral and national development banks on their infrastructure investments to ensure these are compatible with the aims of the Paris Agreement. In addition, it should insist that banks regularly publish reports about the effects of their credit portfolios on international climate protection.

Germany has already promised to end all support for the construction of new coal-fired power plants, and during its presidency it should urge multilateral development banks and state development banks in G20 member states to follow suit. In addition to this, the G20 countries should discontinue the provision of export financing in connection with coal-fired power plants. Specifically, Germany should advocate for the gradual reduction of state financing with the aim of a complete cessation in the next five to ten years.

¹² See *Partnering to Build a Better World: MDB's Common Approaches to Supporting Infrastructure Development*, Report prepared by MDBs for Circulation to G20 Development Working Group and G20 Investment and Infrastructure Working Group, 18.09.2015.

¹³ See Chen, H., Doukas, A., Godinot, S., Schmidt, J., Vollmer, S. (2015): *Swept Under the Rug: How G7 Nations Conceal Public Financing of Coal Around the World*. New York: National Resource Defense Council; and Hervé-Mignucci, M., Wang, X. (2015): *Slowing the Growth of Coal Power Outside China: The Role of Chinese Finance*. London: Climate Policy Initiative.

On the way to Hamburg – and beyond

The G20 summit on 7–8 July 2017 in Hamburg must send a clear signal: the move away from fossil fuels cannot be reversed. The promotion of renewable energy and greater energy efficiency is not merely political rhetoric, it is the linchpin of a concrete political agenda. Such a signal is essential for the implementation of the Paris Agreement and the UN's sustainable development goals. It also provides a foundation for promoting innovation and for the long-term resilience of financial markets and state budgets.

The global significance and heterogeneity of the G20 member states lends the group considerable reach. By publicising successes and failures in the development of sustainable energy production in a way that fosters good decision-making, the G20 could make a decisive contribution to a global energy transition. The G20 member states should therefore report regularly and comprehensively on relevant developments within individual countries and across the G20 as a whole, and make these reports available to the public at large.

However, the G20 still has a transparency deficit. An online source that provides an up-to-date and comprehensive overview of the statements and reports adopted by the G20 is lacking. Much information is lost with each rotation of the presidency, with countries creating dedicated websites for their individual terms of office. Not only does this invite incoming holders of the presidency to reinvent the wheel, it also hampers the G20's inner coherence and undermines cross-cutting approaches to political issues. To help head off these problems in the future, the German government should campaign for the creation of a dedicated website that provides an overview of G20 decisions and outputs regardless of which country holds the presidency. Doing so will not only strengthen the G20's energy agenda; it stands to increase effectiveness across its entire spectrum of activity. ■

Find out more ...

To learn more about international energy transition policy, see the following IASS publications:

- Roehrkasten, Thielges, Quitzow (eds.) (2016): **Sustainable Energy in the G20.** IASS Study, December 2016
- Roehrkasten, Quitzow, Auktor, Westphal (2016): **Advancing an International Energy Transition Policy in North Africa and Beyond.** IASS Policy Brief, September 2016
- Quitzow, Roehrkasten, Jacobs, Bayer, Jamea, Waweru, Matschoss (2016): **The Future of Africa's Energy Supply, Potentials and Development Options for Renewable Energy.** IASS Study, March 2016
- Quitzow, Roehrkasten, Jaenicke (2016): **The German Energy Transition in International Perspective.** IASS Study, March 2016
- Roehrkasten, Schaeuble, Helgenberger (2016): **Secure and Sustainable Energy in a Water-Constrained World.** IASS Policy Brief, February 2016



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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 the sciences, politics, the economy, and civil society. 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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