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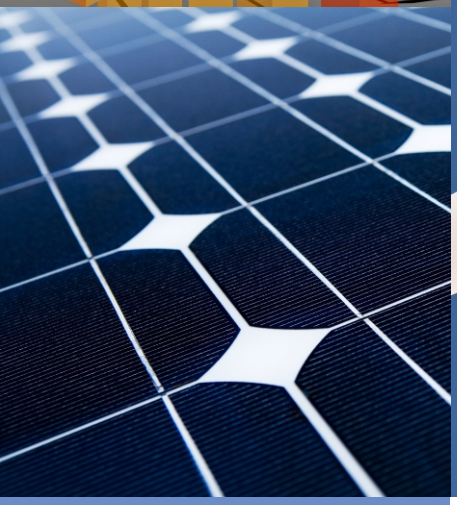
Improving Investment Conditions for Wind and Other Renewables in the Developing World

Challenges, Prospects & Solutions



WWEA
World Wind Energy Association

Welt-Windenergie Verband
Asociación Mundial de la Energía Eólica
世界风能协会
세계풍력에너지협회
Всемирная Ветроэнергетическая Ассоциация

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This conference summary is a part of the second phase of the project, "*Making Sustainable Energy Policies in the Developing World More Effective: Evidences from Pakistan's Wind Energy Market*." The phase is being implemented in collaboration with AVT Channels (Pvt) Ltd (Pakistan), the Foundation for International Dialogue of the Savings Bank in Bonn, Sapphire Wind Power Ltd (Pakistan), and WinDForce Management Services Pvt Limited (India).

This report has been co-authored by Sohaib Malik and Nopenyo Dabla and edited by Stefan Gsänger.

The WWEA acknowledges contributions of the distinguished speakers and participants.

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Robert Dixon, Global Environment Facility
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Preface by the World Wind Energy Association

Wind energy has become a success story during the past two decades, starting in several European countries like especially Denmark, Spain and Germany, with substantial growth also in the USA.

These countries have managed to establish wind power as a main pillar of their power supply scheme – today, wind farms are mainstream technologies usually seen as low-risk investment by banks.

As one consequence, wind power has become a very popular investment also for "average" citizens, in particular in Germany and Denmark, hundreds of thousands of citizens have contributed their savings as equity for building up a renewable energy supply.

For various reasons – access to energy, low cost, environmental sustainability – more and more countries have started to follow these examples, amongst them several developing countries: India and China and most recently Brazil have become leaders in wind investments as well.

However, many developing countries have tried but not managed yet to establish a domestic wind industry. One major barrier seems to be finance – access to capital is a general challenge in these countries, and wind power requires high up-front investment.

Hence we find ourselves in the paradox situation that people who need electricity would have money to pay for their monthly power bill – like they can afford to pay their regular mobile phone bill. However, they cannot afford the upfront investment, unlike European citizens, as they have problems to find a bank willing to lend them the necessary money.

This paper discusses the specific challenges related to such investment and wants to demonstrate that there are solutions to overcome this problem: Multilateral institutions like the Green Climate Fund should guarantee that the consumers will finally pay their bills. Eventually, I am very confident that the actual risks of such guarantees are rather small – but the benefit for the poor and for the climate would be huge.

Stefan Gsänger

Secretary General
WWEA

Contents

Preface by the World Wind Energy Association	i
Part I: Policy Paper	**2**
Introduction	2
Renewable Energy Market Investment Trends	2
Renewable Energy Investment Risks	3
Case Study: Pakistan's Wind Energy Market	4
Risk Mitigation Strategies	5
Conclusion & Recommendations	8
Bibliography	10
Part II: Summary of Conference Presentations	**11**
Session 1: Investment Conditions in RET Sector: Evidences from Pakistan's Wind Energy Market	12
Sohaib Malik, World Wind Energy Association	12
Khalid Aslam, Sapphire Wind Power Ltd Pakistan	13
Khawaja Muhammad Naeem, National Electric Power Regulatory Power Regulatory Authority, Pakistan	14
Session 2: Mapping the Sufficiency of Existing Support Mechanisms for the Developing World	14
Laura E. Williamson, Renewable Energy Policy Network for the 21st Century (REN21)	14
Robert Dixon, Global Environment Facility	15
Dr. Roland Rösch, International Renewable Energy Agency	15
Dr. Jan Martin Witte, KfW Development Bank	16
Session 3: Devising the Way Forward	17
Carolina Fuentes, Green Climate Fund	17
Stefan Schurig, World Future Council	17
Michael Taylor, International Renewable Energy Agency	18
Dr.-Ing. Patric Kleineidam, Lahmeyer International GmbH	18
Maryke van Staden, ICLEI Local Governments for Sustainability	18

Part I: Policy Paper

Introduction

Developing and emerging economies have fast become major players in renewable energy markets. Primarily driven by an increasing demand for energy, these countries are promoting renewable energies to diversify their energy mix and reap the environmental and economic benefits. Although there exist global consensus to limit the use of fossil-fuels in developed and developing countries alike, the developing world may benefit from the opportunity to leapfrog in renewable energy technologies (RET). Many developing countries, however, face a comparative disadvantage in attracting much needed private capital. Emerging economies, China, Brazil, South Africa and India, however remain exception in this regard.

Create enabling environment and scaling up private capital availability in developing markets remain key policy goals. Higher level of (perceived) risks, inefficient energy market structures, lack of sufficient support mechanisms, among others, remain key barriers in renewable energy market developments. Although these countries are striving to devise policies and overcome these barriers, they lack the required scale of financial and technological resources. Therefore, a growing realisation to assist the developing world and establishing multilateral institutions such as the International Renewable Energy Agency (IRENA) and the Green Climate Fund (GCF) are steps in the right direction.

Following a call from the GCF, recent financing pledges made by various countries, mainly led by developed economies, to leverage private investment flows for climate finance are believed to enable developing countries in meeting their renewable energy deployment goals along with dealing with climate change adaptation issues.

Realising the need to assess the existing support frameworks and develop new mechanisms to assist developing countries, the World Wind Energy Association (WWEA) initiated a research project in Pakistan; documented policy lessons; and convened an international conference involving a variety of experts from the public and private sectors. The discussion focused on mapping the need for support mechanisms, analysing the existing framework at various levels, and engineering policy tools for international policymakers intending to make their efforts more efficient and effective. One important barrier which has been identified is access to finance – mainly due to perceived risk of the investment and lack of knowledge in the domestic finance sector. It is obvious that other developing countries are facing similar challenges.

This paper summarises the discussion on the current challenges related to financing wind power in developing markets and while converging them with the deliberations that took place at the conference, aims to assist decision makers in the private and public sectors engaged in the development of renewable energy markets in developing countries – in particular aiming at helping decision-makers in international organisations.

RE Market Investment Trends

Global renewable energy (RE) market attracted USD 40 billion in 2004[1]. Having reached its peak

[1](FS UNEP Centre - Bloomberg New Energy Finance, 2014)

in 2011, USD 279 billion, total investments made in 2013 are estimated at USD 214 billion.[2] Although the market share of developed economies is more than the developing countries', the latter's share has been steadily increasing over the past decade. For instance developing economies' share exceeded 40 percent in total investment, estimated to be 20 percent in 2004. This growth has been led by China, Brazil and India. These countries account for more than three-fourth of the total investment made in developing countries' RE markets.

In terms of technology, solar power was the lead recipient of investments; attracting USD 113.7 billion, recording a 20 percent decrease over the past year. Due to the sharp decline in costs and increased efficiency, 39 GW generation capacity was added for solar PV with 20 percent less money required for 30 GW capacity addition in 2012.

Wind energy market remained resilient. There was rather modest 35 GW capacity addition during 2013[3] with a mere one percent decrease in overall investments[4] - and encouraging 17,6 GW installed in first half of 2014. Interestingly, developing economies' investment in wind power overtook developed countries. The same stands true for small hydro where developing countries' new installed capacity is significantly higher than their industrialised counterparts.[5]

RE Investment Risks

Growing share of investment in renewable energy markets or installed capacities are not good indicators in assessing RE market growth in the developing world. Given that when one excludes emerging economies, China, India and Brazil, investment flows toward these markets would become less encouraging. This is not particularly the case with these markets; the risk weights assigned to investments in these (risky) economies make them less attractive destinations for private investors who would prefer to have invested in emerging economies with positive performance outlook. The fact however remains that developing nations cannot be left entirely on the choice of capital markets, which could further deepen the economic inequalities through conventional risk pricing models. Moreover, the allocation of resources in developing countries' RE markets has to be ensured to meet global development goals to eradicate poverty and accelerate economic growth.

In general, the risks related to wind power investments are low, given the maturity of its technology and predictability of the harvested power over the lifetime of a project. However, wind energy has the speciality that it has almost no operational cost and high up-front investment is needed. This naturally increases the risk of the initial investment hence is the decisive factor out of the three risk categories: policy and regulation, market and financial, and technical. The risks pertaining to policy and regulation are associated with power market design, existing laws and regulations, renewable energy policy, support mechanisms etc. When the governments are perceived to have failed in offering “fairly attractive” incentives for investors, they may deprive themselves to attract private investment.

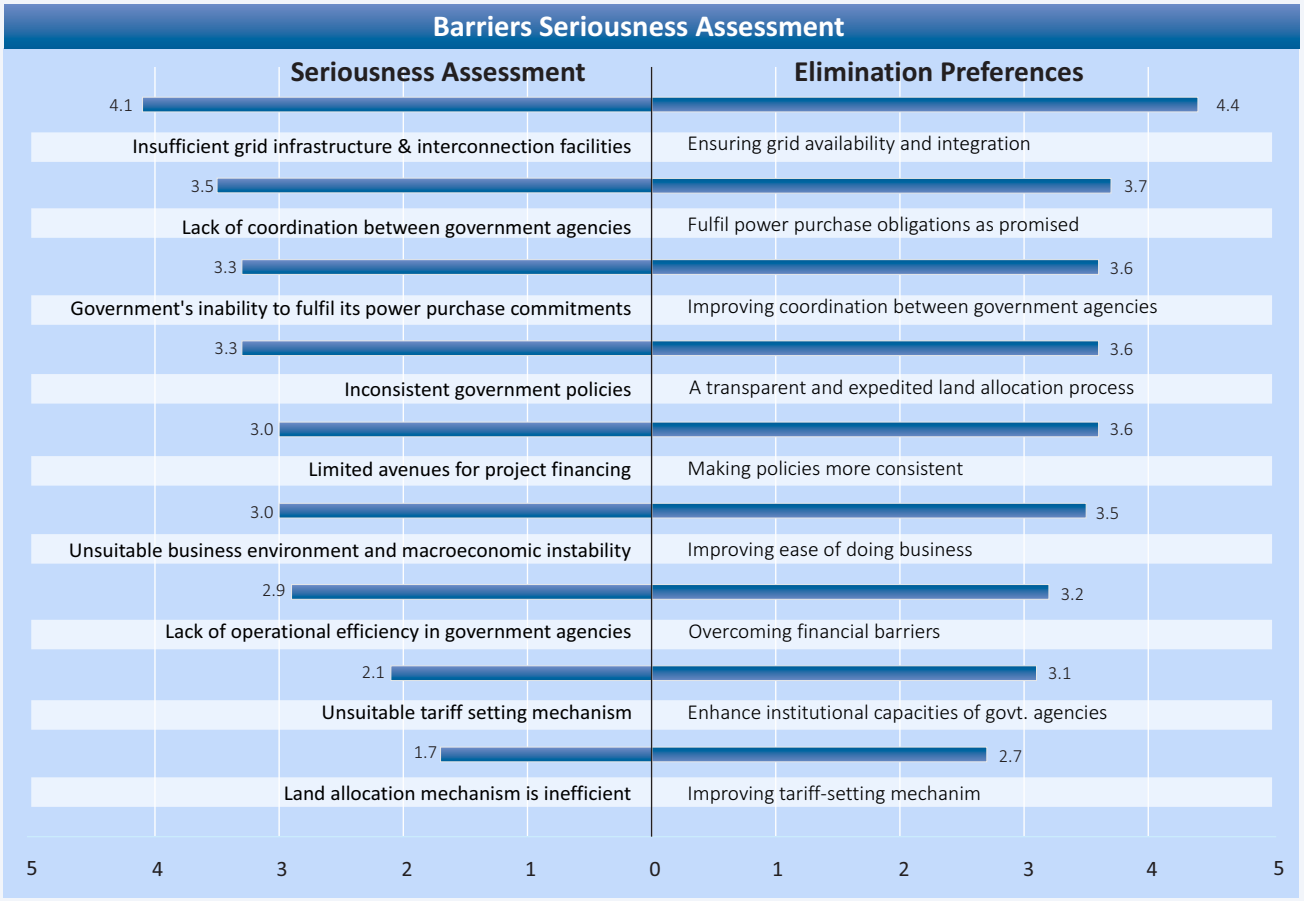
[2](Climate Policy Institute, 2014)
[3](WWEA, 2014)
[4](REN21, 2014)
[5](REN21, 2014)

[6]For a detailed list of the nature and types of RE investment risks please see (Justice, 2009)

Case Study: Pakistan's Wind Energy Market

Pakistan's wind energy market faces numerous barriers common in other developing countries as well, namely insufficient grid infrastructure and inefficient policy implementation. Although the barriers pertaining to financing projects have been assigned moderate-level seriousness, the cost of capital is significantly high. Moreover, if the project sponsor is not an established business house, it was observed that the project faced serious problems to raise debt from domestic or international markets. Similarly, the cost of capital raised by various developers is very high due to factors such as high country risk, inflation etc. Finally, the financial sector had a mixed response with respect to financing more projects due to the reported higher level of lending exposure taken at the energy sector in the country. Therefore, if the country needs to develop additional renewable energy projects, it shall have to rely on foreign capital and debt markets.

Based on these observations, the conclusion can be drawn that: a) Pakistan faces scarcity of financial resources to achieve its policy goals to deploy RETs, b) the available resources are costlier due to higher financial risks. Other developing countries that are experiencing a lack of macroeconomic stability face similar barriers that need to be eradicated through offering a reliable enabling environment and mitigating investments risks to ultimately lower the cost of RE power generation. As found by UNDP (UNDP, 2013), the cost of RE projects in developing countries are nearly 40 percent higher than in developed countries due to the risks associated with these investments. Given that public support can be mobilised to overcome this barrier, RETs will become far more competitive in developing countries than conventional sources of energy.



For example, Pakistan is offering at least 17 percent return on equity for renewable energy project due to higher country risk.

Financial risks, closely linked with macroeconomic stability, investment risk and an overall energy market performance, are the main focus of this paper. The nature of financial risks is diverse including foreign investment, liquidity, political risk etc. Although financial markets have developed various mitigation tools, they carry additional costs inflating the final cost of capital. Higher risk perceptions push the cost farther due to "risk and return basis" business model applied by financial institution.

Technical and project specific risks typically include technological maturity of a given technology, construction, operational etc. Wind technology is well known and can in general be qualified as low-risk, however, in terms of developing countries, these risks may also include the availability of interconnection and integration facilities for renewable energy power projects. The technological advancement and sufficiency of the grid infrastructure plays a crucial role once market starts developing because in the absence of appropriate power evacuation facilities, there would be no mechanism to sell the power generated.

For the Green Climate Fund or other development institutions it is utmost necessary to evaluate a given RE market in the context of market development stage and perceived risks followed by a tailor-made solutions approach. This remains a daunting task while taking into account the diversity of various markets and economies. However, there are some mechanisms that have proven more effective for RE deployment in various developing countries. It includes guaranteed payments for renewable energy project, e.g. Feed-in Tariff (FiT), specifically in the context of developing economies. It is however suggested that scaling up deployment doesn't necessarily imply economic or operational efficiency, which would be more dependent on the design of the entire RE promotion policy package (Azuela & Barroso, 2011).

Having been employed in many developing and emerging economies, FiT was piloted also in Uganda, officially named Global Energy Transfers Feed-in Tariffs (GET FIT), through collaboration between KfW Development Bank and Deutsche Bank supported by a consortium of developed countries' governments. GET FIT Uganda programme design employs various tools including guarantees and financial incentives in the form of premium payments for independent power producers (IPP) to lower investment risks and strengthen investors' confidence (Government of Uganda, 2014). Since Uganda didn't have such policy framework in place, the support started from the policy design phase. The consortium offered consultancy services and designed tailor-made tools. Given the innovation employed in this pilot project and its potential for effective risk mitigation, it might be considered to be adapted for different regional and national needs, extrapolated at larger scale though multilateral development institutions, such as the Green Climate Fund.

Risk Mitigation Strategies

This section focuses on a variety of policy tools that can be employed to mitigate financial risks or lower their intensity.

Developing countries' limitations in attracting private capital are widely known. From the start of the deliberations regarding climate change

mitigation strategies and the envisaged role of private capital, these limitations have been acknowledged at multilateral level. A partnership between developed nations and their support for developing nations to overcome these restrictions is being suggested for quite some time now. The idea to overcome financial barriers through creating a global fund to support a feed-in tariff programme was proposed by the WWEA already a decade ago and for the first time discussed on UN level at the Ad Hoc Working Group on Long-term Cooperative Action in 2009.[7]

The proposal was also actively supported by the International Renewable Energy Alliance[8] (REN Alliance) and endorsed by many other stakeholders. Deutsche Bank Climate Change Advisors (DBCCA) followed WWEA's initial proposals with developing a "Global Energy Transfer – Feed-in Tariff" policy tool with an aim to de-risking RE investments in a developing country context.[9] The World Future Council, however, converged the proposal for the GCF and a global fund for RE FiT programme in developing countries.[10] A detailed proposal for the GCF was developed to introduce a REFIT programme. This approach can be adopted by the GCF given that necessary policy adjustments are introduced.

Another possibility could be to documents the lessons from the GET FIT Uganda pilot and develop policy tools that can perform better. The bottom line would remain that the multilateral institutions shall have to support the developing world to break the vicious circle of capital inadequacy.

[7](UNFCCC, 2009)
[8](REN Alliance, 2009)
[9](DBCCA, 2011)
[10](Michaelowa & Hoch, 2013)

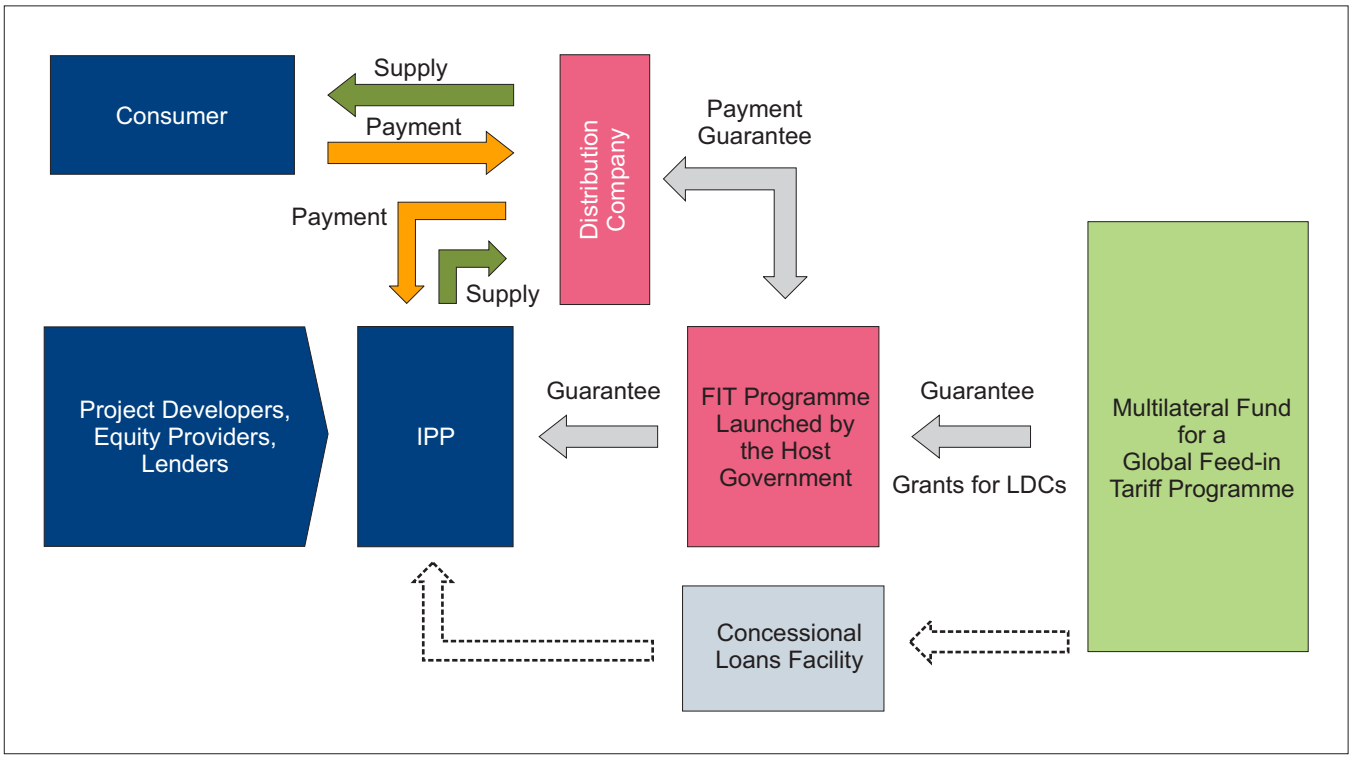
The following discussion highlights the policy options developed through relying on the GET FIT Uganda's design, policy lessons from Pakistan's wind energy market, and a strong need to develop such a mechanism to foster RETs deployment.

Figure 1, adopted from GET FiT Uganda with changes made by the authors, illustrates the model proposed to lower financial risks and scale up private sector investments in the developing world's RE markets through mobilising resources from multilateral institutions, e.g. GCF.

The key stakeholders involve: a) multilateral development institution, b) host country government, c) independent power producer, d) private sector commercial banks, e) distribution companies and f) consumers. The proposal is based on assumptions for a lower middle income economy's characteristics.

The multilateral institution, e.g. the Green Climate Fund, the Asian Development Bank, or the World Bank, will introduce a guarantee, in special cases combined with concessional loans scheme. The FIT guarantee for payment will be offered on behalf of the host country's government to Independent Power Producers (IPP) developing RE projects. Similarly, an additional public guarantee will be offered to the IPP on behalf of the transmission and distribution company (given that the company is a state-owned enterprise) to mitigate the risk of payment default by power purchaser. This approach will help the host country's government to lower the perceived financial risks and can improve the credit ratings for the renewable energy projects as well as eventually for the host country which does not need to

guarantee for such investment with its own assets. What is more important in this regard is the support from a multilateral institution that



tends to have reliable creditworthiness for international investors. Barriers Seriousness Assessment Another possible addition to the program could be capacity building for domestic banks and financial institutions through establishing a "Concessional Loans Facility". This facility can be either run through the governments, central banks, private sector banks, or through a combination of all. During the focus interviews conducted during the first phase of this project, it was observed that although many domestic banks in Pakistan are now funding RE projects, however, their initial reactions toward the RETs were not very encouraging. Moreover, their willingness to extend their RETs investment portfolio is not very promising. Therefore, creating a mechanism to offer concessional loans to these banks (e.g. on the model of export financing by federal banks through private sector banks) for the sole purpose of lending to RE projects developers can not only improve their knowledge at the initial stages of market development but can also strengthen their confidence in RETs. Once that purpose achieved, the flow of capital toward RE market from the domestic banks would also improve.

The case assumed earlier, i.e. lower middle income (LMI) economy, does not represent the characteristics of least developed countries (LDC). In the case of LMI, the availability of equity capital for project development is less serious problem when compared with the debt capital. Most of the projects being developed in Pakistan, for instance, have been initiated by domestic investors who do have equity to invest but face problems to raise loans for their projects. However, in the case of LDCs there can be serious limitations to raise equity capital.

Therefore, this case has to be treated differently.

For an LDC, it is suggested to have a financial support tool in addition to what is suggested for LMIs. There should be a grant mechanism and concessional loans for the private sector investors willing to invest in LDCs. This incentive would help to bridge the scarcity of equity capital in LDCs. Moreover, grants and concessional loans will make these investments cheaper when compared with market based conventional loan pricing

models, increasing the affordability of electricity.

Another avenue which needs equal attention is the grid infrastructure in developing countries. A mechanism to support these countries in developing necessary infrastructure for on-grid power solutions would also help to eradicate a key barrier in many developing countries.

Conclusion & Recommendations

After having established the fact that the human activity has been among the major causes of climate change, world policy-makers are now pursuing a goal to devise mitigation and adaptation tools to cope with these challenges. Establishing the Green Climate Fund (GCF) and recent financing pledges made by various countries to leverage private investment flows for climate finance are the steps taken in the direction. However, the journey to achieve the target of not allowing global temperature to exceed 2 degree Celsius above preindustrial levels to combat change requires clear decisions and setting of priorities for renewables.

The industrial activity found emitting greenhouse gases and causing climate change has been traditionally based in developed countries. The landscape is changing with the industrial advancement in emerging economies; however, per capita CO2 emission levels are significantly higher in high-income countries than their lower-income counterparts. The risks of climate change on the other hand, are not reciprocally exclusive for developed or developing countries. In this scenario the developing world seems worse off. It lacks resources to deal with the challenges where they played a trivial role in triggering such risks.

Many developing economies are growing rapidly, increasing their appetite for energy resources. Whereas fossil-fuel based energy resources that helped fuelling economic growth in today's industrialised economies have been identified as major sources of greenhouse gas emissions. Therefore, it is equally necessary that advanced economies transform their existing energy systems to renewable sources of energy and developing economies leapfrog technologically and reap the benefits offered by RETs.

Developing countries, despite having ambitions to deploy RETs to achieve socio-economic development, face multifaceted challenges caused primarily due to the energy market structures, ineffective investment regimes, higher (perceived) investment and also perceived technological risks. GCF's mandate to assist these countries in mitigation activities offers an opportunity to devise policy tools, improving investment conditions for RETs deployment consequently. Through offering guaranteed price mechanism for global FIT programme and extending necessary support for grid construction, the GCF can contribute to overcome the barriers faced by these countries. It is high time for the Fund, and other multilateral institutions, to assume leadership and assist the developing world in fighting climate change.

In developing such support mechanisms for these countries the first thing to be given due importance is a tailor-made policy making approach around the guarantee for the national FIT. After having assessed the country-specific needs, a mix of support mechanisms can be offered. However, financial limitations are commonly faced by developing nations and a common policy to promote global feed-in tariff can be proven more successful.

The potential offered by such policy tools can be better understood when considering the investment which could be leveraged with the USD 5 billion which have already been pledged for mitigation action by the GCF. Offering guarantees in the developing world, such amount could leverage 20-50 times the investment, which would lead to a total investment of around 200 billion USD - enough to install 100,000 MW of wind power capacity in developing countries.

It is equally important that the availability of the grid is ensured and the FiT programme enables RET deployment in an economically efficient manner because this efficiency would consequently ensure long term sustainability of these markets. Strengthening investors' confidence in RE markets through such innovative support mechanisms would push the RETs cost downward, improving their competitiveness further with the conventional sources of energy. Only a strong and steady increase in RETs deployment and phasing out fossil-fuel based energy sources can ensure a secure common future for us.■

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Part II: Summary of Conference Presentations

Improving Investment Conditions for Wind and Other Renewables in the Developing World

Challenges, Prospects & Solutions

24 October 2014
Bonn, Germany

Conference Supporters

The World Wind Energy Association organised an international finance conference on 24 October 2014 in Bonn. The discussion was initiated by a case study WWEA had conducted in Pakistan and the event primarily focused on drawing lessons that can be helpful to governments, the private sector, and other institutions involved in the development, promotion and/or financing of RETs projects in the developing world. For that purpose guest speakers from all sides of the spectrum were invited to give their views and elaborate on the prospects and challenges that lie on the path to achieve the goals of renewable energy technology (RET) deployment set by various regional, national and multilateral institutions.

The conference comprised four sessions covering respectively the investment conditions in RETs sector in Pakistan, an evaluation of existing support mechanisms for the development of RETs in the developing world, the way forward for multilateral support mechanisms, and an interactive session to summarise the previous discussion and deliberate on the possibility of devising new policies; with the goal of complementing the work of multilateral institutions through mapping of the priority areas to be promoted.

Session 1: Investment Conditions in RETs Sector: Evidences from Pakistan's Wind Energy Market

This first session focused on the recent developments in Pakistan's wind energy market, based on the research conducted in the country and on the contributions of actors from the private sector, regulatory and policymaking institutions and financial sector. The following sections describe the key points of the presentations that were given.

Sohaib Malik, Research & Policy Analyst WWEA

During the first phase of the project, Sohaib Malik conducted research on the barriers to the scaling up of wind power in Pakistan and how to overcome these barriers, approaching the topic from a perspective that includes not only the policymaking side but also the private sector and the regulatory bodies, with which such development would be difficult, if not impossible. During his research, Malik has answered the following research questions:

- Which barriers does the Pakistan's wind energy sector face?
- Why the support mechanisms offered by Pakistan have been unable to deliver the desired results?
- How can Pakistan's existing public policies and support mechanisms be adapted to address these barriers?

Following the study, the main barriers, as seen by investors, found were the inefficiency of the grid infrastructure & interconnection facilities, the lack of coordination between government agencies, the government's inability to fulfil its power purchase commitments and lack of financing avenues for the private sector. When it comes to their preferences of which barriers should be eliminated, the investors are of the view that ensuring grid availability and integration, the fulfilment of power purchase obligations by the government, the improvement of coordination between government agencies, a transparent and expedited land allocation process and more

consistency in the policies as being more important.

Many of these leading barriers are closely linked with the government's inability to implement the support mechanisms more effectively. For instance, the grid infrastructure's unavailability is directly dependent on the off-taker's and distribution companies', owned by the government, financial limitations. The grid development plan has been announced recently and it is expected to offer interconnection facilities to the projects under-construction once they are complete.

Focusing on the financial limitations, it was observed that relatively smaller projects, ranging from 5-20 MW, are facing serious problems to raise funds for project development. Equity capital does not seem to be a serious problem in this context, however, financial institutions' perspective does not offer a very promising outlook for the sector. The domestic banking industry has reached the limits of its financial exposure for the energy sector, mainly based on fossil-fuels, and does not seem convinced to increase its credit exposure. Therefore, it might be expected that when more project developers show their interest in developing renewable energy projects, these limitations tend to escalate.

Developing mechanisms that would strengthen private banks' confidence in renewable energy sector is necessary. For this purpose, it was suggested that the government must develop the grid infrastructure as announced. Along with that the policy for supporting REs should remain unchanged for foreseeable future so that financial institutions find it reliable.

Khalid Aslam, Director Sapphire Wind Power Ltd. Pakistan: "Private sector perspective – Pakistan's wind energy market"

Khalid Aslam highlighted the investment climate in Pakistan with a project developer perspective.

- the guaranteed 17% Return on Equity
- tax-free returns
- the guarantee from the Pakistani government to secure all payment obligations of the power purchaser
- 100% profit repatriation
- relief from double taxation
- protection of reforms including privatization, through constitutional amendments
- the permission to project companies to raise local and foreign financing

In addition to the incentives listed above, government of Pakistan has approved a "security package" that includes an implementation guarantee between the IPP and the government, an Energy Purchase Agreement and a sovereign guarantee. Aslam also went on to introduce the Wind Power Tariff structure and how initiatives to incentivise foreign investments have been inserted into this scheme as well.

Although these incentives seem to have attracted handful project developers, domestic banks faced problems regarding capacity limitations and knowledge about RETs sector. In addition to that, may developers have been successfully trying to tap resources from international financial markets. Given that macroeconomic risks can be mitigated, new developers and markets players are anticipated.

Khawaja Muhammad Naeem, Member (Tariff) National Electric Power Regulatory Authority, Pakistan: "Challenges faced by public officials in developing countries - Pakistani perspective"

Founded in 1997, National Electric Power Regulatory Authority (NEPRA) is in charge of issuing licenses and establishes the rules and regulations that regard the generation, distribution, and distribution of electric power.

The Authority introduced NEPRA Tariff Standard Procedure Rules in 1998 to set the general direction for the setting of tariffs. The main highlights of the Tariff Standard Procedure Rules that were presented were along with alternative tariff-setting methods, which include upfront tariffs or wind, solar, bagasse and coal, competitive bidding and power procurement through NEPRA regulations. Under the latter, the NEPRA may grant permission for initiation of negotiation of contract between the power producer and power procurer and upon acquisition of the contract, the NEPRA may grant approval of contract within 60 days.

Summing up the wind energy sector in Pakistan, M. Naeem stated that there many projects under various stages of project completion with 1,031 MW of accumulated capacity. Based on the tariff determined by NEPRA in April 2013, it was told that the projects with a mix of 100 percent foreign debt have 0.135 USD/kWh levelised cost of electricity in comparison to 0.167 USD/kWh from 100 local debt.

Due to the existing grid infrastructure the Authority has set a ceiling of 5 percent for renewable energy power generation in the total energy mix. Moreover, availability of bankable data for many potential sites still remains a key challenge.

Session 2: Mapping the Sufficiency of Existing Support Mechanisms for the Developing World

Second session, which was focused on evaluating the successes, failures and prospects of the existing climate finance mechanisms, started with a speech by Nick Nuttal, who is Spokesperson and Coordinator of the Communications and Outreach Programme at the UNFCCC Secretariat. In his speech, he stressed the importance of a coming-together in order to reach a meaningful agreement in Paris 2015 at COP 21.

Although he acknowledged the political risk involved with investments in renewable energies, he called for action by policymakers to liberate the trillions of dollars held by pension funds to equity holdings before encouraging renewables energy investors to contact the developers of the Lake Turkana Wind Farm project in northern Kenya as a lesson in the complexity of this field.

Laura E. Williamson, Communication & Outreach Manager REN21: "Present status of renewable energies investment conditions in the developing world"

Laura E. Williamson presented a bird's eye view on the current status and the progress of renewable energies deployment worldwide, while emphasising on the developing world. Although more investments are being made in renewable sources in the traditional developed countries (USA, Europe, Japan and Asia), the share of investments per GDP shows a different picture,

with Uruguay, Mauritius, Costa Rica, South Africa and Nicaragua leading the charts. Altogether, the share of renewable energy has reached 19% in 2012, with 10% coming from modern renewable sources and 10% coming from traditional biomass. In the power sector, the share of renewables is even bigger with 22.1% of the total energy production, where 16.4% come from hydropower and 2.9% from wind.

The developments taking place in renewable energy policies have a very positive outlook, when one looks at the number of countries with more progressive energy policies, many of which are coming from the developing world. From 48 countries in 2004, 148 countries now have policy targets, among which 98 have feed-in tariffs in place.

The level of global investments in renewable energy has been following a downward trend since 2011 and it was at USD 214 billion at the end of 2013 while going from USD 40 billion at the end of 2004 to USD 279 billion at the end of 2011. A sharp decrease in technology costs explains this trend. A particular attention needs to be paid to Africa, which is the only continent where the size of electrified population has decreased in comparison to the size of the general population.

Despite all the positives, in order to reach the renewable energy targets, steps for a fair level playing field for the entire energy sector and long-term and differentiated stable policy frameworks to sustain and increase investment levels have to be taken.

Dr. Robert Dixon, Team Leader of the Climate Change and Chemicals Team, Global Environment Facility

During its 5th phase (2010-14), the share of GEF's investments in renewable energy projects has decreased to about 20% from 22% in the 4th phase (2006-10) and about 46% in the 3rd phase (2002-06). This decrease in primarily due to the increase in investments coming from the private sector, however, these private sector investments are to be encouraged. The investment mix of the GEF has considerably changed between GEF 4 and GEF 5, being made up only of “Mixed & Others”, wind, photovoltaic, combined RETs and biomass-electricity in the 5th phase, while biomass-thermal, geothermal-electricity, hydro-electricity and solar-thermal were part of the investment portfolio in the 4th phase. Despite that decrease and that concentration of investment targets, the GEF is still managing projects on all continents, with the exceptions of North America.

For the GEF's 6th phase that would be starting in 2014, the GEF will be focusing on Innovative technologies that are transformational, on measures and mechanisms to accelerate the uptake of mitigation technologies and on the integration of RE within broader challenges. The example of wind farms for LDCs and Small Island Developing States would be a good direction to be taken.

Dr Roland Roesch, Senior Programme Officer International Renewable Energy Agency, “IRENA Project Navigator”:

As presented by Dr Roesch, the project navigator comes as a long-awaited solution for one of the main hurdles that the development of renewable

energy faces: the lack of access to finance. The problem is not that the funding is not available, it is more that the complex structure of the global finance architecture makes it very difficult for the funding to be accessed by project developers. That hurdle is emphasised by the failure to prove the bankability of the projects and insufficient knowledge of project proposal development. To curb that issue, thus, IRENA has developed the Project Navigator with the aim of building the capacities of project developers through the promotion of best practices in project development tools, which will ultimately facilitate access to finance for the developers.

It tries to achieve this goal by creating a database made up of available sources of financing (grants, loans, equity) for all RETs, covering all projects no matter what their sizes are or where they are based.

Made up of the RET Project Development Communication & Coordination Platform, written project & interactive development guidelines, and an interactive financial navigator with the aim of obtaining results quantifiable in the number of financially realised projects, the benefiters of the Project Navigator could be member-countries of IRENA, municipalities, academia and the financing sector, in addition to the aforementioned project developers.

As next steps, IRENA recognises the need for a constant and continuous improvement of the tool in order to keep up with the organisation's aim of developing more technical concepts and to work on regional adaption of the tool for SIDS, West Africa (2014) and other regions such as MENA, LAC and Pacific region (2015).

Dr. Jan Martin Witte, Head of Division Infrastructure Southern Africa, KfW Entwicklungsbank: "Leveraging private investment for renewable energy in Sub-Saharan Africa"

The African power market is currently in transition, moving from a monopoly to a liberalized single-buyer market, where legal and regulatory frameworks for promotion of renewable energy are on the increase. The creation of fiscal incentives or feed-in tariffs is part of the recent developments throughout the continent. However, many challenges still remain in the form of incomplete and incoherent reforms, political and commercial risk, inadequate incentives and technical issues. These challenges have led to only few RE project deals going into implementation, this being exacerbated by the difficulties related to long-term debt financing.

The long-term debt financing problem, however, should be less regarded as a problem of availability but more as an accessibility problem. The example of the GET FiT programme in Uganda, which comes as a blend of technical assistance, guarantee framework and incentive mechanism, helps remove political and regulatory barriers, and mitigate political and commercial risk while providing attractive returns and unlocking finance for renewable deals, is one to be followed and replicated throughout the continent.

Once again, like the previous speaker, Dr Witte stresses the fact that funds are available but serious investors and project developers are needed to tap into the available funds. Enabling access to those funds through policies, and through initiatives like IRENA's Project Navigator will be very helpful in achieving the global renewable energy goals that have been set, especially in Africa.

Session 3: Devising the Way Forward

There is still a lot of work to be done, both on the policy making and the investment sides, in order to meet the different international goals that have been and which imply a gradual shift from carbon economies to more sustainable systems. During the third session, the presenters discussed the prospects from various viewpoints, which come together to form the potential policy tools that can be developed to mitigate existing barriers in an effective and efficient manner.

Carolina Fuentes, Secretary to the Board of the Green Climate Fund: "Present status of the Green Climate Fund and proposed investment frameworks"

Through its vision, the Green Climate Fund (the Fund) is endeavoured to promote a paradigm shift towards low-emission and climate-resilient development, and induce a change in daily decisions investors and consumers make. To achieve these goals, the Fund estimates that a total yearly investment of USD 5.7 trillion is needed to cover aspects that go beyond the reduction of energy emissions but also include food & water security, reduced transport emissions, and increased ecosystems resilience just to name a few. In its vision, the Fund also wants a 50-50 balance between mitigation and adaptation actions. To make that happen, Ms Fuentes also agrees with the earlier speakers that the access to finance needs to be made easier for project developers, with project and programme-based approaches and best-practice standards to be added to the country and international-driven approaches.

In order to make the Fund have greater impact, a target of a minimum of 50% of adaptation funds are to be reserved for LDCs, SIDS, and African states. Additionally, geographic balance and the engagement of the private sector are to be supported. In the evaluation of the project proposals, the potential of the project's impact and the level to which it shifts the paradigm will play a big role. Overall, the Fund will guarantee a buy-down upfront cost, an easiness of cash flow and a framework that tolerate better the political and commercial risks embedded with projects in many developing countries.

Stefan Schurig, Climate Energy Director World Future Council

In addition to agreeing with previous speakers on the need for access to be made easier, for land issues to be resolved and for (technical) capacity to be built, Mr Schurig made a strong case for Feed-In Tariffs as a primary tool for promoting renewable energy investment. Having proved their successes so far in other parts of the world and in particular in promoting community based investment models, FITs need to be given an increased role in the RE development strategies in developing nations.

To ensure that Renewable Energy FiTs (REFITS) can be implemented in developing countries, the creation of a Green Climate Fund REFIT Facility ("GRF") has been proposed and it should become a key instrument in the fulfilment of the goals of the GCF, which targets a paradigm shift. In the short term, pilot activities should be implemented to build knowledge on the impacts of REFITs within the NAMA framework by developing countries.

Michael Taylor, Senior Analyst, Renewable Energy Cost Status and Outlook, International Renewable Energy Agency: "IRENA Roadmap (RE2030) – How to meet the SE4ALL renewable energy goals and the role of wind energy"

Despite all the progress, the positive outlook for RETs and the decreasing costs of wind power, the story of levelised cost of energy for wind power is not well-known yet because of the learning curve analysis, that includes many scenarios is out of date and/or not comprehensive. Along the latter, the prices of a wind turbine (Wind Turbine Price Index, WTPI) have fallen from around USD 2.5m/MW to around USD 1.2m/MW in the second half of 2012, with the Chinese turbine prices reaching USD 0.7m/MW at the same period. It is worth noting the WTPI level was as low as close to USD 1m/MW in the first half of 2002.

The IRENA is therefore undertaking a project aimed at developing a comprehensive LCOE learning curve in which the factors are decomposed to provide a sounder understanding. Mr Taylor went on to put an emphasis on the need for more financing. According to IRENA's analysis, to meet the SE4ALL goals and achieve the 450ppm path, a quadrupling of modern RE use will be needed, which would mean a yearly average investment of close to USD 550 billion until to 2030, of which USD 132 billion would be going into wind power. However, that would also mean annual saving of USD 230-740 billion if we account for the externalities of fossil fuels and other sources.

Dr.-Ing. Patric Kleineidam, Head of Department Wind Energy, Lahmeyer International GmbH: "Global landscape of project finance for wind energy projects"

With a technical background, the speaker sees a positive outlook in the development of the wind energy market. Although in 2013 China, the USA, Germany, Spain and India accounting for 72% of global wind installations, political will power the growth of wind installation especially in emerging markets.

The importance of risk for developers was also stressed. Viable projects will be needed in order to attract national and international investors but also financial institutions. For those viable projects to be made available, there needs to be stable framework conditions, a well-balanced and reliable Feed-in Tariff, and good grid connection possibilities.

Maryke van Staden, Low Carbon Cities Program Manager, ICLEI Local Governments for Sustainability: "Role of cities in creating enabling environment for RETs investments"

Local governments act to address the challenges created by high energy demand, air pollution, climate change, increasing GHGs, and to help create an enabling environment. In this regard, Ms van Staden advocates the need for an effective vertical integration between national and subnational governments through communication and joint-action. Therefore, the Green Climate Cities Program has been initiated with the aim of improving local-national dialogue and cooperation, both in the Global North and the Global South, to effectively plan, implement, monitor and evaluate local climate action and to encourage the energy transition; and to provide process,

guidance and tools, incl. a Measurable, Reportable and Verifiable (MRV) process for local climate action. To support those MRV processes, several tools, such as the Global Protocol on Community-scale GHG Emissions (GPC), the Harmonized Emissions Analysis Tools plus (HEAT+), and the carbon*n* Climate Registry (cCR) are used at the different stages that make up the MRV process.

Instruments used for the Green Climate Cities Program to perform include a shared strategy and vision, legal and policy frameworks, as well as financial and markets tools.

Additionally, Ms van Staden has advocated that accessibility to the international funding mechanisms should be made easier for cities to put the programs to work as well.

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