FRIEDRICH EBERT STIFTUNG

STUDY

Learning from the »Energiewende«

What Developing Countries Expect from Germany

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- Is an »energy transition« also possible in developing countries? Although the challenges vary in all countries, five key requirements can nevertheless be generalized: It needs advantageous and reliable political framework conditions for renewable energies, subsidies for fossil fuels have to be reduced, private sector involvement is just as dispensable as social acceptance in the introduction of renewable energies, and finally social innovation and willingness to change are essential.

- »Energy transformation is the best thing Germany can extend its help to other countries, especially developing countries!« The expectations for Germany are high. Thereby, the desire for knowledge transfer and support for the development of strategic competence rank above the hope for financial support and more direct investment, as well as the desire for technical cooperation and technology transfer. Funding practices until now have only partially met these expectations.

- The study formulates ten recommendations how Germany can support energy transition processes in developing countries more effectively. A coherent overall strategy and the improved integration of instruments are thereby as important as the increased promotion of processes that lead to capacity building in developing countries. Ultimately, model projects and international partnerships with pioneering countries should be increasingly promoted. This calls for an increase and long-term protection of climate financing. Also essential is the image of the KfW banking group as financier for low carbon projects in developing countries combined with a simultaneous withdrawal of financing for fossil or nuclear energy projects. The German G7 presidency offers the opportunity to put together a package and initiate a global energy transition and climate partnership between industrial and developing countries.

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EXPLORING SUSTAINABLE LOW CARBON DEVELOPMENT PATHWAYS

Providing sustainable development for all and fighting climate change – these are two major challenges the world faces today. The project »Exploring Sustainable Low Carbon Development Pathways« aims to point out ways how to combine both: climate protection and sustainable development. As a joint initiative by Friedrich-Ebert-Stiftung (FES), Bread for the World (BftW), World Wide Fund for Nature (WWF), Climate Action Network International (CAN-I) and ACT Alliance of Churches, the project is led by the common understanding that any future development model has to be

LOW CARBON. That means with a minimal output of greenhouse gas emissions.

ECOLOGICALLY SUSTAINABLE. That means fully respecting planetary boundaries.

HUMAN RIGHTS-BASED. That means with a strong focus on poverty reduction and participation.

SOCIALLY INCLUSIVE. That means creating wealth and employment while absorbing negative social impacts.

JUST. That means equally sharing burdens and opportunities between different stakeholders.

NATIONALLY APPROPRIATE. That means respecting countries different backgrounds and challenges towards sustainable development.

The project was started in 2013 in four pilot countries: Kazakhstan, Peru, Tanzania and Vietnam. In close co-operation and ownership with different national partners from civil society, politics and science we aim to

- Explore Sustainable Low Carbon Development Pathways in these countries which could serve as regional and international examples.
- Show that Low Carbon Development is not only possible but economically and socially beneficial.
- Create platforms for dialogue at the national level for a range of different stakeholders.
- Support and intensify networks between civil society actors in the respective countries and regions.

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1. Introduction

2015 is a year of decision. Around the world, there is a growing realization that the global megatrend climate change urgently requires long-term answers. At the same time, global energy demand will continue to rise for many decades by leaps and bounds. 1.3 billion people have no access to electricity,[1] another 2 billion have only a very limited supply of electricity, and 2.5 billion cook and heat with traditional biomass.[2] Apart from overcoming energy poverty—especially in rural areas—the development of an efficient, safe, and affordable energy supply is high on the list of priorities in almost all emerging and developing countries, to stimulate economic growth and prosperity.

Due to currently declining crude oil prices and the increasing development of unconventional fossil energy sources (tar sands, shale gas, etc.), global greenhouse gas emissions are growing, and the likelihood of still achieving the 2-degree target is sinking: The United Nations Environment Programme (UNEP) anticipates an increase in CO_2 emissions to 59 gigatonnes (Gt) in 2020, 68 Gt in 2030, and 87 Gt in 2050, if the current trend continues. Accordingly, the remaining budget of greenhouse gas emissions would already be exhausted in the next decade, whereby the goal of carbon neutrality proclaimed by climate science recedes into the distance.[3] In view of the energy sector's share (60 per cent) of global CO_2 emissions, energy production is at the centre of climate policy.

Climate change is not compulsory, and a transformation of the energy system is possible. The Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA) emphasize in their recent reports that sustainable economic prosperity and a modern energy supply of long-term declining emissions are compatible.[4] At the same time, the global investment boom in renewable energies continued in 2014,[5] and continues to create new jobs. Even today, with 5.7 million worldwide, there are roughly as many people employed in the sustainable energy sector as in the coal industry. According to calculations by the International Renewable Energy Agency (IRENA), this number could increase to 16.7 million by 2030, with 11.7 million in developing countries.[6]

The interest in developing and emerging countries in renewable energies is correspondingly high—however, the knowledge base is narrow in politics, business, and society, and in many places bound with reservations. In this context, the German energy transition is increasingly attracting international attention. Since becoming the top electricity producer for the first time, with 25.8 per cent in 2014—the third year after Fukushima—the importance of renewable energies will continue to grow. Made in Germany*:* In the eyes of the world, Germany is the country of automotive and mechanical engineering, a high-tech location, world champion exporter—and energy transition country.

Thus, it is necessary to explore if the German energy transition can serve as a global model project? Also a model for emerging and developing countries? Which experiences are transferable and which are not? What lessons do experts from developing countries who have dealt with the German energy transition draw for their countries? What is particularly striking to them and what do they expect from Germany? To what extent have these expectations been fulfilled so far—and what can Germany do better in the future to leverage the international energy transition? Finally: How are developing countries set up and what do they have to do themselves?

This short study aims to discuss these issues and derive conclusions in the form of requirements for German international cooperation in the key year 2015. To that aim, the experiences of an international delegation of visitors from summer 2014 were analysed, and interviews with four senior experts each from Africa, Asia, and Latin America were conducted, including former ministers, senior officials, scientists, analysts, and representatives from trade unions, business, and NGOs. In addition, talks were held with insiders from the responsible German federal ministries, as well as professional organizations, in order to reflect the external view of Germany with the internal view, from which policy recommendations ultimately result.

1. International Energy Agency 2012: 532.
2. http://www.bmz.de/de/was_wir_machen/themen/energie/index.html.
3. UNEP (2014): XV ff.
4. IPCC (2014) and IEA (2014).
5. In 2014, according to Bloomberg, 311 billion US dollars were invested worldwide in new projects, primarily in wind and solar, (+16 per cent compared with 2013). Quoted from *Süddeutsche Zeitung* on 23.1.2015: 20.
6. Quoted from FES (2014): 6.

The short study is part of a project to promote low carbon development[7] in Kazakhstan, Peru, Tanzania, and Vietnam, which the Friedrich-Ebert-Stiftung, Brot für die Welt, WWF, Climate Action Network (CAN), and ACT Alliance are conducting along with national partners.[8]

2. How relevant and transferable is the energy transition for developing countries?

The energy transition resolution by the Merkel/Rösler government from summer 2011 includes the gradual phasing out of nuclear energy by 2022, the rapid expansion of renewable energies (35 per cent of electricity and 18 per cent of primary energy production by 2020), improving energy efficiency by 20 per cent to 2020, and the maintenance of the greenhouse gas reductions target of 40 per cent (2020 compared to 1990).

The Berlin think tank Agora Energiewende (Agora Energy Transition) has identified the key challenges for a successful transformation of the energy supply.[9] These include:

- priority technical challenges, such as the replacement of coal-fired power by solar and wind energy in the baseload range, as well as targeted network expansion, coupled with the creation of flexible gas-fired plants to absorb supply bottlenecks and peak demand

- political challenges, such as the replacement of the energy-only market by capacity markets, and improved integration of the national with the European energy policy

- socio-economic challenges, such as economic viability and ensuring continued broad public support for the energy transition, as well as the creation of a new culture of energy conservation

Although the challenges vary in terms of specific context depending on the country, it is nevertheless indisputable—and should therefore be considered a working hypothesis for this study—that the complex change processes associated with the conversion of a national energy supply system include at least four dimensions, in which certain conditions have to be fulfilled for a successful change process: technological, political, economic, and socio-cultural dimension. In other words, a narrowing of the energy transition debate to, say, »technical feasibility«, »political will«, or »available financial resources« would not do justice to the challenge—either in Germany or elsewhere.

To what extent are the German energy transition experiences transferable in the opinion of experts from developing countries? And what experiences are particularly relevant? Before these questions can be thoroughly answered, a second working hypothesis must be formulated, which is essential for a deeper understanding of the energy transition: The energy transition resolution of June 2011 was not made hastily, as is perceived primarily abroad. While Fukushima was indeed the trigger, the energy transition extends back to the 1970s. Meanwhile, Germany can look back on four decades of growing scientific, technological, and political experience, which has created the necessary basic social trust in the feasibility, reliability, and economics of renewable energies.

However, the energy transition resolution from 2011 remains a precedent and makes Germany a unique pilot project, whose progress and results are being observed internationally with great interest. This gives rise to two challenges: first, to be successful as a climate and energy policy model project; and, secondly, to make the support of copycat countries a priority of international cooperation.

2.1 First Approach—Learning Experiences from the Energy Transition for Developing Countries

At the beginning of their journey, the delegation members from Egypt, Bolivia, Kazakhstan, Tanzania, and Vietnam—who in the summer of 2014 toured Germany together on the trail of the energy transition—identified political will, financial resources, and availability of technology as the three core competencies of the energy

7. In this study, the term »low carbon development« is used rather than »zero carbon development«, because it represents the reality in developing countries more appropriately. In our understanding, carbon capture & storage (CCS) technologies belong to low carbon development as little as nuclear energy.

8. More on the project »Exploring Sustainable Low Carbon Development Pathways« at, http://www.fes-sustainability.org/de/exploring-sustainable-low-carbon-development-pathways.

9. See Agora Energiewende (2012).

transition. A week later, they emphasized the following supplementary learning experiences as relevant for their countries:

- broad interest, support, and active participation in the energy transition across all social groups
- decentralization and diversity of renewable energies with large opportunities for municipalities and rural areas
- long-term, incentive-based policy framework conditions that mobilize stakeholders to participate
- insight into the difficulty of change processes and willingness to resolve conflicts in a constructive and dialogue-oriented manner
- Based on these learning experiences, the delegation formulated four critical conditions for a successful introduction of renewable energies in developing countries, which in the majority of countries have thus far not been or only partly fulfilled:
- clear and long-term energy policy strategy
- appropriate institutional framework conditions
- appropriate instruments and an attractive incentive system
- sustainable financial support

2.2 Success Factors for Internationalization of the Energy Transition

The above statements provide important clues not only to problems, but also to opportunities and possible approaches for international cooperation. But how generalizable are these? There should be an extended survey of experts from developing countries to give more information about this. None of the experts[10] interviewed comes from an »energy transition country«—or even a country where renewable energy sources (beyond large hydroelectric facilities) already play a prominent role. Nevertheless, apart from Bolivia, there are current political considerations in all of the countries studied, to expand the respective energy mix in the direction of renewable energies. However, this does not mean broadly replacing the previously dominant energy sources in any country—be it coal and oil (Brazil, Egypt, India, Ecuador, Peru, South Africa), gas (Egypt, Bolivia, Peru), or hydropower (Brazil, Peru). Rather, the majority of these countries also aim to reduce the acute energy deficit, which is considered to be a serious impediment to development, through the addition of new fossil fuel power plants. The cost argument contributes to the continued prioritization of fossil fuels—energy prices must remain low! This is also considered the energy policy premise of the new Egyptian leadership, according to Ahmed Kandil, energy policy study leader of the Al-Ahram Center for Political and Strategic Studies in Cairo; because the reduction of high subsidies for electricity is sought in Egypt, it is even more important for ensuring social peace that the kilowatt hour costs as little as possible.

While Brazil, India, and South Africa are all emerging countries with nuclear power plants at their disposal, discussion partners from Egypt, Bolivia, and Tanzania report that nuclear power plants are planned or at least reflections on this issue exist. Thus, nuclear power is an option in the majority of countries studied.

Nevertheless: When asked about the energies of the future, all experts place renewables in the first position—and Germany as the leading country. The perception of the energy transition—the concept is familiar to all respondents—is positive, with one exception. Only Daniel Morais Angelim from Brazil, responsible for environmental issues at the inter-American trade union federation, sees in addition to advantages, above all the risk of deindustrialization should the energy transition happen too quickly. All of the other respondents evaluate the energy transition as a success story and are convinced that their countries could learn from it. Accordingly, there is great interest in deepening the exchange of experiences with Germany.[11]

So if on the one hand, renewable energies have a positive image, but on the other hand, they only eke out a niche in the energy policies of many developing and emerging countries, what are the main obstacles? And to what

10. See the complete list of interview partners at the end of the study.

11. Only two interview partners indicate that they already have very good knowledge about the energy transition, one designated their knowledge as superficial, all others assess their knowledge as an average to good.

extent do the experiences from the energy transition help to overcome the hurdles?

It may seem surprising that the interviewed experts come to very similar results, although they come from very different countries and have highly different personal careers. According to them, five factors are crucial:

1) Reliable and Favourable Framework Conditions for Renewable Energies

Functioning energy markets,[12] which are not dominated by monopolies or oligopolies, are rare in developing countries—and decidedly »green« markets even rarer. Hardly a developing country has sufficient experience in regulatory regimes through which renewable energies are strategically promoted over a sufficiently long period—i.e., that combine preferred network access with attractive feed-in tariffs (FIT). The interviewed experts clearly favour the FIT quantity-controlled systems (e.g. expansion plans, emissions trading schemes) for their countries. This generally applies, in a more or less modified form, to all countries surveyed, which Ivan Mbirimi, an analyst from Zimbabwe explains for Southern Africa: »Development of renewable energy sources is still at its infancy. A key problem here is that the necessary support policies are not in place (...) Apart from South Africa, no country in the region has a clearly articulated policy framework on renewable energy.«

Deficient networks are another serious problem in most of the countries studied. In all of the countries except Brazil, Ecuador, and Jordan, a considerable to predominant share of the rural population (Tanzania 95 per cent) have no, or at best marginal, access to electricity (<100 kWh per year), and even in urban centres there are frequent power outages (Egypt, India). An additional problem is the often small-scale networks—i.e., organized across provincial or national borders and hardly interconnected.

What can developing countries learn from the German energy transition? The energy transition has contributed to Germany's prosperity; through economic incentives and the dependable framework conditions of the Erneuerbare-Energie-Gesetz (EEG, Renewable Energy Sources Act), over decades it has led far more than a million households, businesses, and municipal electricity producers to generate decentralized renewable electricity, first in a protected niche and now to an extent that forces the dominant corporations to change their fossil-nuclear business model. According to interview partners, this is an extraordinarily compelling success story that inspires imitation. Highlighted is the special charm of a decentralized and small-scale power generation for rural areas in developing countries, which are currently not or insufficiently connected to national power grids. Improved energy security, higher supply autonomy and the opportunity for democratic control are named as great benefits to which great importance is attached in developing countries: »The involvement of households and small scale niche generation of electricity is key to understand the German *energiewende*. This would be a great learning experience for South Africa as well«, said an expert from South Africa. Furthermore, as many respondents emphasized, the boom in renewables in Germany has globally contributed to so massive a reduction in the cost of a kilowatt-hour of electricity—generated by photovoltaics or wind energy—that cost parity with fossil fuels is already being approached.

2) Phasing out Subsidies, Reducing the Price of Fossil Fuels

Given the loss-making energy supplies in all of the studied countries, the subsidization of fossil energy (electricity, fuels) or of fossil input factors for agriculture (diesel, kerosene, and fertilizers) is of strategic and sometimes election-deciding importance. This applies to the political left (Bolivia, Ecuador), as well as more liberal or right-wing governments (Peru, India), but especially for autocratic regimes (Egypt, Jordan). Particularly with respect to the poor in a country, subsidies—as a social contract—are meant to ensure social peace. The effect on renewable energies is often counterproductive and investments are misguided. Due to the high financial burden on state budgets through the subsidization of fossil energy, however, many countries are re-examining this practice. Thus, in 2013 Egypt raised 20 billion US dollars for the subsidization of fossil fuels, but reduced that amount in 2014 by 30 per cent. Malek Kabariti, former Jordanian Minister of Energy pointed out that also in Jordan the decline of energy subsidies due to fiscal problems would less affect the poor who consume little power, but the

12. Here, functioning energy markets are understood as markets that reliably, effectively, and cost-efficiently relate electricity supply and demand; this also includes network access.

rich and the businesses that as a result would increasingly have to learn to handle energy more efficiently. Energy prices, which in the meantime are rising by 5 to 10 per cent annually, would have also improved the conditions for wind and solar energy.

Subsidies are in many developing countries—contrary to Germany—not primarily an energy or policy competition instrument, but serve to reduce poverty. Therefore, according to the Indian expert D. Raghunandan, the close connection between the energy and development agenda in the sense of sustainable development has to be maintained. Thus according to the experts interviewed, from the perspective of developing countries, the fact that the energy transition in Germany, in addition to climate protection, also contributes to regional added value—especially in relatively marginalized rural areas—and creates diversified income and jobs, is a very strong and little-known argument.

3) Private Sector Involvement

Private investment and increased private sector involvement in renewable energies are considered by all respondents to be important stimulants for a transformation of the energy sector in their own countries. As far as there are experiences related to this (Brazil, Ecuador, India, Jordan), they are described as positive. In almost all of the countries studied, however, the energy sector is wholly or mainly in state hands, which is considered a hindrance to the mobilization of private capital. Also taking into consideration the hitherto rather low level of investment of state utilities in most of these countries and the subsidy practice described above, from the perspective of the experts, the lack of (private) investment proves to be one of today's biggest barriers to energy transition in developing countries. The experts from Egypt, Ecuador, Jordan, and India place high hopes on foreign investment. D. Raghunandan, director of the Centre for Technology and Development and a former member of the Low Carbon Development Committee of the Indian government's Planning Commission, is hoping for a doubling of foreign direct investment in renewable energy in India within three years.

And the learning experience from the energy transition? First, the respondents are impressed by how the German energy transition has developed from a niche thanks to the EEG and has made energy consumers into energy producers. Secondly, the now internationally active, mostly medium-sized German businesses and service providers in the renewable energy sector are seen as potential partners, as well as the Gesellschaft für Internationale Zusammenarbeit (GIZ), which is perceived as largely positive.

4) Social Acceptance and Support for Renewable Energies and Climate Protection

Transformation can only succeed if there is a high degree of social acceptance for it, in the opinion of all respondents. There is agreement that the awareness of climate change issues and the approval of renewable energies in all of the countries studied are increasing. This is particularly true for especially vulnerable regions, indigenous population groups, young people, and middle classes. However, the population is much more price sensitive in developing countries, the level of knowledge about renewable energy is low, and the reservations correspondingly larger. Social acceptance, according to Ahmed Kandil, stands and falls with the success of renewables: They have to be affordable and improve energy security. A South African interview partner, who wishes to remain anonymous, emphasizes the great inequality in developing countries and the correspondingly different priorities, when he says: »There are two types of consumers: the poor who need access to a subsistence level of energy and the rich who need to become more energy efficient.« Overall, however, the respondents are in agreement, the public discourse on renewable energies in their countries is in an early pioneer stage. Henry Eduardo García Bustamante, Peruvian coordinator for climate change in the bioenergy sector, summarizes: »To create a climate and energy policy consciousness in Peru as in many European countries is still a long path, which will require major effort from the government and civil society.«

The high social acceptance of the energy transition in Germany is perhaps the factor that most impressed foreign guests beyond all of the political, economic, and technological factors. It is quite clear to them that this approval has grown over decades and always has to be earned anew. However, the example shows: Reservations may be overcome and conflicts resolved. Chandra Bushan, director of the Indian Center for Science and Environment, gets to the heart of the matter: »Will Ger-

many be able to solve all problems and meet challenges that *energiewende* has thrown up? Can it meet all its targets? I believe, it can and will. The exciting thing about *energiewende* is not how much renewable energy has installed so far, but how the German government, businesses and civil society are thinking about the energy transition. I believe the German society has crossed the hump.«[13]

5) Social Innovation and Transformation Readiness

Pursuing new energy and climate policy paths requires the social willingness to change and a certain ability to innovate—two skills that are distinctly different socio-culturally and, among other things, also depend on whether a country has already had positive experiences with technological innovation and social modernization processes, or in this respect has policy framework conditions at its disposal. Here, many interview partners see considerable room for improvement in their countries: little knowledge, lack of legal certainty, and often weak institutions one the hand, and too much top-down dirigisme on the other hand make change and innovation seem risky. In addition, in many places there is corruption and clientelism. Moreover, many governments of developing countries have limited experience in managing large infrastructure projects. Access to technology alone does not suffice: Ivan Mbirimi points out, for example, that the countries of Southern Africa have had only limited success in introducing new technologies in recent years, regardless of the field.

Developing countries can learn from the energy transition about how to connect climate protection, social responsibility, and sustainable economic development exemplarily with each other, according to Eduardo Noboa, Executive Director of the National Institute for Energy Efficiency and Renewable Energy in Ecuador. The special pioneering work in Germany consists in initially developing technologies as a knowledge society, and then successfully using them commercially. Noboa is confident that a developing country like Ecuador could replicate the energy transition, if it were to be supported. Germany, in turn, could equally benefit from such a cooperation: a strengthening of bilateral political and economic relations.

13. Down to Earth (September 1–15, 2013): 41.

It should be noted that energy policy in developing countries faces different challenges than in Germany. In these countries, it is above all a matter of overcoming energy poverty, developing a modern energy infrastructure, and creating an energy policy regulatory framework. Although renewables are still rarely used in addressing these challenges, their future potential is clearly seen—more from an energy policy perspective, than a climate policy perspective. From the developing countries' point of view, the German energy transition holds countless learning experiences. Here, we've come inevitably to the question, what do developing countries expect from Germany, to help them transform their energy supplies.

3. Fields of Action for the International Dissemination of the Energy Transition

»Energy transformation is the best thing Germany can extend its help to other countries, especially developing countries«, says the former Jordanian Minister of Energy Malek Kabariti. All interview partners agree that the energy transition is a unique, German selling feature and derive from this the hope that Germany should also support their countries in embarking on a low carbon development path and expand energy efficiency and renewable energies. As political promotion and a business opportunity for German companies, the international dissemination of the energy transition is a double opportunity for Germany, according to Komila Nabiyeva, an Uzbek journalist. In the following, three fields of action for this are shown.

3.1 Knowledge Transfer and Development of Strategic Competences in Developing Countries

When asked about priorities, the expansion of knowledge transfer and the support for strategic thinkers and competence centres of a low carbon development are in the first place for countries of the south.

According to Moira Zuazo, project coordinator at the Friedrich-Ebert-Stiftung in Bolivia, Germany has rendered good technical support—for example, in the field of photovoltaics—but has not yet done enough to promote social knowledge and the development of strategic intelligence. This includes generating knowledge within the

country and promoting stakeholders, who can acquire the opinion leadership in transformation issues and can thus advance the public discourse in their countries.

Developing countries expect Germany to allow them to participate in the energy transition knowledge in a much more intense manner: specialist counselling (e.g., in matters of energy planning, draft legislation on renewable energy laws, and market regulation), joint research programmes, as well as dialogue and exchange forums on policy, civil society, science, and economy on energy policy issues were named: »It is important not to view the energy problems of these countries as simply the product of a lack of investment. A better approach is to see them in terms of the risk associated of developing energy systems in an environment of weak institutions and shortage of essential skills«, according to Mbirimi from Zimbabwe.

3.2 Increased Financial Support and Direct Investment

Almost all of the discussion partners want more financial support from Germany—from both the state and the private sector. The general belief is that without foreign investment, a transformation of the energy sector in most developing countries will hardly progress, at least in the next few years. Brazil, however, claims that it has adequate financial resources of its own. For emerging markets (such as India, South Africa, and to a limited extent Egypt), increased interest in direct investments by German companies is most expressed, while poor developing countries (here Tanzania and Bolivia) instead back governmental and non-governmental development and climate financing. The quite widespread scepticism in Germany among civil society stakeholders with regard to the role of the private sector in climate funding is not found in this manner among the surveyed experts from developing countries. Thus, Ajay Kumar Jha, Director of Public Advocacy Initiatives for Rights and Values from India, hopes for German direct investment in the Indian network expansion, as well as off-grid solutions for remote Indian villages. Since 2013, energy projects with 100 per cent financing by foreign investors are possible in India. In contrast, Sixbert S. Mwanga, coordinator of the Climate Action Network CAN in Tanzania, expects from Germany increased climate funding for the expansion of renewable energies, and sees this as an important counterweight to Chinese offerings to promote coal and nuclear projects in the uranium-rich country.

A common theme in all discussions: Developing countries see German politics and business as responsible for exporting the energy transition and accordingly increasing climate funding and direct investments. Pioneering countries that consciously focus on energy-policy transformation should benefit from this—that is to say, in a geopolitical context, in which Arab and Chinese capital increasingly flows to developing countries to establish and expand fossil or even nuclear energy supplies.

3.3 Technical Cooperation and Technology Transfer

The continuation and intensification of technical cooperation, both through GIZ and other organizations and service providers, as well as in the context of cooperation between firms is addressed as the third field of action. Successful lighthouse projects, which at the same time contribute to overcoming poverty and marginalization, are considered essential to increase the social acceptability of an energy-policy transformation. Therefore, it is necessary to closely link technical cooperation with the development agenda, and specifically reach out to the rural poor, namely also with greater involvement of civil society in technical cooperation. The second priority is the high demand for technical consulting by public authorities, for example in conducting potential assessments for renewable energies and the development of functioning markets.

There is a tension in technical cooperation between top-down and bottom-up. It is indeed viewed that many developing countries are too strongly top-down oriented. The transfer of knowledge and cooperation in these countries suffer as a result of this, and for the most part, the already strong exclusion of the poor majority is deepened. Technical cooperation for the energy transition, which precisely characterizes its participatory and decentralized nature, has to take a stronger account of this circumstance, and strengthen bottom-up elements: »We expect a proactive role of GIZ in creating collaborative arrangements with the Indian civil society to promote the role of households in energy transformation. This should be based on the learning of *energiewende*«, says

Tirthankar Mandal, Indian analyst for energy and climate policy.

An improved technology transfer is considered an additional determining factor: access to German high technology is high on the list of priorities in many governments of developing countries and even more in emerging countries, such as India: »Technology is at the core of Indian transformation and Indian policymakers often cite this as a main challenge to leap to better systems«, according to Tirthankar Mandal. While photovoltaic panels have meanwhile become ubiquitous for mass production, currently in high demand, for example, are control technologies, rotors with high efficiency, and above all storage technologies.

International technology transfer is a sensitive issue and strongly depends on framework conditions—such as ensuring intellectual property rights, legal security, and protection of investment—most of which are outside the sphere of influence of energy and climate policy. However, expectations are high that these issues will be addressed with the aim to quickly reach a new level of bilateral and multilateral technical cooperation for the purpose of low carbon development. It is clear that increased efforts are required on both sides.

Komila Nabiyeva from Uzbekistan, who has carried out a comparative study of Central Asia in the context of a Marion Dönhoff Fellowship at the Michael Succow Foundation,[14] has come to almost identical results in terms of the transferability of the energy transition and the corresponding expectations from Germany.

4. Exporting the Energy Transition to Developing Countries? Experiences from Federal Ministries

There has been funding priority in Germany for international cooperation projects in the areas of low carbon development, climate protection, energy efficiency, and renewable energies since 2004. Currently, in addition to the Federal Ministry for Economic Cooperation and Development (BMZ) and the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), the Federal Foreign Office (AA), the Federal Ministry for Economic Affairs and Energy (BMWi), the Federal Ministry of Education and Research (BMBF), and the Federal Chancellery are also involved in varying degrees.

The large number of participating stakeholders (industry, science, and civil society not yet included) makes clear the high need for coordination, in order to arrive at a coherent and targeted strategy of cooperation with third countries. Although in the past a loose ministerial coordination occurred again and again in different formats and finally at the level of the state secretary, insiders from all ministries nevertheless complain that this has not yet led to sufficient interlinking or even a coherent overall strategy. Thus, the Internationale Klimainitiative (IKI, International Climate Initiative) of BMUB has promoted shorter-term initiatives that seem appropriate for a clear strategic focus on climate policy pioneering countries and to attract partners for common goals within the framework of international climate policy. In contrast, BMZ projects are more long-term oriented and more focused on the development agenda of partner countries. Both perspectives have advantages and disadvantages. They can complement each other, but will only do so if they are strategically related. Of course, better coherence should not mean orienting themselves downwards and agreeing on the lowest common denominator. The criticism of poor coherence is shared by civil society observers. Even within ministries, which are often involved with several work units—for instance, in BMZ the separate areas of energy and climate, each with its own functional logic, private partners, and private portfolio—is definitely seen as a requirement for improved coordination and cooperation. In addition, one is considered well positioned, to succeed internationally as an energy transition country and a technological pioneer in the field of climate and renewable energies.[15] At the same time, the impression often arises that Germany is afraid of its own success and therefore does not communicate the energy transition internationally as a success story aggressively enough. An NGO representative criticises the inconsistent image through government's representations abroad in terms of energy policy as incoherent and contradictory, sometimes even »bizarre«.

14. See Komila Nabiyeva (2014).

15. This primarily concerns the two global organizations for financial and technological cooperation, KfW and GIZ.

How do the German ministries evaluate previous cooperation with developing countries and the opportunities for an energy transition in these countries? Essentially, the same challenges are named across departments. Even more remarkable is the large area of overlap with the previously described perspective of developing countries.

4.1 Political Framework Conditions and Subsidy Cuts

In order to successfully implement a transformation agenda, developing countries need strong institutions, a good potential assessment, a clear strategy—including the timetable—and the political will to build functioning energy markets and networks that are not too fragmented and ideally allow cross-border cooperation, according to the view of the federal ministries.

Indeed, the interest in the energy transition is huge worldwide, yet in many countries, the willingness to cooperate across departments is lacking even more than in Germany.[16] In addition, the widespread top-down approach leads to poor knowledge transfer, bureaucracy, and insufficient cooperation with other stakeholders within the respective countries. However, the experts from the federal ministries do see positive examples, especially in China and South Africa.

With a view to subsidies for fossil fuels, it is a common misconception that switching to renewable energies and energy efficiency would save subsidies: They could not be cancelled without replacement, but would have to be redeployed.

The topic of energy efficiency—compared with renewables—is much less highly established on the radar of partner countries. Also named here as exceptions are above all countries with energy deficits that are chronic and harmful to the economy, such as Brazil and India.

4.2 Investment and the Role of the Private Sector

Reliable framework conditions, especially investment and legal security, are considered to be a sine qua non for increased private investment. This, in turn, is considered a prerequisite for an accelerated transformation.

In addition, public climate funding by donor countries like Germany plays a prominent role, especially with regard to the ability of states to prepare and implement major energy projects, to establish and legally protect appropriate framework conditions, and to provide risk capital and to leverage private capital—many developing countries are not attractive for private investors for different reasons. The KfW, in particular, could play a much more strategic role in this context, according to the federal ministries. In general, there are complaints that the funds for climate financing are insufficient, not safeguarded enough for the long term, and not deployed strategically enough. Being able to meet the needs of developing countries more effectively requires a sustainable and innovative financing strategy with a view to funding sources and instruments, and beyond that, more funding for bottom-up approaches.

4.3 Social Acceptance and Willingness to Innovate

In the ministries, an important challenge is considered to be the need in the developing countries themselves to generate more knowledge about transformation issues, to strengthen public discourses, to promote longer-term processes of cooperation and exchange of experience, to build alliances and supporters' networks, and to create centres of excellence. Increased external climate policy efforts, improved public relations of the messages and the dialogue offers in GIZ country offices are named as instruments. The state cooperation reaches its limits quickly when the partner governments are so strongly positioned top-down, that many important stakeholders in the countries are not involved. According to the assessment of the ministries, accompanying measures by non-governmental stakeholders from NGOs, business, and science are required here.

16. In Germany they at least speak with each other, according to experts from the federal ministries.

5. Previous German Climate Funding Practices

To what extent does German climate funding reflect the outlined expectations and experiences? What is its contribution to the internationalization of the energy transition?

For the analysis, the following data were obtained from the database on the German Climate Finance website (http://datenbank.deutscheklimafinanzierung.de/project):

2008–2009: project-specific information only available for IKI (BMUB)

2010–2011: project-specific information available for all financing instruments

2012: project-specific information available for all financing instruments with the exception of the category »other financing instruments of the BMZ«

2013: project-specific information only available for IKI and the Energie- und Klimafonds (EKF)

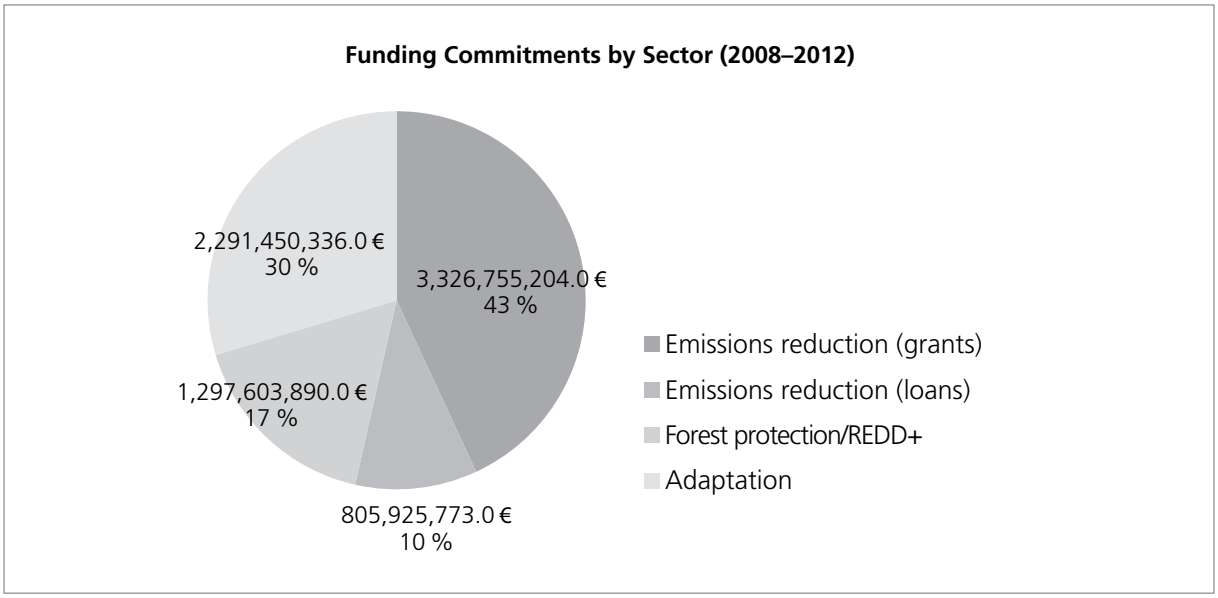
For the period 2004 to 2007, no figures were available, because there were no sector-specific data presented for the 2015 budget.

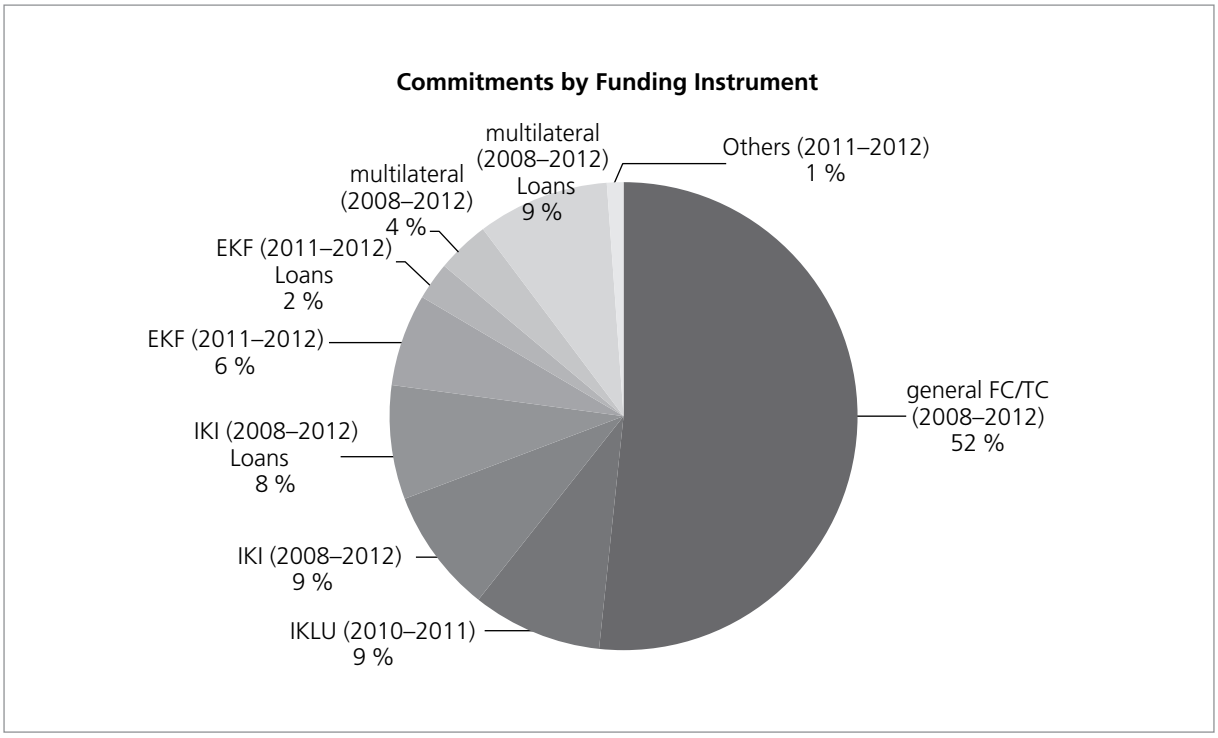
Thus for the analysis, the years 2008 to 2012 were selected. **Funding Commitments by Sector** clarify that in this period, of the German climate funding resources almost two-thirds flowed into the area of reduction, including REDD+. For emissions reduction—i.e., above all the promotion of renewable energies and energy efficiency and the related measures—about 3.3 billion euros were applied to grants, as well as 806 million euros to loans.

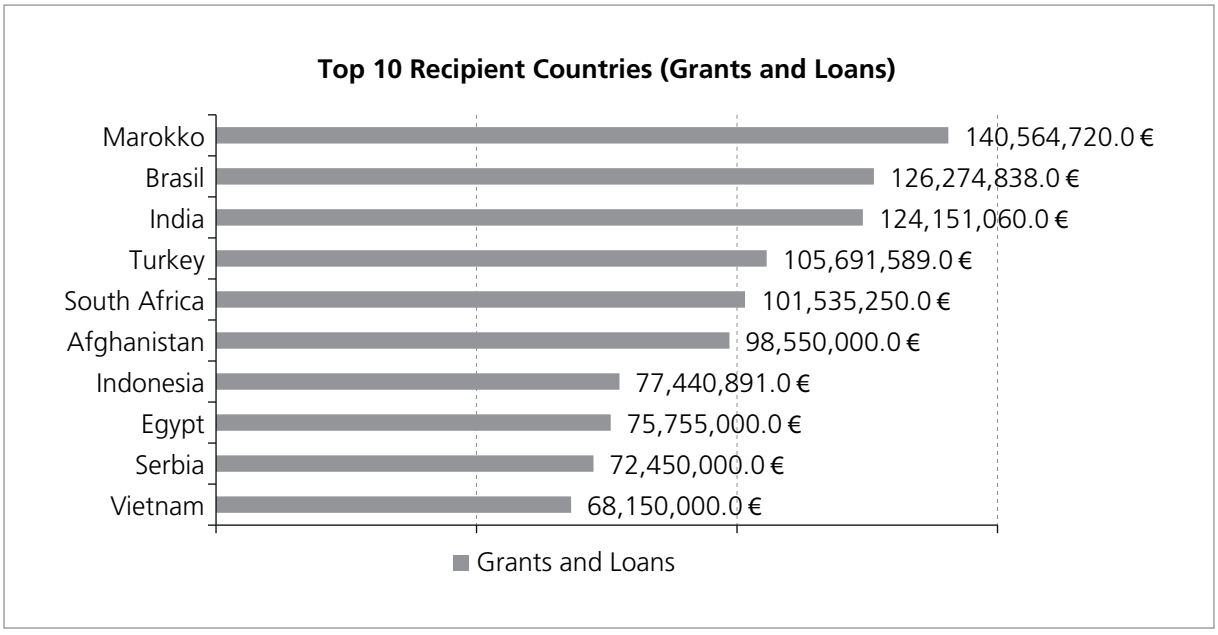
Commitments by Funding Instruments shows that with about 2.1 billion euros, half of the funds (52 per cent) flowed through the general financial and technical cooperation (general FC/TC) of the BMZ. Together with the Initiative Klima und Umwelt (IKLU, Initiative Climate and Environment) of the BMZ, that amounts to about two-thirds of all funds. 350 million euros in grants and 324 million euros in loans to developing, emerging (and Eastern European) transformation countries flow through the IKI. Payments to multilateral funds amount to about 150 million euros (13 per cent).

In the further analysis of emission reduction projects, only the projects available in the database of the general FC/TC and IKLU, ICI, as well as the EKF jointly managed by BMZ and BMUB were included, because these are the most important tools available for the data also comparable for 2010–2012.

If one breaks down the recipient countries groups and asks to what extent countries from the same groups are prioritized, which are generally more likely to be ranked







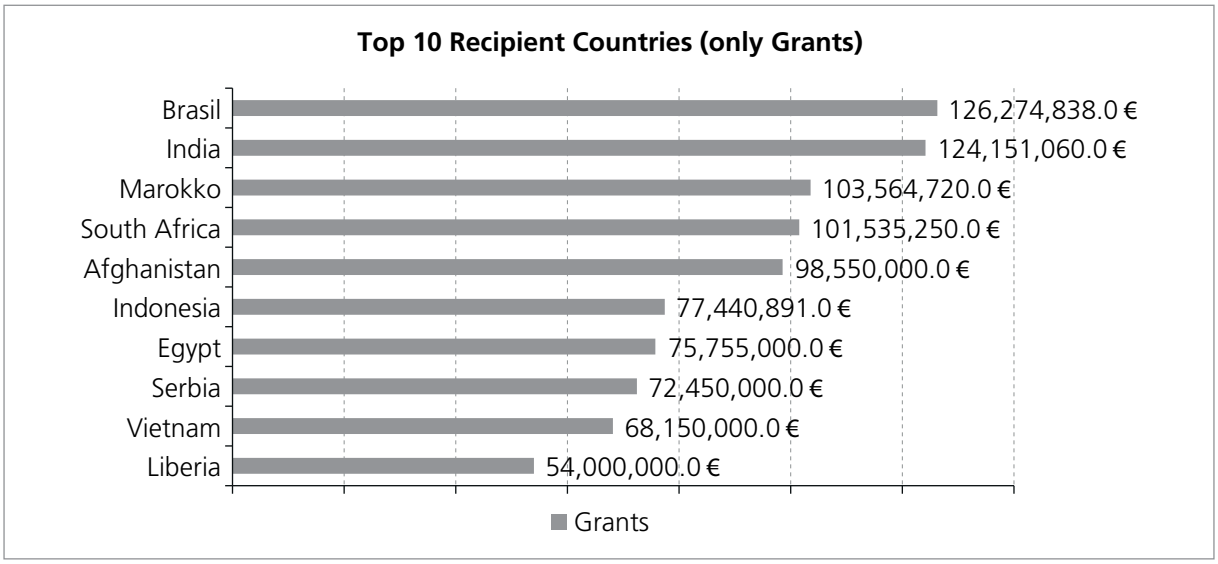
among climate policy ambitious pioneering countries—i.e., the small island developing states (SIDS), the least developed countries (LDCs), and the African States—the following picture emerges: Among the **Top 10 Recipient Countries**, South Africa ranks fifth in the African Group (and fourth in the grants). Liberia, as an LDC, ranks eleventh in the recipient countries (or in tenth place, if only the grants are counted). The Maldives Islands, first representative of the SIDS, is only in 49th place.

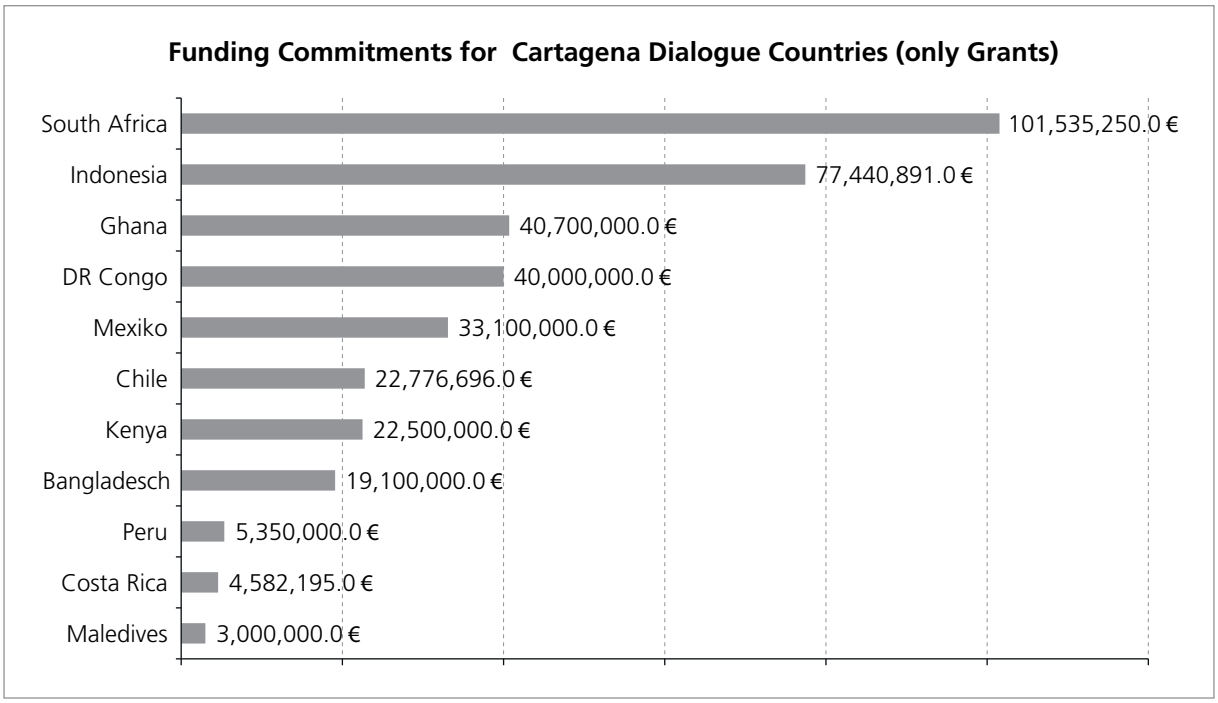
With a total of 370 million euros, about 22 per cent of the total grants received from 2010 to 2012 went to the countries that have participated in the **Cartagena Dialogue**, an association of states that see themselves as ambitious with regard to climate policy.

If one analyses the **Funding Commitments by World Region**, Asia ranks with 27 per cent of all subsidies above Africa with 23 per cent. 13 per cent of all grants have flowed into the MENA region. Global projects account for 10 per cent of all subsidies. The share of loans is highest in Europe, whereby the information is limited because loans are reported differently depending on the financial channel (BMZ accounts for only the share of funding).

In the **Funding Commitments by Country Groups**, it is clear that the SIDS, in particular, have thus far received little funding. However, the generally small SIDS countries are primarily funded through transnational projects.

The **Funding Commitments by Project Sponsors** shows that 75 per cent of all grants are implemented through KfW. Together with GIZ, it manages 96 per cent of the funds. If the project approvals of the IKI for the years 2008, 2009, and 2013 are included in the analysis, the proportion of KfW drops to 68 per cent, while the





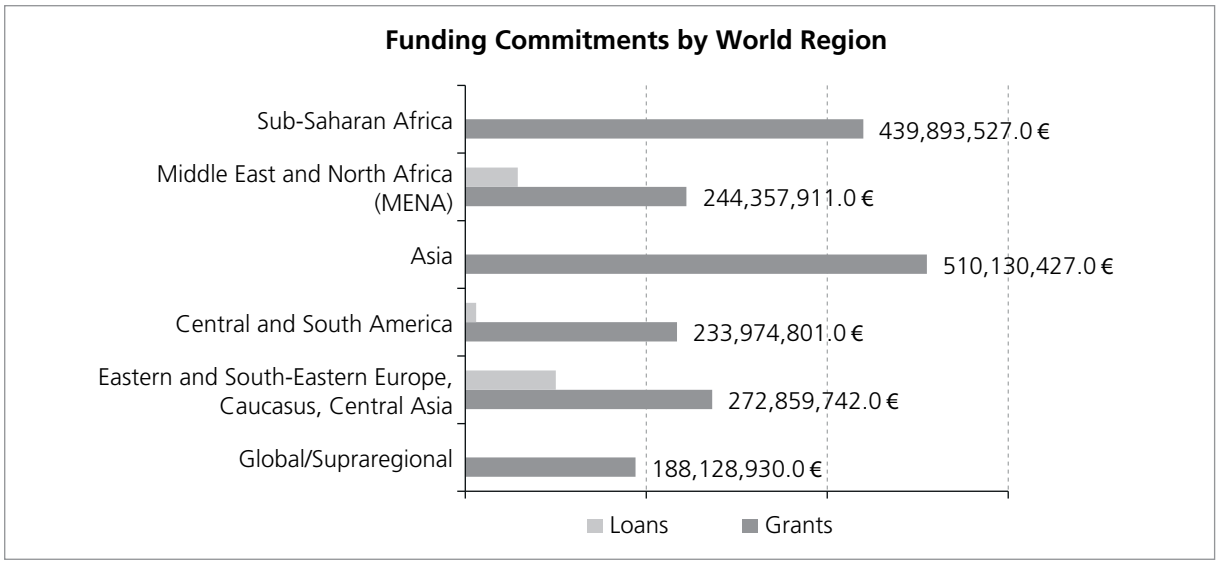
GIZ implements 25 per cent of all funds. The proportion of international organizations increases from 2 to 4 per cent, and the share of the private sector and others increases from 0 to 1 per cent.

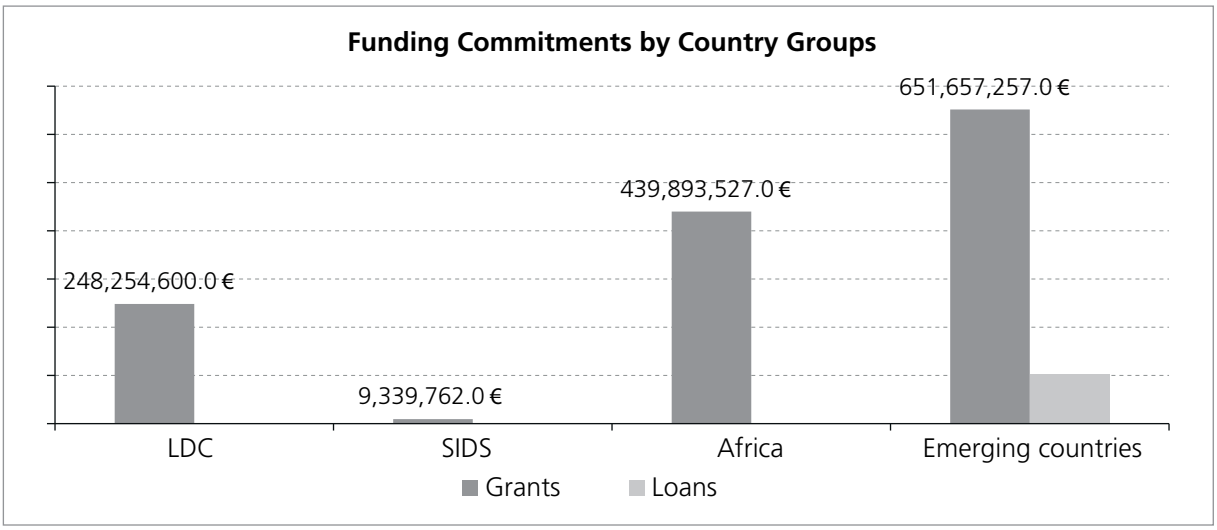
With regard to the **Funding Categories,** the projects of the general FC/TC—including IKLU of BMZ and ICI of the BMUB—from 2010 to 2012 were subjected to a screening. A total of 167 projects have been included.

While the KfW exclusively supports concrete projects in the areas of renewable energies, energy efficiency, and the expansion of power grids, GIZ is primarily responsible for the creation of more favourable framework conditions and public relations. In the BMZ projects, in addition to the main areas of renewable energy and energy efficiency, transport and waste sector play a role. Biodiversity projects and plans for forest protection/REDD + are also occasionally counted in the area of emission reductions. It is also striking that, especially in the IKI projects, topics directly relevant to the UNFCCC negotiations—such as Nationally Appropriate Mitigation Actions (NAMA), Monitoring, Reporting and Verification (MRV) and sometimes also the promotion of Low Emission Development Strategies (LEDS)—play a role.

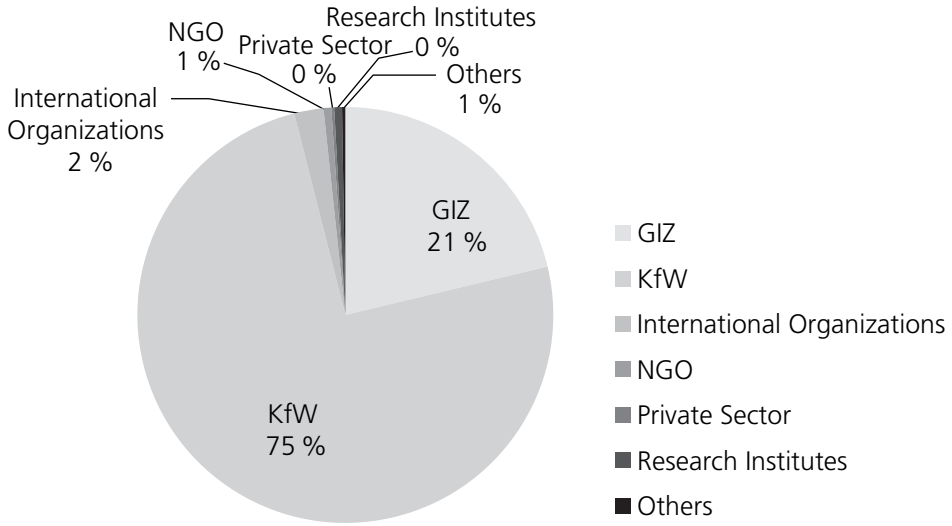
One-third (30 per cent) of the project descriptions contain information on a project-related **role of the private sector**. This can take different forms:

- The **introduction of private sector operator models** is mainly relevant in programmes that are aimed at

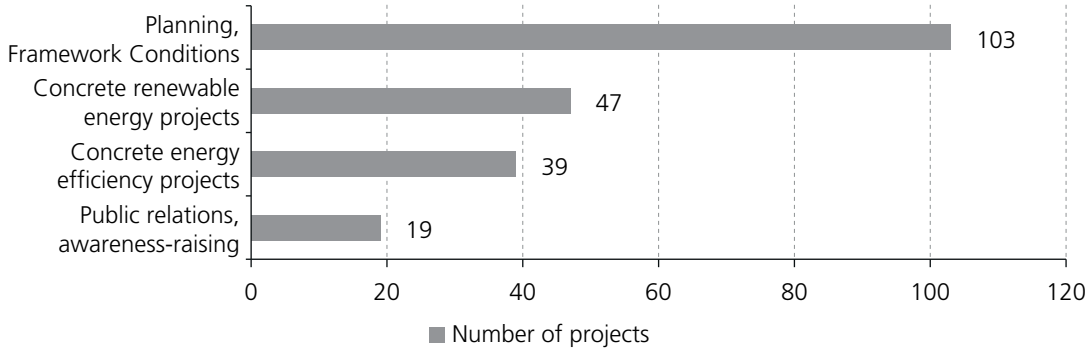


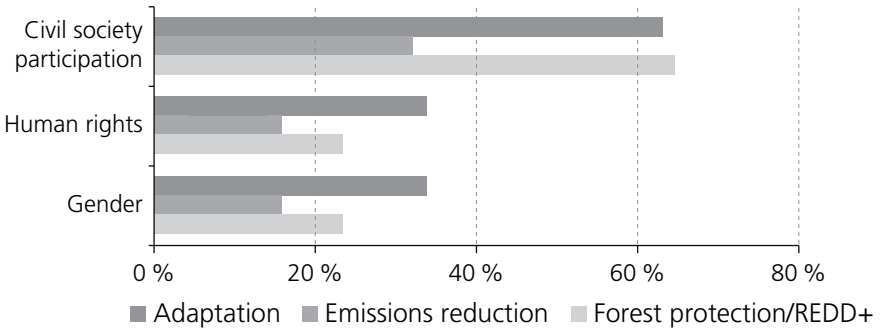


Funding Commitments by Project Sponsors (only Grants, 2010–2012)



Funding Categories in Emissions Reduction Projects (2010–2012)





rural electrification or energy sector reform in underdeveloped countries.

- **Companies as target group** of measures can be found mainly in programmes that introduce new technologies. In this category, individual projects also name micro, small and medium enterprises (MSMEs) as a target group.

- **Development partnerships and cooperation with companies** play a major role and are mentioned in different ways. This includes the collaboration with national companies and chambers of commerce, as well as cooperation with German companies—particularly with the introduction of new technologies. Some projects name collaborations with concrete large companies (including Osram or Adidas). Important keywords in this context are »pilot enterprises« and »innovation partnerships«.

Climate funding (2010–2012) was first published on the website Deutsche Klimafinanzierung (German Climate Finance), in an analysis taking as a basis selected development policy criteria.[17]

The findings of this analysis are summarized as follows:

- **Participation of the population affected by the measures or local/national civil society organizations in the planning, implementation or evaluation:** in emissions reduction projects, civil society participation, with 25 per cent, is less pronounced than in the adaptation and forest protection projects (each with 60 per cent). These are in many cases energy projects, which are meant for technology cooperation, research, and the development of policy framework conditions. They are found in the IKI, but also the BMZ and focus on government consultation and cooperation with the private sector.

- **Protection and promotion of human rights as an explicit objective of the project:** In only 4 per cent of emissions reduction projects are there indications that these projects have made a contribution to the protection and promotion of human rights in their targets.

- **Gender**: A gender differentiation of the target groups, specific measures to promote women, and gender mainstreaming are found in only 12 per cent of emissions reduction projects. In these projects, gender is less deeply anchored than in rural development or water projects, which can be found in the area of adaptation.

The analysis of German climate financing shows that the funding practice up to now, only partially satisfies the previously formulated expectations and demands. Neither is it clear that partner countries (e.g., pioneering countries) and project partners (almost exclusively GIZ and KfW) are selected on the basis of uniform criteria or even a recognizable overall strategy, nor does the promotion of the energy transition as a decentralized and participatory process—with strong civic participation (bottom-up) and taking into account the specific priorities of developing countries (overcoming poverty)—seem to shape climate financing in the way that the interview partners from developing countries, but also many insiders from Germany, would like.

6. Political Challenges and Recommendations for the Future

How can Germany better fulfil its growing global responsibilities and promote low carbon development paths, as well as the transformation of energy supplies in developing and emerging countries in terms of the energy transition?

This question arises with special relevance in the geopolitically important year 2015, because international development financing is being newly regulated, universal goals for sustainable development are being adopted, and a global climate agreement is meant to be resolved; in addition, Germany also holds the G7 presidency this year.

Taking the results of this study as a basis, the following recommendations for action can be derived, which concern the Bundestag and the federal government alike.

1. Germany has to relate an unequivocal position in **energy transition matters** and clearly **communicate** internally and externally their enormous potential for ecologically, socially, and economically sustainable develop-

17. http://www.deutscheklimafinanzierung.de/blog/2014/07/partizipation-gender-menschenrechte-qualitative-aspekte-der-klimafinanzierung-aus-deutschland/ and http://www.deutscheklimafinanzierung.de/infos-projektdatenbank/qualitative-kriterien-fur-klimaprojekte/ (last accessed on 22.12.2014).

ment in Germany and beyond. This is especially true for **external climate policy**.

2. Many developing countries want to build sustainable energy supplies and have high hopes for cooperation with the energy transition country, Germany. They expect German support. Germany has to strengthen its coherence and provide **intelligent, integrated funding and support services**, in which innovative tools for knowledge and technology transfer are bundled efficiently and effectively with financial support. For this, an **ambitious** overall strategy is needed, which is followed by all departments as a guideline and implemented collaboratively. Such additional synergies can be mobilized, in particular, from the complementary skills of BMZ and BMUB.

3. Interagency cooperation requires coordination: To this end, in addition to a regular **interagency climate and energy policy coordination** at the state secretary level, significantly improved coordination must also take place within and between departments at the various levels of work. A working group, »Climate, Energy, and Development«, which meets at least a quarterly should be established, with the participation of all relevant ministries and civil society, based on the model of »AG World Food« (organized by BMZ and BmEL).

4. Transformation—i.e., innovation and change processes—require social participation and acceptance. Germany should actively promote **civil society dialogue processes**, scientific exchange, joint research, as well as the **development of centres of competence for transformation in developing countries,** and set up a separate budget line for this. Top-down and bottom-up approaches need to be strategically integrated.

5. Acceptance grows with successful **pilot projects** that demonstrate examples of how energy transitions can be implemented on a small scale. Germany should invite bids, promote convincing project ideas, and when appropriate provide bilateral **partnerships** with relevant German stakeholders.

6. **International transformation partnerships** and targeted support for a few strategically and carefully selected First Mover Countries (»pioneer states«) with high ambition and suitable framework conditions can significantly accelerate the transformation process in these countries, and would be a good example of a new quality of international cooperation under the auspices of the universal goals of sustainable development. Such a strategy could be complemented by Europe. It should not be confined to large and medium-sized partner countries, but include small but ambitious, particularly vulnerable States.

7. Germany's international **climate funding** is an **investment in the future**: It has to be **financially secured and sustainable**, connected with a political commitment to a **growth path by 2020**, which corresponds to a fair German contribution to support a low-carbon development in developing countries.

8. The KfW has to sharpen its profile as the main development bank with a view to the megatrend climate change and end the current incoherence: All members of the **KfW banking group** should be committed to refraining from **allocating any new credit in the fossil-nuclear field**. Instead, the KfW should specialize in: (i) awarding **risk capital** for low carbon development projects in developing countries; and (ii) using the currently extremely favourable opportunities for borrowing, issuing a **green** »**International Energy Transition**« **bond,** and from this allocating low-interest loans for corresponding projects in developing countries.

9. In view of the capital, knowledge, and technology shortages in many developing countries, **foreign investment from the private sector** as well as business cooperation are indispensable elements to promote low carbon development in these countries. For this, however, politically set guidelines for the protection of environmental and social quality standards seem necessary. A certification of investors under ministerial participation would be a possible route.

10. Donors have to and can, assuming cooperation, work together more. The German **G7 presidency** provides the federal government a great opportunity to see to it that the G7 send a strong and credible signal to developing and emerging countries: Germany considers **climate protection and access to sustainable energy a priority global community task for everyone,** and recognizes its responsibility to support sustainable development in developing countries. To demonstrate credibility, the G7 should put together at their summit a corresponding **package** that includes significant **funding** (see item 8) and **elements of cooperation** (see item 6).

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Interviews

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The study was prepared by Climate & Development Advice, under the direction of Thomas Hirsch and the participation of Christine Lottje (evaluation of the German climate financing) and Tirthankar Mandal (participation in the interviews).

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