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Enhancing domestic private sector development in Africa:

A focus on renewable energy

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Acknowledgments

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1. Introduction: modern industrial policy

The present paper addresses one aspect of what some experts refer to as "modern" industrial policy in Africa by exploring how the participation of domestic private companies in renewable energy generation can be enhanced.

Industrial policy in Africa is again under the spotlight after decades of tarnished credibility. Policymakers in the region are seeking new interventionist approaches to directing state action to stimulate higher-productivity domestic sectors and businesses. This need for State intervention became more apparent in the wake of the 2008 global financial crisis, which exposed the persistent weaknesses in African economies, in particular their inability to compete with emerging markets in faster-growing regions. While economic growth is still strong in some African economies, poverty levels remain unacceptably high and productivity is falling as a result of volatile commodity prices, poorly skilled labour, inadequate infrastructure, government red tape and graft, inefficiencies in the informal economy, and a lack of competition and available credit in regional markets.

In the context of the current global reassessment of trade protectionism, several experts have attempted to distinguish between a right way and a wrong way to use industrial policy. For example, Wells and Hawkins (2010) have shown that expanding the local content of infrastructure construction is an achievable and worthwhile objective, and they offer practical guidance on how to do so using government procurement policies and procedures. Kuntze and Moerenhout (2013) outline a "correct set of tools" to use in formulating productive policies for meeting local content requirements in renewable energy public-private partnerships (PPPs). Similarly, WTI Advisors (2013) identify key issues and lessons that "determine the success or failure of local content policies" (p. 19). The Economic Commission for Africa (ECA, 2011) has endorsed this positive reassessment of import substitution, and suggested its own set of derived knowledge based on an evaluation of the East Asian experience.

Most recently, the Inter-American Development Bank (IDB) has sought to reignite productivity growth in Latin America by stimulating the emergence in the region of what it calls "modern" industrial policy (Crespi and others, 2014). The Bank's first step was to rebrand industrial policy as "productive development policy". This term signals a wider coverage for such policy, including services and farming as well as manufacturing. It also signals a more balanced combination of supply and demand-side interventionist measures, with the former including elements such as government-supported research and development, professional training, and access to various kinds of debt and grant funding. Demand-side measures designed to protect domestic industries from foreign competition are also part of the IDB approach. But lessons from East Asia have been incorporated so that public assistance for domestic private businesses is strictly limited through sunset clauses and is dependent upon demonstrated performance in increased exports and innovation.

In the light of this resurgence of industrial policy, this paper seeks to explore how governments in Africa can effectively employ deliberate and calculated public policies and strategies to stimulate domestic production and grow private entrepreneurship, especially in sectors such as renewable energy generation. This energy subsector merits such discussion because of its rapid growth and the innovations used to achieve increased local private participation in renewable energy projects. Renewable energy is also a critical component of

efforts to reduce the impacts of climate change in the developing world, where those impacts will hit hardest. Programmes in South Africa and Uganda have broken new ground with regard to attracting private investment and involving foreign and domestic private companies.

2. From carbon markets to public-private partnerships (PPPs)

Sustainable economic growth and poverty reduction will not be achieved unless problems caused by climate change are tackled. This task is particularly urgent in the poorest countries, which will be most seriously affected by these problems. Estimates of the costs of climate change mitigation and adaptation in developing countries vary widely, ranging from $170 billion to $475 billion per year. Africa is estimated to require $18 billion per year for climate change adaptation alone, in addition to the $48 billion per year that the Africa Infrastructure Country Diagnostic (AICD) report estimates would be required over ten years to reach modest infrastructure service delivery levels (Foster and Briceño-Garmendia, 2010). Most of this investment will be needed in such infrastructure sectors as power, transport, water, sanitation, and solid waste, in addition to urban and social infrastructure. Investment will likewise be required at subnational levels, in municipalities, regions, states, provinces, etc.

National and international institutions have responded to the climate change challenge by earmarking billions of dollars in funding for carbon emission mitigation, and dozens of international funds and financing vehicles have been established. These include the Clean Technology Fund, Global Environment Facility, and the Clean Development Mechanism created under the Kyoto Protocol. The last of these is one of the most powerful of the climate change financing mechanisms. It channels funding from greenhouse gas-emitting entities in developed countries to carbon-reducing activities in less developed countries. Each eligible project earns certified emission reductions (CERs) payable at a market price for each ton of carbon it reduces. In 2012, after 11 years of operation, total CER units reached 1 billion, with a total value of $8-$10 billion (Baietti and others, 2012).

But the Clean Development Mechanism has several well-known limitations (World Bank, 2010). Some mechanism projects and market participants have gained windfall profits, while the mechanism has eliminated a total of just 20 million tons of carbon dioxide per year from clean technology investments. The mechanism works better with pre-existing assets than with new investments. This approach exploits the lower risks associated with brownfield rather than greenfield PPP projects. Moreover, mechanism funding is paid only after carbon benefits are produced, so it cannot be used in initial project capitalization. Validation, registration, and verification are costly and bureaucratic, while the selection of eligible projects sometimes seems arbitrary, and the extreme volatility of carbon markets has been a significant deterrent to widespread use of the mechanism. The carbon market has not proved the sort of stable and predictable financing mechanism needed to support new investments in low carbon technologies. In any case, the total international public funding raised to date is less than 5 per cent of projected needs.

The shortcomings of the carbon market have triggered new thinking in the development community about how to accelerate investments in low-emission technologies. This new approach involves several basic concepts (Baietti, 2013):

- First, the principal objective of these efforts should be to accelerate investment in low-carbon projects and enterprises, with carbon reduction as a highly desirable, but indirect, outcome of successful implementation. In other words, the "reducing carbon" objective of traditional carbon finance programmes like the Clean Development Mechanism is not leading to enough of the right kinds of investments and may even distort markets.

On the other hand, the "accelerating investment" objective arguably has a better chance of helping to transform markets in a way that leads to an accelerated, sustainable flow of the large, upfront capital investments needed for low-carbon purposes.

- The sort of investment needed will have to come primarily from the private sector. International climate change experts have long recognized that the private sector has a major role to play in climate change mitigation and adaptation. The European Commission estimates that 80 per cent of such funding needs to be obtained from private sources, both individuals and businesses, as a purely private activity. But the Commission expects most of it to come from private investment in low-carbon public projects and enterprises.

- Green technology projects are similar to other infrastructure projects and should rely on proven project financing approaches. Much of the needed low-carbon investment should therefore come through the same kinds of commercial financing channels that already provide private debt or equity to public infrastructure projects, especially through PPPs. The use of such funding for climate change-related objectives will therefore depend ultimately on the willingness of governments to enter into PPPs for these purposes, rather than green targeting decisions made unilaterally by lenders or investors.

- The major difference between traditional infrastructure PPPs and low-carbon projects is that low-carbon investments require financial support to mitigate externalities that private investors cannot pay for and users cannot afford. Low-carbon projects can and should be evaluated, structured and financed using the same fundamental principles as other kinds of infrastructure projects but, as with any sort of subsidy support for infrastructure PPPs, a compelling case needs to be made that subsidies for climate change reasons are financially sustainable and can be cost-effective, and of course resources for supplemental subsidies must be available from governments and their development partners.

3. Renewable energy PPPs

In 2012, investment in PPP power projects in developing countries reached one of the highest annual totals ever, at about $77 billion, as recorded in the World Bank Private Participation in Infrastructure (PPI) Project Database. This category of projects offers tremendous opportunities for introducing climate change mitigation and adaptation elements, but this rarely happened in the past as government officials in developing countries needed assistance with, first, planning and prioritizing such projects; second, designing prescriptive legal and regulatory environments for their development; third, incorporating specific climate change responses into project selection criteria (traditional vs. green) and design; fourth, justifying or finding subsidy funding to pay for costs or mitigate risks that inhibited private participation in these projects; and, fifth, monitoring and controlling project implementation after contract closure.

This has started to change: middle-income countries are increasingly developing their own renewable energy PPP programmes, while low-income countries are now receiving assistance from development partners in the guise of operating capital and subsidies for projects. These are recent developments and the World Bank PPI Project Database only began tracking such projects as a distinct form of private participation in infrastructure in 2012.

In Africa, renewable energy projects frequently take the form of PPPs for several reasons:

- First, private companies rather than public utilities have mastered the technology and technical approaches involved in these projects. The technology requires particular approaches to facility design, construction, and operation and the private sector is usually far better equipped than public sector agencies to manage this process. By the same token, their track records in the sector, creditworthiness, etc., mean that private companies are often better able to raise the financing required to build and operate these types of facilities. Most developing country public utilities in regions like Africa that off-take this power do not have the budgets for such projects nor are they creditworthy enough to be able to borrow.

- Second, as noted earlier, renewable energy is historically more expensive to generate than traditional forms of thermal power, such as coal. This has often meant that renewable energy projects cannot be implemented on a strictly commercial basis whereby project revenues cover costs plus profit. There are exceptions to this rule. Some hydropower dams have been built without government subsidies, but the owners of these projects are frequently State-owned enterprises and therefore not subject to the same rate-of-return demands as private sector players. Geothermal projects in Iceland, Kenya, New Zealand and the Philippines have gone forward without subsidies, but in developing countries such projects often benefit from development finance. Even projects in relatively expensive renewable sectors like wind and photovoltaics are reaching financial close without subsidies, particularly in Latin America. These sorts of exceptions are likely to grow in number as renewable energy technology continues to develop.

- Most power markets in Africa are not liberalized. This provides the third contributing factor that allows the spread of all categories of independent power producers (IPPs) in Africa, rather than a proliferation of merchant projects. Thus all power must be sold to single buyers, which are usually monopoly State-owned utilities responsible for transmission and distribution (and also generation in these countries). Thus, instead of selling power directly to competing distribution companies or large private users as merchant projects would do, IPP projects are developed with

power-purchase contracts signed with government-owned single buyers to formalize pricing and off-take arrangements.

The World Bank PPI Project Database provides an overview of the kinds of renewable energy PPPs that reached financial close in Africa in 2012. Of the 99 renewable energy PPP projects, 96 were greenfield projects and 76 were of the build-own-operate [what is BOO – build own operate or buy to own? Best to avoid…But it's used in the table, so we need to fix on one definition] variety (table 1). In other words, these were projects in which a private sponsor first built a new facility, then owned and operated it, all at its own risk. What distinguishes a buy-to-own project from a merchant project is the fact that the government usually provides revenue guarantees through long-term "take-or-pay"[1] contracts for wholesale power purchases. Renewable energy buy-to-own projects also typically involve other kinds of government financial support.

1 A "take-or-pay" contract is one in which the buyer agrees to pay for power whether or not the purchased power is actually delivered or taken. Such arrangements are commonly used as indirect guarantees for project financing.

Table 1: Renewable energy PPP and PPI projects in Africa, 2012

Country	Number of Deals	Types of PPP	Total Investment (US$ m)	Total Capcity (MW)	Technology								
					Hydro, Small (<50MW)	Hyrdo, Large (>50MW)	Wind, Onshore	Geo-ther-mal	Bio-mass	Waste	Solar PV	Solar CSP	Wave
Angola	2	BOT, BOO	165	42	2								
Burkina Faso	1	BOO	6	12	1								
Cameroon	2	BOT	1,750	1,550		2							
Cabo Verde	1	BOO	80	28			1						
Congo	1	BOO	325	240				1					
Ethiopia	1	BOO	120	60			1						
Gabon	2	BOT	358	78	2								
Ghana	3	BOT, BOO	677	297		1			1		1		
Kenya	7	BOO	1,245	642			2	3		1			1
Liberia	1	BOO	170	36						1			
Madagascar	1	BOT	18	15	1								
Mauritius	6	BOO	88	151			2			4			
Mozambique	1	BOT	2,900	1,500		1							
Namibia	3	BOO	360	118	1		2						
Nigeria	1	BOT	26	39	1								

Country	Number of Deals	Types of PPP	Total Investment (US$ m)	Total Capcity (MW)	Technology								
					Hydro, Small (<50MW)	Hyrdo, Large (>50MW)	Wind, Onshore	Geo-ther-mal	Bio-mass	Waste	Solar PV	Solar CSP	Wave
Rwanda	1	BOO	12	4	1								
Sao Tome & P.	1	BROT	50	-	1								
Senegal	1	BOO	288	154			1						
Sierra Leone	1	BOO	30	15					1				
South Africa	39	BOO	5,681	2,078	1		10				24	4	
UR of Tanzania	3	BOT, BOO (2)	441	203			2			1			
Uganda	13	BOT (6), BOO (6), RLT	1,262	750	6	2			1	4			
Zambia	4	BOT, BOO, Full	1,853	798	2	2							
Zimbabwe	3	BOT, BOO	63	143	2							1	
Totals	99		17,967	8,953	21	8	21	4	3	11	25	5	1

Source: *World Bank and PPIAF, PPI Project Database*

4. Global renewables market

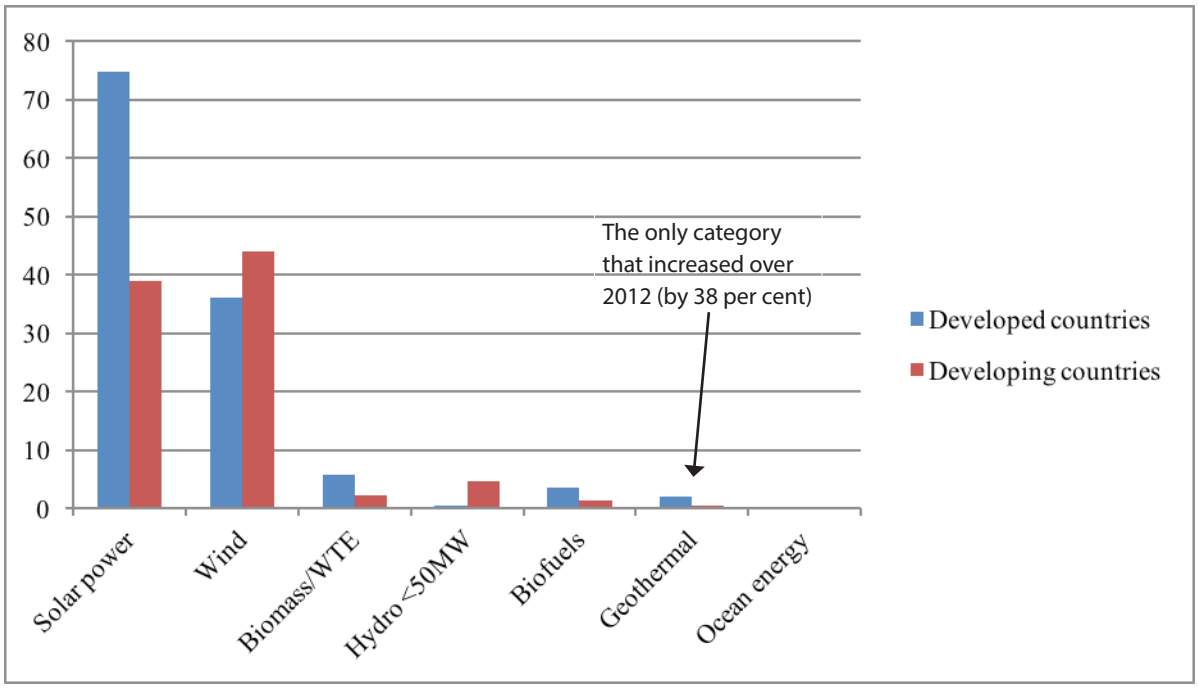
Globally, renewable energy accounted for an estimated 19 per cent of energy consumption in 2012: 10 per cent came from so-called "modern" renewables, and an estimated 9 per cent from traditional biomass. This annual proportion was about the same as for 2011, although the share of modern renewables had increased slightly, owing to the rise in global energy demand and the slow migration away from traditional biomass.

In developing countries, new investments in renewable technologies roughly track global investment trends, with solar and wind power leading the way in terms of total investments but, unlike developed countries, the developing world invested more in wind than solar power in 2013. Total wind-related investments in developing countries were significantly higher than in developed countries, the only technology other than small hydro in which the developing world invests more than the developed (see the figure below).

By global standards the carbon footprint of most African countries is very small: per capita emissions in Africa are less than 5 per cent those of the United States of America. It is therefore possible to argue that Africa should focus more on general socioeconomic development, continue using fossil-fuel-based power generation, and not become distracted by climate change issues. But several imperatives have pushed African countries strongly in the direction of renewable energy.

The first of these is the well-documented fact of a massive and rapidly growing need for more electricity generation in Africa. At the same time, some renewable resources that could help close this gap, especially hydropower, are available, but are not generally being developed. The Africa Infrastructure Country Diagnostic study highlights the fact that Africa accounts for 10 per cent of the world's economically feasible hydropower potential, but only about 7 per cent of this potential is being exploited.

Figure 1: Global new investment in renewable energy by technology, developed and developing countries, 2013 (billions of United State dollars)



Source: *REN21, 2014.*

Second, several governments hold the view that renewable energy projects implemented as relatively small PPPs can be rolled out more quickly than large generation projects managed by state-owned utilities. Recent experience in South Africa underscores this: 64 renewable projects have reached financial close over the past two years, committing $13.8 billion in private funding to the construction of nearly 4,000 MW of power-generating capacity. This is more than the total generating capacity of most African countries.

Third, Africa is developing rapidly with six of the world's 15 fastest growing economies and more than 1 billion people. Approximately 700 million Africans use traditional biomass for cooking, but this is beginning to change. As China and India have demonstrated, surging economic development will drive up carbon emissions fast unless renewables can gain an early foothold. The regional economic communities in Africa have recognized this and most have developed renewable energy development agendas. The most active regional economic communities in this regard have been the Southern African Development Community (SADC), the East African Community (EAC), and the Economic Community of West African States (ECOWAS). ECOWAS has established the Centre for Renewable Energy and Energy Efficiency, forming partnership arrangements with several international organizations, including the Food and Agricultural Organization of the United Nations (FAO) and the United Nations Industrial Development Organization (UNIDO). ECOWAS members have committed themselves to a 20 per cent share of renewable energy in their total power output by 2030, which will include off-grid electricity serving 25 per cent of the rural population.

5. Renewable technologies in Africa

Hydropower: Hydropower has huge potential in Africa, but remains largely unexploited, with only a handful of hydropower independent power producer projects completed, under refurbishment or planned as new projects on the continent. Thus two major hydro projects became operational in 2013, the 400 MW Bui plant (Ghana's second largest hydropower facility) and Gabon's 160 MW Grand Poubara plant. Both plants were built by Sinohydro of China and financed by the China Export-Import Bank. Rehabilitation started on the 350 MW Inga 1 on the Congo River in the Democratic Republic of the Congo; refurbishment is ongoing on the Kainji and Jebba plants in Nigeria. Based on a purchase agreement between South Africa and the Democratic Republic of the Congo, a start date of late 2015 was announced for initial construction of the Inga 3 project on the Congo River (now planned as a 4,800 MW facility).

In Ethiopia, the Grand Renaissance Dam is expected to generate up to 6,000 MW for the country, with possible energy exports to neighbouring Djibouti and Somalia. Ethiopia is also building the Gibe III (1,800 MW), the Gibe IV (1,472 MW), and Gibe V (560 MW) plants. Guinea has announced plans to dam the River Niger upstream of the river's inner delta, with possible participation by Mali. To help deal with the huge costs of hydropower projects, the United Nations has announced plans to expand the Clean Development Mechanism by establishing regional centres in Togo and Uganda. This mechanism has generally benefited hydropower projects.

Biofuels: Biofuel energy production grew to an estimated 300 million litres in 2012 but remains a limited source of power in Africa. Globally, overall investment in new biofuel plant capacity continued to decline from its 2007 peak, reflecting uncertainties about the potential of this technology. In Côte d'Ivoire, the United Republic of Tanzania and Zambia, a type of drought-resistant flowering plant is being used in the development of a biodiesel plant. In Mozambique, a new plant allows rural populations to use ethanol instead of increasingly expensive charcoal. In Zimbabwe, a community-based biogas plant is being constructed in Harare to convert organic waste to energy. Other African countries plan to install similar plants. Crest Global Green Energy continues to produce biofuel in Guinea, Mali and Senegal.

Wind: Wind energy remains the developing world's major source of renewable energy and Africa is no exception. In East Africa, wind energy commitments in Kenya increased from zero in 2011 to $1.1 billion in 2012. Kenya has some of the best wind power potential in the world, and the Lake Turkana Wind Power Consortium plans to build the largest wind farm in Africa, with a 300 MW plant. The project is expected to cost over $800 million, making it the largest single private investment in Kenya's history. Ethiopia is undertaking a number of wind projects, including the Ashegoda wind farm (120 MW), the Adama I and II projects (51 MW each), and the Messobo project (42 MW). There is even greater potential for wind power generation in West Africa because of consistent wind speed. Senegal is taking advantage of this with several projects of 30–50 MW, plus a 150 MW wind farm in the northern part of the country. Cabo Verde completed its ground-breaking series of four 4–10 MW wind farms in 2012. These facilities now provide nearly a quarter of Cabo Verde's power.

Solar: In 2014, Ghana indicated an intention to begin construction of Africa's largest photovoltaic power plant to date, the Nzema solar facility (155 MW). With a construction cost of$400m, the project will be one of the biggest in the world – only three photovoltaic plants in operation today are bigger. Nzema will increase Ghana's current generating capacity by 6 per cent and will meet

20 per cent of the Government's target of generating 10 per cent of its electricity from renewable sources by 2020. Ghana is also expanding the use of solar power in rural areas, where it is implementing a pilot programme to replace kerosene lanterns with 400,000 solar lanterns in remote off-grid communities.

Similarly, Senegal has pledged to meet more than 30 per cent of its rural energy requirements with solar power. Mozambique claims that more than $15 million has been invested in solar power, with most of this coming from a fund managed by the Mozambique Ministry of Energy. Mini-solar projects in Rwanda generate power for schools and farms. In Kenya, two Chinese firms are building a 50 MW solar power plant in Garissa County to feed power into the national grid. In Ethiopia, a solar panel assembly plant capable of making 20 MW of panel per year opened in Addis Ababa in early 2013.

Geothermal: Geothermal energy projects, often related to gas and oil discoveries, have been initiated in Ethiopia, Ghana, Nigeria and Rwanda. Ethiopia is planning one of the biggest geothermal plants in Africa to help offset intermittent hydropower production caused by seasonal water flow variations. Reykjavik Geothermal, an American-Icelandic company, has agreed to develop the 1,000 MW facility at a cost of $4 billion. Kenya's geothermal potential is estimated at 7,000–10,000 MW, but only a fraction of that has been exploited. The Ormat Olkaria III geothermal project in the Rift Valley involves three facilities financed with debt from the Overseas Private Investment Corporation (OPIC). In 2013, the country added 36 MW of capacity at Olkaria III. A further 16 MW was added in early 2014, bringing the total to 110 MW. By early 2014, Kenya had another 280 MW of geothermal power capacity under construction and expected to be commissioned by the end of 2014.

Even in developed countries, however, growth in geothermal generating capacity has not been robust. While many countries suspect that they have geothermal potential, the exploratory costs are extremely high and the required feasibility assessments to verify assumptions are rarely conducted. To address this problem in Africa, a $66 million Geothermal Risk Mitigation Facility for East Africa has been established by the African Union, the European Union-Africa Infrastructure Trust Fund, and the German Ministry for Economic Cooperation. The facility supports surface studies and exploration drilling.

6. Incentives for private participation in renewable energy generation

Because renewable energy is by and large more expensive than more widely used energy from fossil fuels, governments typically seek different incentive mechanisms to support generation of this type of power. Some mechanisms offer incentives for use of renewable energies in the home or business environment, while others offer utilities incentives to generate more renewable energy. Almost all these methods are used in Africa to one degree or another. This section focuses on procedures for selecting and offering incentives to private partners to generate renewable energy for sale to the single-buyer utilities dominating the electricity sectors of African countries. These systems thus support renewable energy PPP or PPI projects.

Renewable energy targets: The starting point in efforts to involve the private sector in renewable energy production is frequently the adoption of formal targets for the generation or consumption of renewable energy. In developing countries these targets are typically more ambitious than what can be achieved by existing public utilities. If such targets are difficult to meet, in effect they become a commitment to seek private partners in the roll-out of renewable energy PPP or PPI projects. Formal targets are therefore a common feature of the global renewable energy landscape, with 144 governments adopting them by the end of 2013 (table 2). In Africa, however, almost a quarter of the countries had not adopted policy targets (table 3).

Selecting private partners: As with any PPP project, the methods used to select private partners for renewable energy PPPs are critical for ensuring value for money in service delivery, affordability of services, manageable contingent government liabilities, and mitigation of other government risks. For renewable energy projects globally, two selection methods dominate:

- Feed-in tariffs (FITs): This is the most widely used form of support for renewable energy generation (table 2). The philosophy behind feed-in tariffs is simple: because existing electricity tariffs are thought to be insufficient to fully compensate investors who design, build, and operate renewable energy facilities, governments agree to higher tariffs for these producers. A feed-in tariff is a guaranteed minimum price per unit of power (normally kWh or MWh), over a stated fixed-term period and is sold and fed into the grid, normally with priority or guaranteed access and dispatch.

In most developing countries, electricity can be sold into the grid only via the public utility that acts as the single buyer of power, so the tariff is

Table 2: Targets, feed-in tariffs/tendering for renewable PPP or PPI projects (global numbers)

	Start 2004	End 2012	End 2013
Policy targets (numbers of countries)	48	138	144
Feed-in tariffs or Premiums (states, provinces, countries)	34	97	98
Competitive bidding (states, provinces, countries)	8	45	55

Source: *REN21, 2014.*

normally formalized in the power purchase agreement signed by the generator and off-taker. These agreements are highly technical contracts that usually serve to confirm for lenders that power will be purchased at specified prices under a variety of circumstances. They are habitually supported by government payment guarantees and credit enhancements, like letters of credit, escrow accounts, liquidity facilities, tax exemptions, etc.

- Feed-in premiums (FIPs): These are similar to FITs. Energy producers sell electricity at market prices, but a premium is added to the market price to compensate producers for the higher costs of production, thus mitigating financial risks. Premiums may be fixed for certain periods or flexible, depending on various factors. Flexible premiums are naturally more popular with producers because they can be used to mitigate some of the market price volatility that can create risks for producers.

- Public competitive bidding (auctions or tendering): This is a procurement mechanism that governments occasionally use to solicit bids from private companies willing to supply specific amounts of renewable energy. Usually the selection of bidders is principally based on price, but non-price factors are often included in the evaluation (job creation or industrial development, for example). Bidders offer the lowest prices that they would be willing to accept in exchange for the design, financing, construction, and operation of power-generating facilities. For renewable energy projects, bid prices are usually higher than standard market rates. Governments may cap prices at the maximum amount they are willing to pay.

Tendering is sometimes seen as an alternative to FITs, which may lower the overall cost of renewable energy. FITs are set by governments at levels that they think are fair and attractive to private suppliers. But they are sometimes set too high and need to be reduced over time to avoid windfall profits for developers at the public's expense.

Tendering lets the market decide what level of pricing is fair; but tendering is also an expensive process for everyone concerned, and sponsors sometimes underbid in order to win contracts in the hope of renegotiating higher prices later (so-called "low-balling").

Increasingly, governments seem to be using a combination of FITs and tendering, or using tendering to establish FIT levels. Internationally, approximately twice as many government entities now use FITs rather than tendering, but the use of tendering is growing more rapidly than FITs (table 2). Table 3 shows the distribution of FITs and tendering among a selected sample of African countries. About the same number of countries use FITs and tendering, but three times as many countries do not user either mechanism and as a result do not have organized government support programmes for renewable energy. (See the case studies of renewable energy programmes in Uganda (section 9) and South Africa (section 10) for successful examples of FITs and tendering in Africa.)

- Financial support: Government financial support is often necessary to make renewable energy PPPs commercially viable. Most of these projects involve financial support that comes indirectly via tariffs that are higher than standard market prices. But other types of financial incentives are also common.

Table 3 shows the range of incentives adopted by a selected group of African countries to support renewable energy projects.

These incentives include the following:

- Capital subsidies: These subsidies cover a share of the up-front capital cost of a generating facility. An example of this type of subsidy is the viability gap funding scheme for PPPs in India. The intention is to use the subsidy to close the gap between the economic viability of the project (allowing for all the social and economic costs and benefits of the project) and its financial viability (taking into account what customers would have to pay to make the project commercially viable).

Table 3: Incentives for private partners in renewable energy generation, selected African countries

Country	Renewable energy targets	Tariff Setting		Financial Support for Projects				
		Feed-in tariffs (or feed-in premium payments)	Public competitive bidding (or auctions or tendering)	Capital subsidy or rebate	Investment or production tax credit	Reduction in sales, energy, or other taxes	Energy productions payment	Public investment, loans, grants
Upper Middle Income:								
Angola								
Botswana	○			×		×		
Mauritius	○	×	×	×				
South Africa	○		×	×		×		×
Lower Middle income:								
Cameroon						×		
Cabo Verde	○		×			×	×	
Cote d'Ivoire	○					×		
Ghana	○	×		×		×		×
Lesotho	○		×	×	×		×	×
Nigeria	○	×		×		×		×
Senegal	○					×		
Low income:								
Benin	○					×		
Burkina Faso			×		×	×	×	
Ethiopia	○					×		×
Gambia						×		
Guinea	○					×		
Guinea-Bissau	○					×		
Kenya	○	×	×			×	×	×
Madagascar	○					×		
Malawi	○					×		
Mali	○					×		×
Mozambique	○							×
Niger	○					×		
Rwanda	○	×				×		×
Sudan	○							
Tanzania		×		×		×		
Togo						×		
Uganda	○	×		×		×		×
Zambia				×		×		
Zimbabwe	○							

Source: *REN21, 2014.*

- Tax credits, tax reductions, or production payments: An investment tax credit allows a project developer to deduct all or part of its investments in renewable energy from their tax obligations or income. Production tax credits provide an investor or the owner of a qualifying facility with an annual tax credit based on the amount of renewable energy generated by that facility. Production payments are government payments based on the amount of renewable energy generated by a qualifying facility. Alternatively, tax rates for renewable power generation facilities may simply be set at lower levels than for other businesses. Most African governments allow reductions in various kinds of taxes in exchange for renewable energy generation (table 3).
- Public investment, loans or grants: Governments in Africa or their development finance institutions may likewise make capital available to the sponsors of renewable energy projects at rates that are comparatively below those offered by commercial banks, or with longer tenors and payment grace periods. Occasionally such funds are structured as grants to be paid back under certain conditions of performance (referred to as "returnable capital"). In some cases, governments use contractor compliance with local development project add-ons to justify providing this kind of soft finance to private companies.

7. Key success factors for renewable energy PPPs

7.1. Private sector factors

General capacity factors: Private sector success factors, particularly with regard to small domestic firms, are similar in most countries. Firms need to have, first, the capacity to plan, estimate costs and risks, and manage projects; second, access to technology, especially advanced computerized technology; and, third, the kinds of entrepreneurial skills necessary to plan and develop strategies to grow their own business, particularly when it comes to seeking partnership opportunities with the larger firms.

Access to finance: Access to finance is the main success factor for prospective private partners in renewable energy PPPs. Above all, project sponsors need access to debt with long enough tenors and affordable pricing to help make financing such projects commercially viable. Unfortunately, no other African country has the kind of banking, legal and other economic resources that have been available in South Africa under that country's Renewable Energy Independent Power Producer Programme (REIPPP) (see the South Africa case study in section 10 below), but governments and their development partners regularly help to facilitate financing for renewable energy programmes.

7.2. Government factors

Government support: Renewable energy PPP programmes require strong government support to make them sustainable. This is because, in addition to involving the private sector in what many countries see as a strategic infrastructure sector, the power produced by such programmes is as a rule more expensive than power generated from conventional sources. Government leaders need to support such programmes publicly and incorporate ancillary benefits whenever possible to help ensure public backing. For example, renewable energy programmes might be justified as fast and effective ways of rolling out new generating capacity. Occasionally, economic development requirements can be attached to such programmes to demonstrate that social and economic development benefits, frequently accruing in rural or impoverished areas, are worthwhile trade-offs for somewhat more expensive power. (For a discussion of South Africa's use of these kinds of requirements in the country's renewable energy programme, see the case study in section 11 below.)

Programme champions: It is almost a cliché now to talk about the importance of programme champions in driving successful PPP programmes of any kind. Someone with credibility needs to be able to interact convincingly with senior government officials, effectively explain and defend the programme in meetings with stakeholders, deal with donors, select and manage consultants, communicate with the private sector, and manage a complicated procurement and contracting process. For renewable energy programmes that usually produce more expensive power, justification for the programme needs to be made at every opportunity in informal government meetings, conferences and public meetings, as well as cabinet and parliamentary meetings. Efforts need to be made to make sure that no one is allowed to forget that a programme like this has strong motivations. It helps if the champion is a leading political figure, but it need not be a senior government official. It should be someone who is familiar with (and known to) senior officials, with enough experience working with the private sector to be comfortable adopting a business-friendly approach. This is a key success factor, but it is profoundly difficult to achieve.

Programme management: Private sponsors and investors in the global renewable energy industry want to sell power to governments, particularly now that the global market for these services is still recovering after recent downturns. If deals are

well designed, reasonably profitable, and key risks are mitigated in an acceptable way, a considerable amount of private sector interest is likely. Private sector players in Africa seem most impressed by factors that are relatively easy to duplicate; for example, the efforts of government programme managers to communicate with them on key issues, the government's track record of consistently meeting programme deadlines. Other key elements indicating well-managed programmes include:

- Smoothly functioning, reasonably priced, and private sector-oriented renewable energy PPP programmes often exhibit operational approaches that emphasize problem-solving, rather than automatically following government policies and procedures that emphasize enforcement of bureaucratic rules.

- A government programme management team with extensive experience working with the private sector, a good working knowledge of PPP contracts, experience managing consultants and credibility with both public and private sector stakeholders. Such a team and their advisors will be able to carry out evaluations of private sector project proposals effectively to ensure all the usual requirements of PPP programmes: value for money, affordability, and minimized (or managed) government contingent liabilities.

- It is of immeasurable importance that the programme management teams should exhibit none of the mistrust of the private sector so often found in African government agencies and that it demonstrate a willingness to discuss issues with private sector players to facilitate public-private dialogue on key programme issues. This helps make private sponsors feel some ownership of, and be more willing to participate in, such programmes.

- Potential private sector participants in such programmes have far more confidence in the government approach if the programme management team is able to recruit and use experienced local and international transaction advisors capable of successfully transferring international best practice in PPPs and renewable energy procurement to government programmes.

- For these programmes to be successful, adequate operating resources to hire the kinds of private sector experts described above need to be available. Resources are likewise needed to set up and manage contractor selection mechanisms that apply appropriate expertise to the evaluation of proposals as part of a secure process that minimizes opportunities for graft. South Africa has managed to run such a programme – the REIPPP – completely off budget by relying on donor support, money from government-managed grant funds and, eventually, fees paid by winning bidders. (See the South Africa case study in section 10 below.)

Policies, plans, and regulatory frameworks: Renewable energy policies and programme design must fit country circumstances. South Africa's REIPPP programme suggests that competitive tenders for renewable energy are potentially an attractive alternative to feed-in tariffs because they may be able to keep tariffs under tighter competitive control. Tendering transaction costs are higher, however, and many small developing countries may lack the capacity or resources to run such complex and expensive procurement processes.

Unfortunately, this is the case even when it seems clear that funding the higher initial transaction costs will ultimately be more cost-effective if lower power prices eventually result from the process. Obviously, bigger programmes with multiple bid rounds are more attractive to private sector companies because they increase the possibility that a particular company will eventually be awarded a project. Regardless of the size of the programme, developers must believe that they will have opportunities to make reasonable profits if their bids are successful. Overly aggressive government efforts to cap prices can easily dampen private sector interest in such a tendering programme.

8. Conclusions

A notable feature of many renewable energy PPP programmes in developing countries is that they tend to use unusually aggressive, and often controversial, measures to promote the use of local labour and the development of local industry. Such measures are fairly common in renewable energy programmes in countries like Argentina, Brazil, China, India, Malaysia, South Africa and Turkey. But the degree of localization in normal PPP projects almost never matches the kind of localization required in these renewable energy programmes. South Africa is an example of a country where the localization requirements of its renewable energy programme (REIPPP) go far beyond the black economic empowerment and preferential procurement policies applied to normal PPP projects. (See the South African case study in section 11 below.)

Why do governments choose to apply stronger localization requirements in renewable energy programmes than in normal PPP programmes? According to Kuntze and Moerenhout (2013), it is because governments need to find some form of tangible economic justification for renewable energy programmes, which tend to be heavily subsidized and likely to increase customer costs. This explanation suggests that in many developing countries, renewable energy localization requirements are rarely used exclusively or even primarily for the local economic development purposes attributed to them. These governments seldom carry out any kind of rigorous cost-benefit investigation before adopting localization requirements, not even basic economic modelling to determine the appropriate rates for different kinds of requirements. Nor do they carry out ex-post evaluations to confirm that localization benefits have indeed been achieved.

Policymakers need to sell incentive schemes to politicians and the general public. Environmental benefits are usually not enough to do that – economic benefits are also necessary. Governments therefore choose to apply high-powered demand-side localization measures to renewable energy programmes, but do not feel the need to do so for normal PPPs because they are usually justified on the basis that they will bring down customer costs.

There may be lessons to be learned from these renewable energy programmes with regard to methods for developing the ability of local labour and businesses to compete effectively for a wider variety of PPP projects.

9. Case study: feed-in tariffs and related market enhancements: the approach of Uganda[2]

9.1. Introduction

By the time the long-delayed Bujagali hydropower project began limited operation in 2011, the Ugandan Government realized that it needed more power-generating capacity to avoid power shortages and reliance on expensive rented thermal power plants. The Government could not wait for more large-scale solutions like Bujagali or the proposed 600 MW Karuma hydropower plant. They decided to initiate a programme to exploit other renewable energy resources by contracting with small-scale independent power producers. Such facilities could be developed much faster than large hydropower plants and multiple projects could be developed simultaneously at relatively little cost to the Government. In addition, renewable energy schemes were highly attractive to donors and multilateral development banks that had worked with Uganda on earlier energy sector reforms. These development partners quickly offered financial and technical support.

The government created a renewable energy feed-in tariff (REFiT) programme in 2007 with a two-year life-span. Feed-in tariffs were set at levels expected to encourage private developers to build and operate renewable energy generating facilities. After slow acceptance by project developers, the programme was extended to cover the 2011–2014 period. With the help of KfW, a German development bank, the programme was redesigned and, beginning in May 2013, requests for proposals were issued and proposals solicited for technologies for small projects (1 to 20 MW). By early 2014, after two rounds of public competition, the Government signed power purchase agreements for 12 small build-own-operate projects for a total of 103 MW. In effect, these are all small independent power providers.

9.2. Setting FITs

The overall objective of the REFiT programme is to offer incentives and support for greater private sector involvement in power generation using renewable energy technologies. This is in line with the Uganda Renewable Energy Policy 2007. The key basic element in the programme is of course the feed-in tariff. The small size of renewable energy projects and the relatively high costs of most of the technologies typically results in a situation in which reputable bidders are not motivated to propose projects if the power purchase agreements are competitively tendered. Feed-in tariffs are often necessary because tariffs that are higher than prevailing utility rates are required, to attract potential private partners.

REFiT sets tariffs for different types of renewable energy technologies. The programme used a $/kWh levelled cost approach based on the electricity generation costs associated with renewable energy technologies. It aims to provide an after-tax internal rate of return to equity holders equal to an assumed cost of equity capital. The key inputs are based on general investment assumptions and specific assumptions for each of the renewable energy technologies that influence the power generation costs. These include: investment costs for the plant (including materials and capital costs); grid connection costs; operation and maintenance costs; fuel costs (in the case of biogas and biomass); interest rates charged for the invested capital; and reasonable profit margins for investors.

2 Sources: Republic of Uganda, 2014; World Bank, 2014; Kreibiehl and Schwiete, 2014.

The objective of the feed-in tariff is to offer a reasonable level which will allow the sponsors to accept the market risks and make an acceptable return on their investment. Even using state-of-the-art methods for setting these tariffs, however, the process does not always produce optimal tariff levels. A good deal of estimation is used in the process, and power generation costs are site specific – different projects of the same technology often have different cost structures. Adjustments to feed-in-tariff levels are common as new or better quality information about investment assumptions becomes available. If tariffs are set too high, sponsors may make windfall profits while potential benefits to consumers and the economy are eroded, but this is a relatively simple problem to solve: the tariffs can be revised downwards. All projects already approved would continue to operate at the higher tariff level, but new projects would incorporate lower tariffs. REFiT anticipated the possibility of this problem by setting feed-in-tariffs with caps on the amount of generating capacity that could be supported for each technology between 2011 and 2014.

Setting the tariffs too low means by definition that private developers are not attracted to the programme. But this is sometimes a problem that is difficult for government regulators to solve. The tariffs can of course be revised upwards as a corrective measure, but such increases can be problematic if the increases go beyond the affordability of government off-takers and end-users.

9.3. GET FiT market enhancements

Although set using best-practice methods, the initial tariff levels under the REFiT programme were not high enough to attract developers. The Ugandan sector regulator was also reluctant to raise the tariffs because of affordability impacts on government and rate-payers. A solution was found with the help of KfW, other donors and multilateral development banks. The development partners supported a government supplemental scheme to provide extra financial assistance to these small renewable energy independent power producers. The scheme, known as Global Energy Transfer Feed-in Tariff (GET FiT), provides three kinds of market enhancements, as described below.

The first is an output-based top-up payment to independent power producers to allow a reasonable return on investment, while minimizing the need to increase REFiT tariffs and the electricity retail tariff. This top-up payment is referred to as a "premium" payment and is made available to small renewable energy projects on a competitive, first-come-first-served basis (as long as the funding lasts). The premium payment is designed to increase the cash flow of the projects during their initial operating years, thus significantly increasing internal rates of return. The total GET FiT payment for a specific project is determined relative to estimates of the total energy (GWh) that the power plant is expected to generate during its contracted period (20 years). Half of the GET FiT premium is paid to the project after it begins commercial operation. The remaining half is paid over the first five years of plant operation. The premium is adjusted during this period for any deviation between the power plant's projected plant output and actual operation.

Decisions regarding which projects will benefit from these payments are made by an independent investment committee recruited from universities, non-governmental organizations and the private sector. Determinations are based on criteria such as technical and economic viability and international environmental and social standards. The levels of top-up payments are designed not to exceed the targeted price level of CERs set when the Clean Development Mechanism was established. In other words, the premiums are in effect replacements for what CERs were designed to do (had the international carbon market ever started functioning efficiently). Table 4 shows REFiT tariff levels for the different renewable energy technologies, capacity limits, and premium payment levels.

Table 4: REFiT tariffs, capacity limits, and premium payment levels

Technology	Capacity Allocation (MW)	Current REFIT Tariff (US$/kWh)	Payment Period (Years)	GET FIT Premium (US$/kWh)	Payment Period (Years)
Hydro (9-20 MW)	180	0.085	20	0.014	5
Hydro (1-8 MW)	90	0.115 - 0.085	20	0.014	5
Hydro (0.5-1 MW)	5	0.100	20	**	5
Bagasse	100	0.081	20	0.01	5
Biomass	50	0.103	20	0.01	5
Biogas	50	0.115	20	no premium	-
Landfill Gas	50	0.089	20	**	5
Geothermal	75	0.077	20	**	5
Solar PV*	7.5	0.362	20	no premium	-
Wind	150	0.124	20	**	5

***** *The Ugandan regulator recently removed Solar PV from REFiT due to its volatile cost in the current market.*

*** Not yet established.*

Source: *Republic of Uganda, GET FiT Programme Uganda, Overview Brief, 2014.*

A second kind of GET FiT market enhancement was offered by the Government in coordination with several development partners. It came out of a government-led assessment that identified priority risk mitigation instruments for attracting private sector participation in small renewable energy projects. The World Bank was therefore asked to provide partial risk guarantees to support the development of these independent power producers. The partial risk guarantees are required to mitigate the payment risks relating to power purchase and implementation agreements through a letter of credit issued by a commercial bank and to mitigate the debt repayment default risks incurred by commercial lenders.

The World Bank agreed to the request. In effect, the guarantees allocate to the public sector those risks that the private sector cannot manage, thus reducing the private sector's risk exposure under these investments. The Bank estimates that the guarantees help to reduce approximately 50 per cent of the payment gap between the initially available feed-in tariff and the level of tariff required to make these investments financially viable for the private sector.

The third market enhancement is a private financing mechanism that offers debt and equity at competitive rates. Working with selected local Ugandan commercial banks, Deutsche Bank offers long-term project financing needed to help projects close financing gaps. The terms and conditions of this financing reflects the improved risk profiles of projects supported by the two previously mentioned GET FiT market enhancements. This financing is designed as an additional facility– it is not a dedicated fund focusing exclusively on GET FiT projects – and private developers are thus free to obtain financing from any available source.

KfW took an early lead in supporting this programme and now boasts an impressive roster of development partners: Norway, the United Kingdom, the World Bank, and the European Union, along with the independent experts involved in the GET FiT Investment Committee. In addition to financing, this expert support has helped with the overall design and management of the REFiT programme. For example, KfW worked with the Ugandan regulator to streamline and standardize the programme's power purchase agreements and implementation agreements. The standardized agreements, which incorporate best industry practices regarding the rights and obligations of signatories, are now used for all REFiT projects. They have reduced project transaction costs by accelerating the signing processes and contributing to the bankability of projects with clear and fair terms and conditions.

9.4. Future challenges

The goal pursued by GET FiT of helping REFiT reach a targeted level of 15 projects and 125 MW of total installed capacity is within reach, at least in terms of approved projects (naturally the facilities still need to be built, commissioned, and operated). But challenges remain. One is to strengthen the government regulator's confidence in the use of feed-in tariffs, so that the base tariffs can be escalated over time, thereby reducing the required amount of premium top-ups. Some progress was made in this regard in 2013. A fundamental review of REFiT levels is scheduled for the end of 2014 and may lead to further increases in base tariffs.

REFiT is an impressive start but, as with all African countries, more needs to be done in the Ugandan energy sector. Uganda has long been at the forefront of energy sector reforms in Africa, including in unbundling and privatizing its state-owned enterprises. REFiT was one of the first renewable energy programmes in Africa to use feed-in tariffs. Key development partners like KfW will continue working with Ugandan officials to address urgent issues such as the need to improve energy efficiency, upgrade transmission systems, and expand grids into remote rural areas.

10. Case Study: Shifting from feed-in tariffs to competitive tendering in South Africa[3]

10.1. Introduction

South Africa has played a central role in the debate about the best ways of setting tariffs for renewable energy PPPs. In 2009, the government began exploring feed-in tariffs for renewable energy, but in 2011 they were rejected in favour of competitive tenders. The initial outcome of the programme, now known as the Renewable Energy Independent Power Producer Programme (REIPPP), is encouraging: since 2012, South Africa has ranked among the top ten countries globally in terms of renewable energy independent power producer investments, ahead of Canada, Brazil, Spain, and France. In three years, South Africa signed up more investments for more independent power generation plants than has been achieved across the entire African continent over the past 20 years. South Africa's experience with tendering sheds some light on the central issues in the feed-in-tariffs versus tendering debate.

10.2. From feed-in-tariffs to tenders

In the 1970s and 1980s, the publicly-owned national power utility, Eskom, overestimated demand growth and embarked on a massive investment programme. As a consequence, in the 1990s the utility had significant overcapacity and stopped building new power stations. By 2010, however, demand for power was approaching available capacity.

While the South African Government recognized that independent power producers should be allowed to enter the market to help supply more generating capacity, most procurement programmes run by Eskom for independent producers were unsuccessful. Eskom signed no contracts with such producers, apart from a handful of short-term power purchase agreements with industrial generators.

In 2003, the Government began setting renewable energy targets for the country. South Africa had made no commitments to reduce greenhouse gas emissions under the Kyoto Protocol but policymakers have been mindful of the risks that the country's relatively high levels of carbon emissions (because of a heavy reliance on coal for power generation) might pose to the economy's future international competitiveness.

The 2003 targets were not met, but ongoing government research eventually provided the basis for President Zuma to make a pledge at the Copenhagen Climate Change Conference in 2009 that South Africa would significantly reduce its carbon dioxide emissions by 2025. The National Energy Regulator of South Africa (NERSA) backed that commitment with a REFiT policy. Developers generally regarded the initial published feed-in tariffs as generous but the legality of feed-in tariffs within South Africa's public procurement framework was unclear, as was Eskom's commitment to a programme that would facilitate independent power producers.

Eventually, legal advice confirmed that feed-in tariffs were inconsistent with public finance and procurement laws. The Department of Energy announced that a competitive bidding process for renewable energy, known as REIPPP programme, would be launched. The regulator's subsequent decision to abandon feed-in tariffs was met with dismay by a number of renewable energy project developers.

3 Adapted from Eberhard and others, 2014.

10.3. Key features of the tenders

REIPPP marked a change of strategy by the Government. Because of Eskom's earlier failures to make progress with independent power producers, the Department of Energy took control of the new programme. It also sought the assistance of the National Treasury Public-Private Partnership (PPP) Unit to manage the process. A small team of mostly mid-level technical staff from the Department and the PPP Unit established a project office, known as the Department of Energy Independent Power Producer Unit, which functioned effectively outside the formal departmental structure of national government to act as a facilitator for the REIPP process.

The programme was initially funded by donors, the Development Bank of Southern Africa, and through a R100 million contribution from a Jobs Fund managed by the National Treasury. After the first round of bidding, the programme began to rely for funding on bidder registration fees and fees paid by successful independent power producer project companies. The programme has remained completely off the formal government budget over the first three bidding rounds.

The tenders for different technologies were held simultaneously. Bidders could bid for more than one project and more than one technology. Caps were set on the total capacity to be procured for individual technologies in order to limit the supply to be bid out and therefore increase the level of competition among the different technologies and potential bidders.

The request for proposals (RFP) package included standard, non-negotiable, power purchase agreements (PPAs) and implementation agreements (IAs). Purchase agreements specified that the transactions should be denominated in South Africa Rand and that contracts would have 20-year tenors. Implementation agreements were to be signed by the independent power producers and the Department of Energy and effectively provided a sovereign guarantee of payment to the producers by requiring the Department to make good on these payments in the event of an Eskom default. Implementation agreements also placed obligations on the independent power producers to deliver economic development targets, with project selection based on a 70/30 split between price and economic development considerations.

10.4. Outcomes of the bid rounds

Bid round 1 was launched on 3 August 2011 with the issuance of a request for proposals. On 4 November 2011, a total of 53 bids for 2,128 MW of power-generating capacity had been received. Ultimately, 28 preferred bidders were identified in the first round, offering 1,416 MW for a total investment of approximately $5.75 billion. The financial close of all 28 projects occurred on 5 November 2012. Construction on all of these projects has started and the first project came on line in October 2013.

Bidders may have realized that the tight deadlines and challenging threshold qualification criteria would result in less capacity being bid for than was available in Round 1. Accordingly, the prices bid were generally unaffected by competitive limitations and only marginally below the caps specified in the request for proposals.

Round 2 was launched in December 2011 and made use of the same request for proposals as Round 1. However, the total amount of power to be procured was reduced to 1,275 MW in order to stimulate additional competition. Seventy-nine bids had been received by5 March 2012 for 3255 MW. The preferred bidders were announced on 21 May 2012. Nineteen bids were selected in Round 2. Prices were much more competitive and bidders also offered better local content terms. Contracts were signed for all 19 projects on 9 May 2013.

Round 3 procurement documents were released on 3 May 2013 and were again based on those used in previous rounds, but with further refinements. The total capacity on offer was restricted to 1473 MW, with individual capacity caps for different technologies. By19 August 2013, 93 bids had been received totalling 6023 MW. Seventeen preferred bidders were notified on 29 October 2013. Their bids totalled 1456 MW. Prices fell further in Round 3 and local content again increased. Financial close for Round 3 was set for 30 July 2013.

At the end of Round 3, 2808 MW still remained to be allocated. Round 4 tenders were planned for August 2014.

10.5. Key private sector actors

The first three REIPPP bid rounds attracted a wide variety of international project developers, sponsors and equity shareholders. The 64 successful projects incorporate 47 different entities with primary shareholdings. In all, 56 of the 64 projects in rounds 1, 2, nd 3 were project financed. On average, across the three rounds, approximately 75 per cent of the funding was through debt. The majority (64 per cent) of debt funding came from commercial banks (ZAR 57 bn), with the balance coming from development finance institutions (ZAR 27.8 bn), and pension and insurance funds (ZAR 4.7 bn).

Tendering requirements forced bidders to rely heavily on local currency financing. Request-for-proposals rules ensured that 86 per cent of the project debt was raised from local-South African sources. Debt tenors are around 15 years and spreads over the Johannesburg Interbank Agreed Rate (JIBAR) are between 350 and 400 points.

10.6. Conclusions

Does the REIPPP experience prove that tendering leads to lower prices for renewable energy than feed-in tariffs? Not necessarily. The realization that the latter have to be adjusted downward over time ("tariff digression") is a standard feature of feed-in tariff policies, and what are clled "payment level adjustment mechanisms" (PLANs) are frequently employed to reduce tariffs as costs of production decrease because of things like new or improved technologies. Tariffs need to be set at reasonable levels at the outset, and the experience of REIPPP suggests that the levels established by the National Energy Regulatorwere much too high.

Moreover, tendering is not without its shortcomings: first, transaction costs are high for everyone involved, including government evaluators; second, for private sector players, the high costs tend to favour well-capitalized firms and disadvantage smaller ones, especially local small and medium-sized enterprises; and, third, tendering can lead to low balling by bidders who attempt to win a project with the lowest bid, but expect to increase the tariffs later through renegotiation.

In the case of REIPPP, the National Energy Regulator certainly set tariffs and price ceilings too high for bid round 1. But this simply highlighted the fact that South African officials did not understand the renewable market well enough to set prices at reasonable levels or effectively to manage a tariff digression process.[4] Shifting to competitive tendering helped tariffs come down sharply after round 1, and this reduction was a major factor in the Government's willingness to continue its support for REIPPP as what it deemed a "successful" programme.

Other features of the tendering programme helped reduce some of the other typical shortcomings of such a process. For example, the Department of Energy gained an exemption from the National Treasury's PPP regulations for the REIPPP projects. Subjecting these independent power producers to the complex South African PPP development rules, including the need to prepare "public sector comparators" and to obtain Treasury sign-offs at various stages of the process, would have slowed significantly this complicated, fast-tracked programme. In addition, the requirement that bids be fully underwritten with debt and with equity effectively eliminated the tendency of competitive tenders to encourage underbidding to win contracts followed by renegotiation in the hope of securing more profitable deals. The non-negotiable, power purchase and implementation agreements also sent a clear message to bidders that agreements would not be renegotiated after financial close.

4 Department of Energy officials later admitted that they were unaware that the slowdown in Organization for Economic Cooperation and Development (OECD) markets for renewable power meant that a programme the size of REIPPP would attract considerable attention from the international private sector. The huge private sector response to the round 1 request for proposals caught officials by surprise.

11. Case study: localization requirements under the South African REIPPP[5]

While most stakeholders judge REIPPP to have been successful through the first three bidding rounds (see case study in section 10), its strong reliance on non-price factors in bid evaluation has generated criticism and controversy. These non-price factors are organized in bid documents under the heading of "economic development" requirements and generally have the effect of creating non-tariff "localization" barriers to trade in goods and services. They require bidders to meet certain minimum thresholds with regard to such issues as jobs for South African citizens, local black ownership and management of project companies, financial contributions to local communities, and spending on local manufacturing content. Bidders can also earn extra bid evaluation points by exceeding these minimum thresholds. Because these localization measures account for 30 per cent of bid value, they have played an important role in the REIPPP procurement process, a much more important one than the 10 per cent maximum bid value that non-price factors are required to play in other South African government procurement programmes.

South African government officials view REIPPP as a programme that, in the words of the first request for proposals, "is inherently excellent for achieving positive socioeconomic outcomes" (Republic of South Africa, 2011b, p. 11). They clearly see the potential to boost local manufacturing and jobs in a sector that is completely underdeveloped in the country. Because of the distributed nature of renewable energy generation, project sites offer an unusually intense business focus on rural areas that otherwise have little potential to attract investment. The nature and extent of these potential outcomes apparently warranted exceptions to established localization procurement requirements.

One exception concerns the importance of non-price factors in bid evaluation. The focus placed by REIPPP on localization has been much more aggressive than that required under existing government frameworks like the Broad-Based Black Economic Empowerment or Preferential Procurement Policy Framework. Instead of the Policy Framework requirement that 90 points go towards price evaluation, with the remaining 10 points allocated to compliance with preference categories (or the 80/20 split for smaller contracts), REIPPP allocates 70 points to price and 30 points to non-price "economic development" criteria. This more robust role for localization requirements in REIPPP highlights the importance of these factors in the programme and supports the argument that its socioeconomic benefits balance out the higher costs of renewable energy.

Black economic empowerment also features strongly among the economic development requirements of REIPPP, although with different categories and weightings being applied than those used under Broad-Based Black Economic Empowerment. The smaller individual weightings add up to less overall emphasis on black empowerment than suggested in the relevant legislation. In other departures, REIPPP emphasizes black job creation over black ownership, and reclassifies enterprise and socioeconomic development as local community development targets rather than black empowerment targets.

Table 5 shows how the scoring categories are to be calculated and their overall scoring weights, and indicates thresholds and targets for onshore wind, one of the seven renewable energy categories covered by REIPPP. Meeting the threshold level simply means that a bid is minimally compliant. Bidders score points in these categories as long

5 Adapted from Eberhard and others, 2014.

as they exceed the threshold levels (ten points are awarded for achievement between threshold and target levels, and an additional score of ten points for any achievement above the target level).

In addition to these programme elements, labelled as "economic development" subcomponents, the REIPPP requests for proposals listed several other localization-type thresholds that bidders were required to meet in order for bids to be minimally compliant. The "qualification" sections of the requests note that in order to be compliant all projects must have at least 40 per cent participation by South African "entities" – corporate entities based and registered in South Africa, with South African shareholders. Bidders were also required to submit audits of their financial models confirming that no more than 60 per cent of project capital investment consisted of foreign currency.

Localization requirements were amended in a variety of ways over the course of the bid rounds. The changes mostly tightened requirements, narrowed definitions, and closed loopholes identified during bidding by the Department of Energy REIPPP management team and its advisors. But the most dramatic changes were made to the local content expenditure requirements, the only localization category that was different for each of the technologies. From the beginning of the bidding rounds, the Department had warned that thresholds and targets for local content spending would be revised upwards over time as manufac-

Table 5: REIPPP localization scoring categories – onshore wind*

Elements	Weights	Measurement		Round 1 Scoring	
		Numerator	Denominator	Threshold	Target
1. Job Creation	25%	SA-based employees who are citizens	Number of RSA-based employees	50%	80%
		SA-based employees who are black citizens	"	30%	50%
		SA-based employees who are citizens of local communities	"	12%	20%
		Skilled employees who are black citizens	Number of skilled employees	18%	30%
2. Local Content	25%	Value of local content expenditure	Total project value	25%	45%
3. Ownership	15%	Black shareholding in the project company	Total shareholding	12%	30%
		Black shareholding in the construction contractor	"	8%	20%
		Black shareholding in the operations contractor	"	8%	20%
		Local community shareholding in the project company	"	2.5%	5%
4. Management Control	5%	Black top management	Number of people in top management	--	40%
5. Preferential Procurement	10%	BBBEE procurement expenditure	Total procurement expenditure	--	60%
		SMME procurement expenditure	"	--	10%
		Women-owned vendor procurement expenditure	"	--	5%
6. Enterprise Development	5%	Community enterprise development contributions	Total project revenue	--	1.2%
7. Socio-econ. Development	15%	Community socio-economic development contributions	Total project revenue	2%	3.0%
	100%				

***** *All seven renewable energy technologies have identical thresholds and targets except for "local content," which is different for each technology*

Source: *Eberhard and others, 2014.*

Table 6: Changes in REIPPP local content requirements (percentages)

Technology	Round 1		Round 2		Round 3	
	Threshold	Target	Threshold	Target	Threshold	Target
Onshore wind	25	45	25	60	40	65
Photovoltaics	35	50	35	60	45	65
Concentrated solar power	35	50	35	60	45	65
Biomass	25	45	25	60	40	65
Biogas	25	45	25	60	40	65
Landfill gas	25	45	25	60	40	65
Small hydro	25	45	25	60	40	65

Source: *Eberhard and others, 2014.*

turing capacity increased in the country. Table 6 shows these increases.

As table 7 shows, the photovoltaic, wind and concentrated solar power projects in rounds 1, 2, and 3 promise to generate approximately 20,000 temporary construction jobs and approximately 35,000 operations jobs. At the same time, the government increased competition dramatically by making less capacity available in rounds 2 and 3. This increased the number of bids and those that met and exceeded the qualification hurdles. Prices fell significantly, and by round 3 wind prices had dropped by 43 per cent, photovoltaics prices by 68 per cent, and concentrated solar power prices by 46 per cent (Eberhard and others, 2014).

Table 7: REIPPP job creation through three bid rounds

Technology	Round 1	Round 2	Round 3	Totals
Solar PV				
Local construction jobs	2,381	2,270	2,119	6,770
Local operations jobs	6,117	3,809	7,513	17,439
Wind energy				
Local construction jobs	1,810	1,787	2,612	6,209
Local operations jobs	2,461	2,238	8,506	13,205
Concentrated solar power				
Local construction jobs	1,883	1,164	3,082	6,129
Local operations jobs	1,382	1,180	1,730	4,292
Total Jobs				
Local construction jobs	6,074	5,221	7,813	19,108
Local operations jobs	9,960	7,227	17,749	34,936

Source: *Eberhard and others, 2014.*

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