

Green finance in emerging markets

Capitalizing private investments in sustainable electricity production in developing countries

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The Deutsche Bundesstiftung Umwelt (DBU) funds innovative, exemplary and solution-oriented projects for the protection of the environment, with special consideration of small and medium-sized enterprises. The funding activities focus on environmental technology and research, nature conservation, environmental communication and protection of cultural assets.

Renewables currently make up around 46% of electricity generation in Germany (2019). In 2009, this figure was only 18%.¹ Around the globe, renewables accounted for approximately 26% of all electricity sources in 2018.² Germany has pledged to phase out not only nuclear power but also coal-fired power plants. The country's energy transition is making strides that were considered to be nearly impossible a few years earlier. However, critics find fault with the fact that Germany is failing to meet its climate targets and has not yet managed to comply fully with the requirements of the Paris Agreement on climate change. At the same time, energy costs in Germany are among the highest in Europe; private households in Germany pay over 30% more than those in comparable industrialized countries such as France, Italy or Great Britain.³

In this regard, the energy transition is an often underestimated political achievement because, despite the high energy costs for both business and consumers, a clear majority of the German population remains in favour of the realignment of the country's energy policies that is required in order to fight climate change. This is not

necessarily a matter of course, because even objectively necessary reforms can lose acceptance among the population in a democracy.

And yet, even if Germany picks up the pace of the energy transition, despite all the societal discussions surrounding grid expansion and the minimum distance requirements for wind turbines, and even if the country manages to meet the targets it has set in terms of decarbonization, the fact remains that Germany is only responsible for around 2% of global CO₂ emissions.

FASTER GLOBAL DECARBONIZATION NEEDED

The growth rates in terms of energy consumption in emerging countries such as China, India, the booming Tiger Economies of Southeast Asia as well as developing countries in Central and South America far exceed Germany and other Western European countries' capacity to cut CO₂ emissions.

For this reason, global consequences of climate change will only remain manageable if we are able to accelerate decarbonization on a global scale. Developing countries will continue to grow rapidly, thus increasing the wealth of their populations, which in turn will result in an increase in energy consumption. And why shouldn't they? After all, the per capita energy consumption in these countries today remains far lower than that of industrialized nations.

Moreover, when it comes to the aspect of fairness on a global scale, developing countries justifiably point out the fact that in the 20th century, industrialized Western countries were responsible for producing

the vast majority of globally tolerable CO₂ emissions in order to generate prosperity for their nations. Industrialized countries therefore have a particular obligation to help find climate-friendly power generation solutions on the international level. In addition to an increase in energy efficiency thanks to innovative technologies, which will also be a key component of solutions in the future, decarbonization is necessary in order to generate power that meets the growing needs around the globe in a more climate-friendly manner.

»Global consequences of climate change will only remain manageable if we are able to accelerate decarbonization on a global scale.«

After all, even if improved energy efficiency thanks to continually evolving technical innovations means that energy consumption does not necessarily increase in parallel with global growth, forecasts

show that worldwide energy consumption will rise considerably in the coming years.

The International Energy Agency (IEA) predicts an increase in global energy consumption of more than 25% between 2019 and 2040.⁴ The IEA anticipates the rise in energy consumption to be particularly high in Southeast Asia (+67%) and India (+109%), whereas during the same time period, a decline of 12% is predicted for Europe. For the US, the organization anticipates a slight increase of 3%. The basis for these estimates, however, is a continuous improvement in energy efficiency. If this is not taken into account, the rates of increase will nearly double.⁵

STRONG DEMAND FOR INVESTMENT IN THE ELECTRICITY SECTOR

The energy industry will continue to gain importance in terms of electricity production for reasons of climate protection. While electricity consumption is only rising slightly in developed, industrialized nations, it will double in developing countries. And in both developing and developed countries, affordable clean energy that is available to everyone is at the heart of strategies both for economic development and reducing emissions. Electrical motors in China alone are responsible for one-fifth of the increase in global energy demand. Increasing demand for cooling systems in developing countries is resulting in a similar growth push.⁶

In India, a great deal more than half of the primary energy consumption is currently covered by around 350 GW of installed capacity that is powered by coal. Taking into consideration newly constructed, low-emission facilities and the closure of particularly high-pollution

coal power plants, the capacity of the coal power plants is expected to remain at 238 GW in 2027, which is just 11 GW below the 2016 level.⁷ In 2017, India was responsible for 11.4% of global coal consumption, and up to 82% of the electricity in the country was generated using fossil fuels; in 2019 it was still 79%. However, the Indian government has pledged to quickly expand power generation through renewable sources because the use of coal to generate electricity currently accounts for around 35% of the country's entire CO₂ emissions. The aim is to generate 175 GW through renewable sources by 2022, with the vast majority coming from solar energy, followed by wind energy, bio energy and small hydropower plants. In the National Electricity Plan 2018, the planned production capacity of 175 GW was increased by 100 GW to 275 GW by 2027.⁸ With an absolute capacity of 78 GW, India is currently the fourth-largest producer of renewable energy after China, the US and Germany.⁹

Procurement of capital for investments in power generation is a challenge in India, because the interest rates charged by domestic banks are in the two-digit range, as well as because of issues of technical grid management, slow-moving government agencies and corruption.

Around the world, nearly one in every three dollars invested into energy supplies (all areas taken as a whole) goes to power generation and distribution in developing countries. However, the necessary investments could fail to materialize, especially in places where end-consumer prices are too low to cover costs.¹⁰

In order to comply with the goals set out in the Paris Agreement, investment

in renewable energies must increase, and not only in emerging market countries. According to the Allianz Climate and Energy Report 2018, USD 886 billion must be invested annually in the energy industry of G20 countries by 2050.

»The expansion of renewable energies in many developing countries is progressing comparatively slowly.«

According to these figures, the capital required in the energy sector in the US, for example, totals USD 158 billion, which is nearly three times as high as the actual investments of USD 57 billion that have been made in renewable energy. In 2017, China invested around USD 133 billion into renewable energies, and yet it would need to invest USD 314 billion annually in order to be on track to achieve the goals of the Paris Agreement in terms of its energy sector. In India, the number of solar power installations doubled in 2017, and wind energy has also seen a significant uptick in installations. However, with investments

in renewable energies of USD 11 billion in 2017, India did not even reach 10% of the required total of USD 160 billion.¹¹

Despite growing global investment in renewables for power generation, we are still in danger of losing the race against the growing demand for energy around the world.

MOBILIZATION OF PRIVATE CAPITAL IS ESSENTIAL

Without mobilization of private capital, the necessary investment amounts will not be reached, and certainly not in emerging markets and developing countries.

At first glance, it is truly astonishing that countries which, given their geographic location, have excellent opportunities for the use of renewable energies, do not take greater advantage of this fact. Solar and wind energy would not only be more effective in Africa, the Middle East and the Gulf States than in Germany, but also in many Asian countries, in India, and in South America. In India, the sun shines more than 300 days a year on average. As a result, the irradiation levels there are twice that of Germany.¹² Despite this fact, the expansion of renewable energies in many developing countries is progressing comparatively slowly.

The reasons for this are manifold. Many of these countries have a centralized energy infrastructure that is based on fossil fuels and they are not necessarily intrinsically motivated to invest large sums of capital into reforming their current energy supply. The existing energy infrastructure provides jobs for the population, which, as in industrialized countries, leads to inertia. For a long time, renewable energies were not competitive in these countries in terms

of cost. A lot of countries are also lacking financing options because often the local energy providers are not stable enough on their own. Moreover, local banks in developing countries tend to issue loans with shorter terms than is compatible with investing in energy grids.

»Political risks associated with investments in real value assets in developing countries are a major problem.«

However, as a result of the technical advances made in terms of renewable energies, thanks in great part to the pioneering work of countries such as Germany, production costs for renewables have sunk so low over the past few years that they are not only increasingly competitive even without public subsidies, but are also an attractive investment opportunity for private investors. Today, in countries such as Germany, France and Italy as well as in Scandinavia, many more institutional investors, such as foundations, life insurance companies or pension funds, are in-

vesting in renewable energies as a matter of course than in the past.

Therefore, if making investments in renewable energies is attractive to investors in these countries, it must be at least as attractive if not more so in developing countries where the geographic conditions for the use of wind and solar energy are much better.

In fact, there are currently a number of investment opportunities in these kinds of emerging market funds, which are often marketed under the umbrella of impact investing. One example in Germany is the Emerging Markets Renewables fund offered by Evangelische Bank, which is based on investments from the German Investment Corporation (Deutsche Investitions- und Entwicklungsgesellschaft (DEG)), which is a subsidiary of KfW Group. The fund includes projects for wind power, hydropower, solar energy and geothermal energy in Central and South America and in Africa. Investors can rely on DEG's many years of experience, while DEG can more broadly diversify its portfolio through additional private investment capital. The fund remains a relatively niche product that attracts little interest among the vast majority of institutional investors.

For this reason, it makes sense to look at the barriers to entry because, despite the fact that the zero-interest and negative-interest phase has continued for a number of years now, there is a great deal of available private capital around the world that is still looking for investment opportunities which do not necessarily promise extravagant returns. This capital could be invested in a climate-friendly global power supply as soon as the conditions for all parties are sufficiently attractive.

POLITICAL RISKS AS A BARRIER TO ENTRY

Political risks associated with investments in real value assets in developing countries are a major problem. For example, as soon as there are indications of a crisis in these countries, stocks or publicly listed bonds can be sold off relatively quickly on the stock exchange – although this may be at a discount – which helps to reduce losses. Illiquid investments in material assets such as real estate, infrastructure projects, or even investment in the generation of renewable energies comes with a significantly higher risk because the investor would be forced to watch, largely helpless, should the political conditions in the country take a negative turn.

Civil war, corruption, massive shifts in taxation, regulations to the movement of capital, and expropriation can result in everything from high depreciation costs all the way to complete losses because the sale of the assets would become practically impossible in the event of a crisis. Taking into consideration that the standard investment periods for these kinds of investments are between 10 and 30 years, it is clear that these risks become considerable over the entire timeline.

Deutsche Bundesstiftung Umwelt, DBU (German Federal Environmental Foundation) has had illiquid capital investments in emerging countries in its portfolio since 2006. This has demonstrated that not only are these risks theoretical in nature, but also that they may be overestimated by investors. In terms of the DBU's investments in microfinance funds, there have been, for example, problems with corruption in Nicaragua, issues in Kenya with political unrest and violent conflicts after

a contested presidential election in 2008, as well as massive corruption in Honduras, all of which have had negative effects on the anticipated returns. When we look at the totals across all investments, there were some returns that were lower than the initial estimates on the part of the initiators; however, there were no total losses or depreciation of the invested capital. However, the fact that the actual returns were somewhat less than anticipated by the initiators of the funds is not unusual, even in traditional asset classes such as real estate funds.

Naturally, the latest political developments in Central and South America in 2019 are anything but encouraging for investors in illiquid real assets. Whereas initially it was only Venezuela that was spiralling further into a serious political crisis, over the course of the year, massive unrest took hold in Columbia, Ecuador, Bolivia, and even in countries that had been considered relatively stable, such as Chile. The reasons for the political unrest and protests are all different, and it is essential to consider the situations in each country on an individual basis.

For example, in Ecuador, the protests were sparked by increases in petrol prices; in Bolivia, it was a president who refused to relinquish power and eventually ended up in exile in Mexico; in Chile it was fare hikes for the buses and the metro, coupled with increases in the cost of living, that caused the pre-existing discontentment with the government among the general population to boil over into mass protests. One common denominator all of these events share is growing mistrust of politicians among the population and the inability on the part of politicians, both on the right and the left,

to strike a balance between competing interests and find workable compromises. The inability to compromise in the political sphere brings with it the latent danger of political unrest and a radical political shift in the opposite direction, with all the corresponding risks for investors in illiquid real assets.

However, focusing on investments in power generation through renewable energies rather reduces potential risks, because people will always need power, and therefore turnover is always guaranteed, even in the event of a radical political re-orientation. Whether the energy is paid for as agreed is another question. Interventions into the legal positions of the investors poses another risk. However, drastic measures such as expropriation are rarely taken, even in emerging countries, because governments understand that this will result in all foreign investments into their domestic economies quickly grinding to a halt, and that the resulting damage to their economies would greatly outweigh any potential advantages.

Naturally, even developing countries have their own national jurisdictions. However, the investor must therefore determine whether or not the benefit-cost ratio of legal proceedings makes sense not only from a legal point of view but also from an economic one, taking into account the structure and impartiality of the justice system of the country in question as well as the possibility of legal recourse in the event of government intervention or against local business partners.

A lack of understanding of the specific situation in the individual countries can result in a disproportionate increase in risk perception on the part of the investor,

which in turn causes them to tend to reject these kinds of capital investment. Even for professional ratings agencies, this is listed as a reason why many developing countries are quickly grouped in the non-investment-grade segment in terms of their rating.

Another pragmatic aspect to be considered is that, for institutional investors, write-offs result in investment committees raising questions as to whether these kinds of capital investments make sense economically more often than, say, write-offs after a stock market crash in established markets that everyone is aware of and in which everyone understands the after-effects.

RISK MANAGEMENT THROUGH GOVERNMENT INSTITUTIONS OR DEVELOPMENT BANKS

One way to facilitate these kinds of investments is to use third parties to buffer against risks, in particular the public sector or international development banks. Projects that fund power generation through renewables in emerging countries are particularly well-suited to this kind of risk coverage. For the public sector, these kinds of public-private partnerships (ppps) could be a very attractive model because the involvement of private investments serves to leverage the funds that they invest, which in turn multiplies the positive impact on the climate.

The objective is not to protect the investor, who is naturally also interested in returns, from any and all risks, but rather to reduce the specific political risks associated in particular with investing in illiquid climate protection assets in emerging countries, in order to establish a counter-

weight to a risk perception that may be inflated, for example in the form of “first loss tranches”.

»Investment-ready projects cannot simply adopt the standard business models of European funds.«

These tranches allow potential investors to choose from different tranches. The first tranche offers the highest returns, but is also forced to absorb first losses. In the second tranche, investors only absorb losses in the event of a reduced return when the first tranche has absorbed its losses in full. In the third tranche, risk is very low, because it will only be forced to absorb losses when the first two tranches have experienced full losses. Accordingly, return in the third tranche is significantly lower. However, in general, the return is still higher than it would be in comparable liquid bonds such as a green bond. These platforms allow investors to choose between expected return and risk profiles. Public institutions or development banks would then invest in

the first, high-risk tranche, therefore absorbing the first losses.

The European Energy Efficiency Fund (EEEF) works according to this model. In a recently launched fund that supports projects in Europe with a target volume of EUR 500 million, the European Union is currently invested in the most high-risk tranche with EUR 100 million. This results in a risk buffer of at least 20%. Private investors are currently being sought for the second and third tranches.

The social start-up Africa GreenTec has launched a significantly smaller public offering. With a EUR 10 million loan, the company has financed the delivery and installation of 50 solar containers in Mali, thus providing up to 250,000 people with access to clean, inexpensive, reliable energy. The brightly colored containers are equipped with photovoltaic modules as well as a battery and can provide hundreds of households with power day and night. The investment is secured by a guarantee provided by the Federal Republic of Germany for direct investments abroad. Investors, including the DBU, bear a deductible of 5%; in the event of damage caused by war, the deductible is 30%. The returns of 6.5% p.a. are at risk. However, for many institutional investors, the total of EUR 10 million is too small-scale, and an individual project in Mali is too far off the beaten path of traditional investments. As a result, the bond has not yet been fully placed.

LACK OF MARKET COMPATIBILITY

Project funds in Europe such as the EEEF are generally designed for much larger sums than those used in the example in Africa. The economic power in developing countries is much lower, which means

that projects are generally much smaller in scale than in industrialized nations. This makes them uninteresting to many fund initiators who are looking for projects in the tens of millions for a EUR fund with hundreds of millions to invest. For this reason, investment-ready projects cannot simply adopt the standard business models of European funds, because the project scales do not match and, moreover, the transfer often needs to be regulated in a local currency that is much more volatile and significantly weaker. A look at how microfinance funds are structured could be helpful: in these funds, local microfinance institutes (MFIs) play an important role in terms of distributing investment resources on location.

When applied to the energy sector, fund management could be the responsibility of reliable local banks that in turn allocate the resources to the smaller projects. The local banks could in turn guarantee longer maturities than are standard in emerging market countries. This would also serve to alleviate a financial bottleneck in a developing country.

Furthermore, a basic level of acceptance for these projects must be achieved in the target countries. To this end, negotiations are not only necessary on the governmental level, but the local interests in these areas must also be considered. For this reason, the involvement of local banks for the distribution of investment resources in local currency makes sense because they know their regions better than anyone. Similar to an MFI when it comes to microfinancing products, involving local banks establishes an important local connection that can be key in terms of a project's success – for example, if a local government administration in the target

country makes a project unnecessarily difficult or causes delays because they are skeptical about foreign investors.

One investment project that has already paved the way in Germany is the Universal Green Energy Access Program (UGEAP) for countries south of the Sahara. The project was initiated by the UN Green Climate Fund (GCF) together with the German asset manager DWS as the investment manager. This project offers institutional investors access to growth markets in Africa, while capital from the GCF serves to protect investors against losses. In terms of investments in green energy projects, DWS uses the local expertise of its partners in the target countries, and in particular local banks and renewable energy companies there. In the first phase of UGEAP, the project is investing in projects in Benin, Kenya, Namibia, Nigeria and Tanzania. The governments of these countries support the UGEAP fund.

»The structures of capital investments are often extremely complex.«

COMPLEX AGREEMENT STRUCTURES

Another obstacle that should not be underestimated is a technical one: the structures of these types of capital investments are often extremely complex and the agreement paperwork is often extensive. For

many institutional capital investors, this is a serious regulatory problem in terms of existing investment guidelines.

Many of these funds for capital investors take the form of a SICAF (société d'investissement à capital fixe) in Luxembourg – a collective investment scheme for capital investing with a fixed base capital that generally does not allow investors to leave the fund before maturity. As opposed to a German investment company, a SICAF is not a separate fund but rather an independent legal unit with its own management and management board. The agreement paperwork is accordingly comprehensive.

As a result, up to now, the EEEF of the European Union has had limited success in attaining private investors even though this fund allows for temporary involvement with an option to choose between various periods of involvement in the form of a SICAV (société d'investissement à capital variable) in which the base capital is variable and there is a range of possible multi-year maturities.

However, many institutional capital investors are not permitted to get involved with these types of funds, or involvement is associated with major administrative hurdles. But even if internal and external regulatory frameworks allow an investor to get involved with these kinds of investments, there is often an understandable amount of reluctance regarding complex structures and agreements of this nature. Moreover, the admissibility of investments in these types of structured products often involves strict limits in terms of a mixture within the framework of diversification of a portfolio. Investors prefer to use these limits for higher-yield investments than

for safe tranches with correspondingly limited returns.

GREEN BONDS ARE A GOOD POINT OF ENTRY

Special green bonds for financing investments for the generation of renewable energy in emerging countries, initiated, for example, by development banks in industrialized nations, could also help solve issues of financing. To investigate the effectiveness of green bonds, the DBU commissioned a study by the Südwind Institut in Bonn and published the results in 2019.¹³ KfW Group has paved the way in Germany when it comes to green bonds. Since April 2015, KfW Group has built up a global green bond portfolio with support from the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety. The portfolio finances projects for climate protection and environmental conservation. KfW Group's objective is to invest a total of up to EUR 2 billion in these bonds. Around the world, green bonds totalling USD 150 billion are currently issued every year.

However, not every green bond is necessarily as "green" as one might hope. In the study, which was entitled "Great Expectations – Credibility and Additionality of Green Bonds", it became clear that out of more than 400 issuers of financial instruments, less than half disclosed the actual projects that would be financed with the green bonds. One positive finding, however, was that Südwind only determined 2% of the roughly 3,000 projects evaluated to be problematic because there was no clear ecological benefit. Furthermore, the study determined that green bonds also resulted in an additional boost for projects in emerging markets and developing

countries because they actually serve to redirect more private capital to sustainable projects in these countries that would otherwise have no financing options available to them.

»Green bonds could be a good point of entry into climate protection investments in developing countries.«

Another advantage of green bonds is that they have a much higher liquidity because they are often traded on stock exchanges. This significantly lowers the barrier to entry for investors without any specific experience or expertise in the area. For this reason, green bonds are becoming increasingly popular. According to an analysis carried out by the ratings agency Scope, green bonds with a total volume of USD 118 billion were issued in the first half of 2019. This corresponds to a growth of 48% compared to the previous half-year.¹⁴ However, as with bond markets, the returns on the whole are much lower than

for direct investments in real assets. Still, green bonds could be a good point of entry into climate protection investments in developing countries for risk-averse capital investors with low return expectations.

SUMMARY

Overall, it should be noted that there are a number of hurdles keeping institutional investors from investing more in environmentally friendly power generation in developing countries. As a result, demand remains modest for the few investment projects that currently exist. However, as a number of existing projects have demonstrated, these problems can be solved. Nevertheless, it is clear that it is not sufficient to simply solve one of the problems, such as buffering for political risks, a lack of liquidity, or complex agreement structures. There are not enough offers that properly address all investment obstacles and make it easier for investors to decide to invest.

Given the challenge of significantly increasing the amount of power generated by renewable energies, both in industrialized nations and in developing countries, and given the investment capital currently available around the globe that is urgently searching for investment opportunities, it is worthwhile to consider possible solutions that could result in a win-win situation for investors, developing countries, and for environmental protection. This will require close cooperation between institutional investors, their regulatory bodies, providers from the financial sector, and partners in developing countries.

¹ Fraunhofer ISE, Public Net Electricity Generation in Germany 2019, January 2020.

² REN Report 2019, page 29, 41.

³ Eurostat 2019.

⁴ IEA World Energy Outlook 2019, Overview.

⁵ BMWi, "Energiewende direkt" newsletter, 11/2018, World Energy Outlook 2018.

⁶ World Energy Outlook 2018, German Summary, page 3.

⁷ Indo-German Chamber of Commerce, Energy Efficiency and Self-supply with Renewable Energy in Industry in India, target market analysis 2019, page 14 f.

⁸ Indo-German Chamber of Commerce, Energy Efficiency and Self-supply with Renewable Energy in Industry in India, target market analysis 2019, page 16.

⁹ REN Report 2019, page 42.

¹⁰ IEA, World Energy Outlook 2018.

¹¹ Allianz Climate and Energy Monitor 2018, pages 21 and 22.

¹² Indo-German Chamber of Commerce, Energy Efficiency and Self-supply with Renewable Energy in Industry in India, target market analysis 2019, page 1.

¹³ Great Expectations – Credibility and Additionality of Green Bonds (German: Große Erwartungen – Glaubwürdigkeit und Zusätzlichkeit von Greenbonds), Südwind Institut, Bonn, 2018.

¹⁴ Scope Analysis, Green Bonds Fund, December 2019.