Channelling Economic Regulation to stimulate Competition for Economic Development and Inclusive Growth: Lessons from South Africa's Renewable Energy Experience

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Abstract

Economic regulation, including competition policy, is not an end in itself but a means to an end, and must ultimately have a positive impact on the economy as a whole. However, this positive impact needs to be broad-based or inclusive, particularly in the context of a country like South Africa given its legacy of non-inclusive growth and persistent inequality. An area where increased participation is important in achieving more inclusive growth in a developing country context is in the procurement of large-scale infrastructure. The South African experience with procuring large-scale renewable energy-based electricity generation capacity carries interesting lessons in this respect.

The paper will review the development of South Africa's large-scale renewable energy sector, analysing the evolution of the different renewable energy programmes in the country to identify enabling factors and constraints. The regulatory framework governing the sector will be examined, looking at both the policy and institutional environment, and their role in contributing to inclusive growth objectives. As such, the paper will investigate the role that economic regulation (particularly sound regulatory principles and good institutional coordination) can play in stimulating competition (effective competitive rivalry) to achieve both price and non-price objectives assigned to the sector. Lessons learnt from South Africa's renewable energy experience can be extended beyond the electricity supply industry, rolling them out to other large scale infrastructure programmes and other regulated industries in the country and the Southern African region.

1. Introduction

The world is currently facing a triple challenge of sustainability (Addison et al., 2010; Lagarde, 2012). Economic crises, symbolised by weak gross domestic product growth, compound the growing social emergencies of poverty, unemployment and inequality in developed and developing countries alike. On top of these socio-economic issues, the threat of climate change related to an over-reliance on fossil fuels and the unsustainable use, depletion and pollution of other natural resources, is pushing the world to levels of dangerous instability.

The current growth model is clearly unsustainable and a paradigm shift is urgently required to set economies and populations on a new renewed development path focusing not only on economic prosperity but including both social (such as poverty eradication, inequality reduction, local development, etc.) and environmental (such as climate change, pollution, biodiversity, etc.) considerations.

The transition to an inclusive green growth model, stemming from the concept of sustainable development, has been recognised as a ground-breaking way forward, combining economic development, social welfare and environmental protection. As defined by the Brundtland Report in 1987, "*sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (UNWCED, 1987). Building on this definition, inclusive green growth can be defined as "*growth that not only helps green economies, but also helps move towards sustainable development by ensuring environmental sustainability contributes to, or at least does not come at the expense of, social progress*" (AfDB et al., 2013, p. 3).

Focusing on social and economic aspects, inclusive growth, a term often used interchangeably with broad-based, shared or pro-poor growth, refers to growth which encapsulates both improved participation and benefit sharing (UNDP, 2013). It is fairly uncontroversial that growth has to be broad-based to be sustainable in the long run, both across sectors in the economy and across a large proportion of a country's labour force (Ianchovichina and Lundstrom, 2009; Khan, 2012). The findings of the Commission on Growth and Development (2008) highlight that inclusiveness is an essential ingredient of any successful growth strategy and that it captures equity, equality of opportunity and protection in markets and equality in employment opportunities (cited in Ianchovichina and Lundstrom, 2009). While general economic growth is a pre-requisite for poverty reduction, it is well recognised that it does not guarantee that everyone benefits equally. Particularly in developing countries, general economic growth, even if sustained for a period of time, has not necessarily translated into equal opportunity and equal access to markets and resources for poor and marginalised groups (see de Mello and Dutz (eds.), 2012). This has perpetuated high inequality levels, a concern that is central for South Africa given its legacy of historically-skewed economic participation. Broader, more dynamic perspectives of inclusive growth include the opening up of new sectors and harnessing existing sectors to produce more value-added offerings. These rely on significant investments in productive capabilities and skills (Khan, 2012). Similarly, in order to shift to an inclusive green growth pattern, changes in production processes (requiring investments) as well as production and consumption practices are crucial (UNEP, 2009).

South Africa seeks to achieve more inclusive growth as envisioned in the country's New Growth Path (EDD, 2010). South Africa's strategy to achieve inclusive growth, particularly increased employment growth and lower income inequality, and the transition to a green (including low-carbon) economy, is set out in the National Development Plan: Vision 2030 (NPC, 2011). These policy drivers recognise the importance of a competitive, diversified and more inclusive economy in improving trade performance, job creation and revenue generation (National Treasury, 2013). This requires government intervention

through appropriately designed, coordinated and implemented policies which will create new economic opportunities and ensure greater participation. Intervention can take the form of removing barriers to participation and creating a more level playing field (Ianchovichina and Lundstrom, 2009) or actively formulating policies that, by their very design, mandate participation by previously marginalised groups. As argued by Roberts and Mondliwa (2014), a view of regulation which only focuses on existing infrastructure and static considerations of efficiency is indeed a narrow one and there is a strong rationale for regulation to actively introduce competition, dynamism and transformation into an industry.

Infrastructure development (i.e. the procurement of large-scale infrastructure) is one area which the state and economic regulators can, by setting the example, leverage to foster inclusive growth. Infrastructure development in South Africa has so far not been done in an inclusive manner and the potential of economic regulation has not been harnessed accordingly. As identified by Roberts and Makhaya (2013), infrastructure development was narrowly focused on serving the needs of strategic industries in apartheid South Africa, particularly mining and agriculture, in which black participation was non-existent. It can be argued that in order to foster inclusive growth through infrastructure development, a change in practice is required, one in which economic regulation can play an active role. Makhaya and Roberts (2013) have also highlighted that past policy intervention has largely failed to stimulate effective competitive rivalry and tip 'the balance of power' in favour of new entry and increased participation. However, the role that regulation can play in fostering inclusive growth through creating opportunities and removing barriers to entry by stimulating competitive rivalry remains largely under-researched in South Africa.

The analysis of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) in South Africa for the commissioning of large-scale renewable energy generation capacity provides valuable insights on the issue and aims to contribute to the literature. Owing to the renewable, clean nature of the electricity produced, the programme is assumed to be in support of a growth model more conscious of environmental and climate change issues. The inclusive nature of the programme from an economic and social perspective however remains more questionable and requires an in-depth analysis. Identifying and reflecting on the lessons learned through South Africa's journey is fundamental in understanding the roots of the present accomplishments, recognising areas for improvement and laying the foundations for successful future procurement programmes beyond just the energy sector.

The paper proceeds as follows. Section 2 discusses the interplay between competition, regulation and inclusive growth, highlighting the importance of regulating *for* competition. Section 3 reviews South Africa's REIPPPP from the two prisms of analysis of economic regulation and inclusive growth, drawing the links between the two fields. Section 4 concludes.

2. Increased competition for inclusive growth? The role of effective regulation

The benefits of greater competition in terms of lower prices, greater choice, improved quality and innovation are well accepted. However, whether or not greater competition necessarily translates into inclusive growth is less clear, as is the role of regulation in achieving this. This section highlights the potential for effective regulation to stimulate increased competition, and the positive impact this could theoretically have on inclusive growth outcomes in the South African context.

A common justification for economic regulation is the presence and persistence of a range of market failures. Market failures arise when resources are not allocated efficiently, and when a more optimal outcome from reallocation exists. Market failures, along with other constraints, impede the poor and

marginalised from accessing markets and benefiting from growth, thereby perpetuating inequality and non-inclusive growth (Ali and Son, 2007; Ianchovichina and Lundstrom, 2009).

One type of market failure, and arguably the most persuasive justification for regulation, is the presence of natural monopolies. A natural monopoly exists when only a single firm is sufficient to serve the entire market and it can do so at a lower cost than if two or more firms served the market. Given the significant economies of scale and high fixed costs present in such industries, the lowest long-run average total cost is achieved with a single firm and it would be inefficient to have more than one firm or to duplicate the infrastructure. Typical industries that have natural monopoly characteristics and that are commonly subject to regulation include electricity transmission, liquid fuel pipelines, telecommunication infrastructure and water supply systems. In South Africa, economic regulation has indeed been focused on regulating the natural monopoly parts of the economy that were formerly state-owned and subsequently privatised (Mondliwa and Roberts, 2014).[1]

Another type of market failure arises from non-competitive markets. This can occur when a single firm or groups of firms possess persistent market power which results in less than optimal output being produced and resultant prices are higher. Further, firms with market power that control essential facilities that cannot easily be replicated or key inputs could abuse their dominance by limiting access to their facilities, thereby creating barriers to entry. Regulation therefore can be a way to curb excesses in market power in terms of regulating access to infrastructure and prices (Viscusi et al., 2000, as cited in Roberts and Mondliwa, 2014).

South Africa's history and former economic policies under apartheid created markets that are highly concentrated, with a few firms in strategic industries possessing considerable market power. Economic opportunity only catered to the interests of minority groups. The state owned and controlled strategic sectors, such as energy, telecommunications, mining, agriculture and several intermediate industrial product markets. Even following liberalisation and privatisation trends in the 1990s, most of these industries continue to be highly concentrated and some remain state-owned (Makhaya & Roberts, 2013). Participation by new entrants is constrained through either structural or strategic barriers to entry (or both). Structural barriers include sunk costs, scale economies, network effects, and regulatory or legal barriers (Motta, 2004; Bain, 1956), while strategic barriers result from anticompetitive conduct by incumbent dominant firms in a deliberate attempt to exclude new players from the market (Vickers 2005; Rey and Tirole, 2006). Even in regulated industries, where competition could be actively introduced, such as in energy and telecommunications, broad-based participation has remained muted.

Role of proactive economic regulation and competition policy

This is precisely where proactive economic regulation, including effective competition policy, has an important role to play as we illustrate through the case study in renewable energy in Section 3. Effective competitive rivalry is a means by which participation in different sectors in the economy can be widened to be more inclusive. Broad-based growth will not necessarily automatically materialise if left solely to

[1] Markets can also fail when there are externalities that arise when the social cost or benefit of producing or consuming a good or service does not match its price, or when a party who did not choose to incur that cost or benefit is nonetheless affected by it. Negative externalities, such as air pollution and other environmental concerns, result in the good being overproduced, as the producer does not take into account the external cost when producing it. Conversely, in the presence of positive externalities, too little of the good would be produced, as the external benefits to others are not taken into the valuation of the good or service. In such instances, regulation or intervention is necessary to provide the optimal quantity of the good or service.

the market and, as described in the introduction, the state as well as economic regulators have active roles to play in this regard.

On the one hand, several countries, including South Africa, have competition policies, a form of intervention that aims to curb excessive concentrations in the economy (*ex ante* through the merger regime) and prohibit anticompetitive conduct that results in the exploitation of customers or the exclusion of competitors ultimately to the detriment of consumers and the competitive process (*ex post* through abuse of dominance and cartel provisions). While greater economic efficiency (resulting in lower prices, better quality, increased choice and innovation) is a key desired outcome of competition policy, the South African Competition Act[2] in particular has a broader purpose which specifically addresses goals of greater participation and economic inclusivity. This is clearly set out in the preamble of the Act, where purpose includes '*to promote employment and advance the social and economic welfare of South Africans'* and '*to ensure that small and medium-sized enterprises have an equitable opportunity to participate in the economy; and to promote a greater spread of ownership, in particular to increase the ownership stakes of historically disadvantaged persons"* (Competition Act of 1998, Section 2).

On the other hand, economic regulation is largely viewed as *ex ante*, where the aim is to control market power in instances where competition is either not possible or is not desirable (such as where industries are characterised by natural monopolies and certain market failures are present). It aims to do this by setting out the rules of the game upfront (das Nair and Roberts, 2014).

Bringing economic regulation and competition policy together

As argued above and as we show in the case study in Section 3, economic regulation and competition policy are not mutually exclusive. For competition to flourish, effective economic regulation is necessary and can be designed to create what has been termed 'synthetic competition' even in natural monopoly situations (Ginsberg, 2009). Indeed, Newbery (2002:28) cautions against the mantra "*competition where feasible, regulation where not*", highlighting that even the potentially competitive elements of a network industry, such as electricity generation, often still need regulatory oversight so that market power is not abused. Changing the rules of the game, or 'regulating for competition' to ensure that the dynamic benefits of competition are part of the long-term vision is necessary to ensure wider economic participation and inclusive growth. Actively encouraging investment in the energy sector is an area in which previously disadvantaged individuals could participate and this requires regulators to design the rules of the game upfront such that participation is encouraged.

Does more effective regulation and greater competition necessarily result in increased participation?

While in theory increased competition should allow greater and more inclusive economic participation, in reality the power and vested interests of large firms and linkages to the political economy paves the path in which countries develop and often undermines efforts of economic regulators and well-intended policies (Roberts, Simbanigave and Vilakazi, 2014 citing Acemoglu and Robinson, 2012 and North et al., 2009). In South Africa, powerful conglomerates have shaped the development trajectory of industry and Makhaya and Roberts (2012) suggest that it is both the political connections of the incumbents and strategic behaviour in these sectors that serve to restrict entry, allowing entrenched dominant positions

[22] Act No. 89 of 1998, as amended.

to be maintained. This influence extends to the ability to shape the new regulatory frameworks in favour of dominant incumbents (Makhaya and Roberts, 2012).

More broadly, Rodriguez and Menon (2010) have argued that, in developing countries, blindly promoting competition laws and policies ignores the actualities of the prevailing political settlements and institutional realities (as cited in Roberts, Simbanigave and Vilakazi, 2014). Regulators are also exposed to lobbying by powerful interest groups and outcomes of this may be that the development trajectory of the industry is short-sighted. Khan (2012) reiterates the importance of understanding the importance of political settlements when evaluating inclusive growth and that differences in political settlements mean that one cannot simply transplant a successful strategy/policy for inclusive growth from one country to the next without understanding the political settlement of that country in which policies and institutions are embedded (in de Mello and Dutz (eds.), 2012). This is also highlighted by Levine (2012) who, when assessing the financial sector, highlights the political economy challenges to create policies that stimulate inclusive growth. He explains that powerful individuals or circles in society may not want the financial sector to perform well as this would empower the previously economically disenfranchised, creating competition and potentially diluting the importance of their wealth and political influence (in de Mello and Dutz (eds.), 2012). It is therefore important to bear these divergent vested interests in mind when assessing the outcomes in the renewable energy sector and the electricity sector more broadly and whether the carefully designed framework has indeed resulted in the potential for more inclusive growth, or whether increased participation is again non-inclusive of the marginalised. It is thus important to understand the relevant players, their history and evolution, the institutions involved and the political nuances that affect the renewable energy sector.

International examples

While the record of regulatory intervention in telecommunications, liquid fuels, rail and electricity supply in South Africa has generally not yielded the desired degree of competition (see das Nair and Roberts, 2014[3] and Roberts and Mondliwa, 2014), some interesting international examples exist on the importance and difficulty of regulating for competition.

The Scottish experience in the water industry illustrates some of the inclusive growth benefits of economic regulation. While the water and sewerage assets remain state-owned, regulation has introduced effective competition in the retail market resulting in reduced prices, lower water use, capital and operational efficiencies. An independent regulator, the Water Industry Commission for Scotland (WICS) sets prices for Scottish Water, using a benchmark of comparable English companies and the United Kingdom price cap model. Scottish Water can appeal disputed decisions at the Competition Commission. The system is protected from political interference but has checks and balances in place to ensure that policy mandates are met (Parker, 2014). Furthermore, retail competition was deliberately introduced (albeit in a limited form) by allowing retail competition for business customers only. This was done by Scottish Water establishing a ring-fenced subsidiary purely to supply businesses, in competition with 14 other retailers. All suppliers are licenced by the WICS (Parker, 2014).

Benchmarking against competitive English prices has improved efficiency and performance, quantified to have realised at least GBP2.5 billion in efficiency savings or GBP110 per annum per household (Parker, 2014). Other estimates have suggested that the average household bill for water and sewerage services is GBP50 lower than that of England and Wales for 2012-2013 and that households have enjoyed price freezes over a number years, with recent increases being below inflation (Scottish

[3] It is highlighted in this paper however, that the Ports Regulator in South Africa has in recent years made significant regulatory decisions with positive impacts on competitiveness.

Government, 2013). Competition introduced in the retail level to business also resulted in positive outcomes, with the ability of customers to negotiate lower prices with Scottish Water's subsidiary which now faces competition. Levels and quality of service also greatly improved. The success of the system is credited to the fair and equal treatment of all competitors in the market and open and transparent pricing models. The Scottish water regulation experience has shown that regulation can indeed introduce and promote competition which can deliver private sector levels of efficiency (Parker, 2014).

Against the Scottish example, the Californian experience in the United States of America demonstrates some of the difficulties in liberalising without adequate regulatory oversight. Following the liberalisation and unbundling of electricity infrastructure in California in the late 1990s, wholesale electricity prices trebled between 1999 and 2000, quite contrary to the expectation that increased competition in generation would drive prices down. As part of the unbundling process, the three incumbent vertically integrated suppliers of electricity were forced to sell off most of their generation capacity, focusing only on transmission and delivery (Armstrong and Sappington, 2006). At the same time, their retail prices were capped (while wholesale prices were not regulated) and retail customers were allowed to buy from other firms, not just from the incumbents.

Unusually high demand for electricity in 2000 (given very hot and dry weather conditions) spurred generating firms to use old and inefficient technologies to generate more electricity as new generating capacity (in which there was serious lack of investment) would take considerable time to come on stream. This increased wholesale prices to well above the retail price cap, which severely squeezed the margins of, and bankrupted, the incumbent suppliers/distributors. Furthermore, buying and selling of electricity was strongly encouraged through the California Power Exchange. While this ensured short-term certainty of supply, entering into long-term contracts was dissuaded, exposing the incumbents to rising prices from wholesalers. Ultimately, the state of California had to intervene by buying power on behalf of the incumbents, by raising prices to large retail customers and by disallowing the large retailers once again from buying from companies other than the incumbent suppliers. Therefore, retail competition was both introduced and reversed in a very short space of time (Newbery, 2002; Armstrong and Sappington, 2006).

The Californian example provides important lessons on the risks of attempting to introduce competition without adequate regulatory oversight. Moreover, regulation in the transition phases of liberalisation cannot be static and inflexible. It has to evolve to suit the changing competitive landscape of the industry if long-term competitive outcomes are sought (Newbery, 2002).

Summary

This section has highlighted, from a theoretical perspective, the important role that increased competition could have in attaining greater participation and inclusive growth outcomes. This is particularly relevant for South Africa given its history of non-inclusive participation in the economy and skewed access to economic opportunities. This section also emphasises, including through international experiences, the importance of '*regulating for competition*' dispelling the notion that regulation and competition can effectively function independently of each other. Coordination of the state, independent economic regulators, competition authorities and the private sector is essential to reduce barriers to entry and stimulate inclusive growth. However, this has to be done with cognisance of the political interests or vested interests at play.

The renewable energy experience in South Africa highlights the deliberate attempt to introduce price competition and inclusive growth objectives in the formulation of regulatory policy for the sector. The coordination between various stakeholders which ultimately in part contributed to the success of the

programme was not always present in early rounds. But through learning from lessons from past failed programmes and changing/adapting the rules of the game accordingly, the regulatory framework has evolved to suit the needs of the industry.

3. Case study: South Africa's experience with large-scale renewable energy

Against this background, the study of South Africa's REIPPPP, aimed at commissioning large-scale electricity generation capacity from renewable energy technologies, provides valuable insights on the use of economic regulation to stimulate competition and inclusive growth. This requires an investigation of the REIPPPP from a new prism of analysis, adopting both an economic regulation and an inclusive growth lens. Following a brief introduction of the programme, the explicit use of the REIPPPP to channel economic regulation for competition and inclusive growth is discussed. The results of these mechanisms are then analysed in terms of inclusive growth.

3.1. The Renewable Energy Independent Power Producer Procurement Programme: History and Brief overview

South Africa's road to large-scale renewable energy-based electricity generation has been a haphazard and convoluted path. From the publication of the 2003 White Paper on the Renewable Energy Policy of the Republic of South Africa (DME, 2003), which set the objective of generating 10 000 gigawatt-hour (GWh) of renewable energy by 2013 (approximately 4% of the energy mix), to the procurement of the first megawatt (MW) of generation capacity in 2011, a long and complex policy development process took place in the country. It is intrinsically intertwined with the opening of the electricity supply industry to the private sector.

Several initial attempts were conceptualised, designed and administrated by the state-owned, vertically-integrated monopoly Eskom, such as the Pilot National Cogeneration Programme (PNCP), the Medium Term Power Purchase Programme (MTPPP) and the Multisite Base-load Independent Power Producer Programme (MBIPPP) (DoE, 2009; Yelland, 2009), failed to effectively procure power from independent power producers (IPPs). Following the failure of early procurement programmes, the National Energy Regulator of South Africa (NERSA) developed a Renewable Energy Feed-In Tariff (REFIT) mechanism to procure power output from qualifying renewable energy generators at predetermined prices. Faced with political and legal challenges, the REFIT policy was, however, abandoned in favour of an auction system (Baker, 2012; Creamer, 2011). Following a lengthy transition process, the Department of Energy, with assistance from National Treasury's Public-Private Partnership Unit, launched the REIPPPP in August 2011.

The first phase of the REIPPPP has been designed with an initial allocation of 3 625 MW to be procured from IPPs over a maximum of five bid windows by 2016, as determined by the Minister of Energy under Section 34(1) of the Electricity Regulation Act No. 4 of 2006.[4] In December 2012, the Department of Energy published an additional determination of 3 100 MW for the 2017-2020 period,[5] bringing the total determination to 6 725 MW (as well as 200 MW for small-scale project). As of February 2015, 4 116

[4] Additionally, 100 MW have been set aside for small-scale renewable energy projects to enable new entrants, which may not have the support of international partners, to participate.
[5] The 2012 ministerial determination also includes 100 MW for small-scale projects.

MW of generation capacity have been procured for total investments of over ZAR 140 billion, with a collective capacity of 1 500 MW already operational.

The programme has benefited from a number of key overarching success factors on political (such as the policy space), organisational (such as the institutional arrangements) and operational (such as the power purchase agreement (PPA)) levels.[6]

Indeed, only when policy certainty on the role of renewable energy and the associated investment strategy (i.e. the role of the private sector) were achieved, could the procurement framework be successfully implemented. The REIPPPP has built on the concomitant increased policy certainty on the role of renewable energy and IPPs in the country. The participation of IPPs in electricity generation was secured in 2007 with Cabinet designing Eskom as the single buyer of power from public and private producers and mandating the state-owned enterprise to ensure that "*adequate generation capacity is made available and that 30% of the new power generation capacity is derived from IPPs*" (GCIS, 2007).[7] Large-scale commitment to renewable energy was achieved in 2010 with the Integrated Resource Plan for Electricity 2010-2030 (IRP 2010). The IRP 2010, finalised in 2011, intends for renewable energy technologies (solar and wind essentially) to supply 42% of the new additional capacity over the 2010-2030 period or 9% of the total electrical energy in 2030 (DoE, 2011).

Institutional arrangements have also been at the crux of the success of the REIPPPP. The programme has benefited from institutional leadership and political will from the Department of Energy and the National Treasury, and the active participation of all relevant stakeholders, from other government departments (such as the Department of Trade and Industry and the Department of Environmental Affairs) to NERSA, from Eskom to financial institutions and project developers. While ameliorations could still be achieved on the coordination of all involved institutions, the success of the REIPPPP lies in the inclusion of all stakeholders from government departments, to the regulation and the state-owned utility, to the private sector. Had just one of these vital players been missing from the programme design and consultation, the scheme would have undoubtedly not been such an overwhelming success.

Finally, under the REIPPPP, the PPA, which constitutes the only source of revenue for developers and for commercial banks financing IPPs (to ensure debt repayment and adequate return on investment), meets international standards (although the financial close phase could be improved). It is held for a period of 20 years and in local currency, and allocates risk between the parties based on investment-friendly terms.[8] It guarantees payment of an agreed tariff for power generated on a take-or-pay basis (Stemple, 2013).[9] The tariff is agreed upon the award of the preferred bidder status and is indexed to the rate of inflation over the duration of the contract with Eskom. The agreement is underwritten by the National Treasury should Eskom default on the terms of the agreement. The Department of Energy separately contracts with the project companies in order to offer recourse for project investors in the event that Eskom fails to meet its obligations under the PPA. The project developer and its financiers are however responsible for the building and the operation of the plant. In the case of IPPs defaulting on supplying the agreed amount of electricity due to weather instability or plant degradation or

[6] Many more factors contributed to the success of the programme. See (Montmasson-Clair et al., 2014; Montmasson-Clair and Ryan, 2014) and (Eberhard et al., 2014) for more details.
[7] Cabinet further specified that over the 2007-2027 period, "*Eskom will build all nuclear power plants in South Africa and the IPPs will build more than 50% of all non-nuclear power plants*" (GCIS, 2007).
[8] A multitude of risks can be associated with the construction and profitable operation of a power plant, from fuel price and supply (this risk is by definition not applicable to renewable energy-based plants), foreign exchange, environmental assessments and authorisations, the connection to the transmission and distribution networks, revenue collection, to timely and on-budget plant construction and plant operation.
[9] Essentially, this means that irrespective of power demand by the grid, if the power is generated by the renewable project, the tariff will be paid by Eskom for each kilowatt of energy produced.

destruction, the liability falls on the IPP and the renewable project's financiers. Should the project company fail to generate the contracted energy, the lenders are asked to step in and find a replacement project company, if feasible. If not, the allocation for that project could be put up for bid in subsequent rounds (Stemple, 2013).

3.2. Channelling economic regulation to stimulate competition and inclusive growth

In addition to a series of key success factors, the design of the REIPPPP is a good illustration of an attempt to channel economic to stimulate competition and inclusive growth.

A first step to address market failures and barriers to entry

As raised in Section 2, like in other key infrastructure industries, South Africa's electricity supply industry is dominated by a state-owned utility, which notably generates about 95% of the country's electricity. The REIPPPP is the first meaningful endeavour from the South African government to open the electricity generation market and introduce IPPs alongside Eskom.

While the opening of the generation market to the private sector constitutes a positive development, it has had no real impact on competition *in* the electricity market, only introducing competition *for* the market, owing to the sustained control of Eskom over the market through the holding of most of the generation capacity (Pickering, 2010) and the limitation of the role of IPPs to government-run procurement programmes.

Nevertheless, the REIPPPP did create a precedent and the electricity market is now being opened to IPPs for other technologies. Following the publication of the determination in 2012 (DoE, 2012a), two similar IPP procurement programmes for baseload electricity from coal, natural gas and hydroelectricity as well as for co-generation are being finalised (as of March 2015) by Government.

Further opening of the electricity supply industry is required, notably at the generation stage through a 'willing buyer, willing seller' model. The opportunity to invest in large-scale renewable energy generation capacity is currently limited. Outside of the REIPPPP, renewable energy technologies are constrained to off-grid options or to *ad hoc* power purchasing agreements with Eskom or trading through Amatola Green Power, the country's sole energy trading entity.

The passing of the Independent System and Market Operator (ISMO) Bill, aimed at introducing an unbundled ISMO (i.e. outside of Eskom) to invest, operate and maintain the country's high voltage transmission grid is meant to address this blockage. It would empower IPPs to sell electricity directly to third party consumers, such as mining and industrial complexes, and provide the platform for South African companies to generate their own electricity and sell potential surplus to the utility and a third party. As of March 2015, the Bill has been stalled in Parliament since 2011 and is likely to remain so in the short term, seemingly owing to vested interests in the industry (Das Nair et al., 2014).

Harnessing economic regulation to avoid the winner's curse and stimulate inclusive growth

In the limited space allocated to renewable energy, the programme has harnessed economic regulation to manage market entry and the conditions attached to it. The evaluation framework of the REIPPPP ensures a fair and levelled playing field for all participants and encapsulates inclusive growth objectives.

The programme is designed to procure renewable energy-based electricity at the lowest cost possible, while contributing to economic development in South Africa. The main objective of the REIPPPP is to

obtain the most optimal price for electricity generation. In addition, the South African government aims, through local content and job creation requirements, to stimulate employment generation and develop an industrial base for the local manufacturing of the inputs required in renewable energy projects. Social development outcomes, primarily through community ownership, have also been included as part of the objectives of the programme. The economic development objectives of the REIPPPP have focused on ensuring that South Africans (notably previously disadvantaged citizens) participate, own and benefit from renewable energy activities in the country. The structure of the programme has been explicit in facilitating this (although economic development criteria remain secondary to price). The evaluation process of the REIPPPP is composed of two clear-cut phases: a pre-qualification stage and an evaluation stage.

In a first pre-qualification stage, bidders have to satisfy certain minimum threshold requirements in six areas: financial; technical; commercial and legal; land; economic development; and environment. They must *inter alia* demonstrate the readiness of the project (land acquisition, funding, technologies, suppliers, ability to meet deadlines, environmental consent, etc.), its financial viability and the arrangements to meet minimum requirements in terms of economic development. As a rule, and in order to secure local participation, the project company must also comprise 40% participation by a South African entity (Campbell, 2012). The Department of Energy (via teams of independent experts) requires detailed and comprehensive bids. Failure to include all required information, and not have this information available on request during the evaluation period, is grounds for elimination.

In addition, in order to avoid low-quality or unreasonable bids and the phenomena of "winner's curse" which has plagued a number of auction mechanisms, such as the British Non-Fossil Fuel Obligation scheme in the 1990s (Mitchell and Connor, 2004), project developers have to pay at bid submission a deposit (reimbursed to unsuccessful projects) of ZAR 100 000 per MW (Campbell, 2012).

Bids meeting all these initial requirements are admitted to the second stage of the auction, where they are assessed on a competitive basis. In the second stage of the evaluation process, bids are reviewed based on weighted criteria, namely 70% for their price offer and 30% for their additional contribution to economic development (i.e. over and above minimum requirements). Traditionally, government's procurement has been based on 80-90% price consideration (and 10-20% for developmental objectives such as black economic empowerment). The REIPPPP, in advancing a greater proportion to economic development considerations, has attempted to maximise socioeconomic goals.

Within the 30 points (out of 100) which are awarded for economic development, different components are weighted as follows: job creation (25%), local content (25%), ownership (15%), management control (5%), preferential procurement (10%), enterprise development (5%), and socio-economic development (15%) (DoE, 2013a).

For each category, points are allocated based on minimum desired targets, over and above minimum thresholds. In a given category, only meeting the minimum threshold translates into zero point while reaching the target grants the maximum number of points. From the threshold to the target, a linear relationship determines the total of points awarded to the bid. This system is meant to ensure minimum economic development contributions from project developers while encouraging them to aim for higher targets (Montmasson-Clair et al., 2014). Tables 1 and 2 respectively summarise the qualification thresholds for the third bid window and the thresholds and targets for local content across the first three bidding windows.

In order to further prevent the "winner's curse", successful bidders are required to pay a grid guarantee of ZAR 200 000 per MW as well as factor in their budget a development fee (to be used to run the programme) of 1% of total project costs (Campbell, 2012).

Table 1: Economic Development Criteria and Targets Set for Bid Window 3

Economic Development Element	Description	Qualification Threshold	Target
Job Creation	Jobs for Citizens	50%	80%
	Jobs for Black Citizens	30%	50%
	Jobs for Skilled Black Citizens	18%	30%
	Jobs for Local Communities	12%	20%
Local Content	Value of Local Content as a percentage of Total Project Value	40% or 45% depending on technology	65%
Ownership	Shareholding by Black People in the Project Company	12-20%	30-40%
	Shareholding by Local Communities in the Project Company	2.5%	5%
	Shareholding by Black People in the EPC Contractor	8%	20%
	Shareholding by Black People in the Operations Contractor	8%	20-40%
Management Control	Black Top Management	N/A	40%
Preferential Procurement	Broad-Based Black Economic Empowerment Procurement	N/A	60%
	QSE and EME Procurement (up to R35 million in turnover)	N/A	10%
	Women Owned Vendor Procurement (businesses +50% owned by women)	N/A	5%
Enterprise Development	Enterprise Development Contributions	N/A	0.6%
	Adjusted Enterprise Development Contributions (local communities)	N/A	0.6%
Socio-Economic Development	Socio-Economic Development Contributions	1%	1.5%
	Adjusted Socio-Economic Development Contributions (local communities)	1%	1.5%

Source: Montmasson-Clair et al., 2014, based on Campbell, 2012 and DoE, 2013a

Table 2: Local content requirements across bidding rounds of the REIPP procurement programme

Bidding Rounds/ Technology	Bidding Round 1		Bidding Round 2		Bidding Round 3	
Criteria	Threshold	Target	Threshold	Target	Threshold	Target
Onshore wind	25%	45%	25%	60%	40%	65%
Solar PV	35%	50%	35%	60%	45%	65%
CSP without storage	35%	50%	35%	60%	45%	65%
CSP with storage	25%	45%	25%	60%	40%	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: Montmasson-Clair et al., 2014, based on Campbell, 2012

Harnessing economic regulation to stimulating competition

Complementing the use of economic regulation to mitigate the winner's curse problem and promote economic development, the REIPPPP includes mechanisms to ensure competitive behaviours. Instead of setting the price (like in the case of feed-in tariffs), an auction system, such as the REIPPPP, relies on framed market dynamics to obtain the best price. The programme indeed includes mechanisms to encourage rivalry and mitigate risks associated with the lack of competition or competitive behaviour.

Tariff caps, determined by the Department of Energy, have been used to limit the risk of high prices linked to *inter alia* a lack of competitive behaviour, particularly for the first bidding window. Price ceilings per technology were also adjusted (downward in the case of solar photovoltaic, concentrated solar power and wind technologies) for the second and third rounds. Also, while price caps for the first round were made public, they were kept confidential in the second round onwards in order not to send any signal to the market.

While no capacity cap (other than the total allocation of the programme) was set in the first round, a limit on the megawatt capacity of each technology was subsequently implemented in the next rounds. The Department of Energy has also set a maximum size per project.

In addition, the allocation for the second round onwards has been determined based on the initial market response to encourage competition in the renewable energy sector. The final allocation per round appears quite flexible and mostly determined by market dynamics (Montmasson-Clair et al., 2014).

3.3. Results: What impacts on inclusive growth?

The REIPPPP has therefore been designed to harness the potential of economic regulation to foster market entry, competitive behaviour and price and non-price objectives. The efficiency of these

mechanisms in stimulating inclusive growth must be investigated. Five particular areas, namely market entry, pricing, job creation, local content and community development, are discussed below.

3.3.1. Increased market entry

The first three (and a half) rounds of the programme have largely been oversubscribed, a testament to the interest for the programme, and resulted in committed investment of over ZAR 140 billion. As illustrated in Table 3, the number of bid responses has increased dramatically with each round, along with a decrease in the number of successful bidders, illustrating the growing interest for the programme as well as its increasingly competitive nature.

On the one hand, the design of the programme has been conducive to market entry, considerably widening the number of electricity producers in the country. The number of bids increased from 53 to 93 across the first three rounds. The fourth round, ongoing as of March 2015, saw a stabilisation effect with a total of 77 projects bids received by the deadline of 18 August 2014 (Creamer, 2015).

On the other hand, safeguard mechanisms aimed at stimulating competitive rivalry have made success particularly hard. In the first round, 53% of received bid responses were selected as preferred bidders. This proportion decreased to 24% in the second window and further to 18% in the third bid window.

Over the first three (and a half) bid windows, a total of 4 116 MW of large-scale generation capacity has been procured, i.e. more than the original allocation of 3 625 MW.[10] *De facto*, a part of the third round as well as upcoming bidding windows for the 2014-2016 period are already carving up the determination for the 2017-2020 period, essentially due to the positive market response and the excellent quality of projects.

[10] Looking at the difference between the actual ministerial determination and the procurement process, the allocation for onshore wind, solar PV and CSP have been already exceeded for the 2012-2016 period.

Table 3: Total megawatt awarded per technology, bid responses and preferred bidders in the REIPP procurement programme

Awards (MW)	Initial determination (2012-2016)	Second determination (2017-2020)	Round 1 Allocation	Round 2 Allocation	Round 3 Allocation	Total Allocation
Wind	1 850	1 470	634	563	787	1 984
Solar PV	1 450	1 075	632	417	450	1 499
CSP	200	400	150	50	200	400
Small Hydro	75	60	0	14.3	0	14.3
Landfill Gas	25	47.5	0	0	18	18
Biomass	12.5	47.5	0	0	16.5	16.5
Total	3 625	3 100	1 416	1 044.3	1 456	3 916
Bid Responses Received	N/A	N/A	53	79	93	225
Preferred bidders	N/A	N/A	28	19	17	64

Source: TIPS, based on (DoE, 2013b) *and* (DoE, 2012b).

Going forward, yearly targets (of 1 000 MW for solar photovoltaic capacity, 1 000 MW for wind capacity and 200 MW for concentrated solar power) have been established by the Department of Energy in line with the country's electricity plan (DoE, 2013c, 2011).

The success of the programme has been evidenced by the positive response received from developers, investors and financiers, as well as local and international manufacturers, who have actively participated in the programme.

As such, the first three rounds attracted a large number of international and domestic project developers, sponsors and equity shareholders. Across the first 64 projects, more than 100 different shareholding entities have participated in the programme. Some entities have been particularly active, with 46 and 25 institutions participating respectively in more than one project, and three or more projects. South African insurance company Old Mutual has been the most active entity, supporting a total of 16 projects (Eberhard et al., 2014).

Practically, the programme has also been efficient in mitigating the risk of winner's curse. All projects selected as preferred bidders have so far reached financial close and the first REIPPPP project, Scatec Solar's 75-MW solar photovoltaic plant, was connected to the grid three months ahead of schedule in September 2013 (Clover, 2013).

These positive achievements were no accident and result from continual policy and regulatory learnings from previous initiatives, international experience as well as the iterations of the current programme (Montmasson-Clair et al., 2014; Montmasson-Clair and Ryan, 2014).

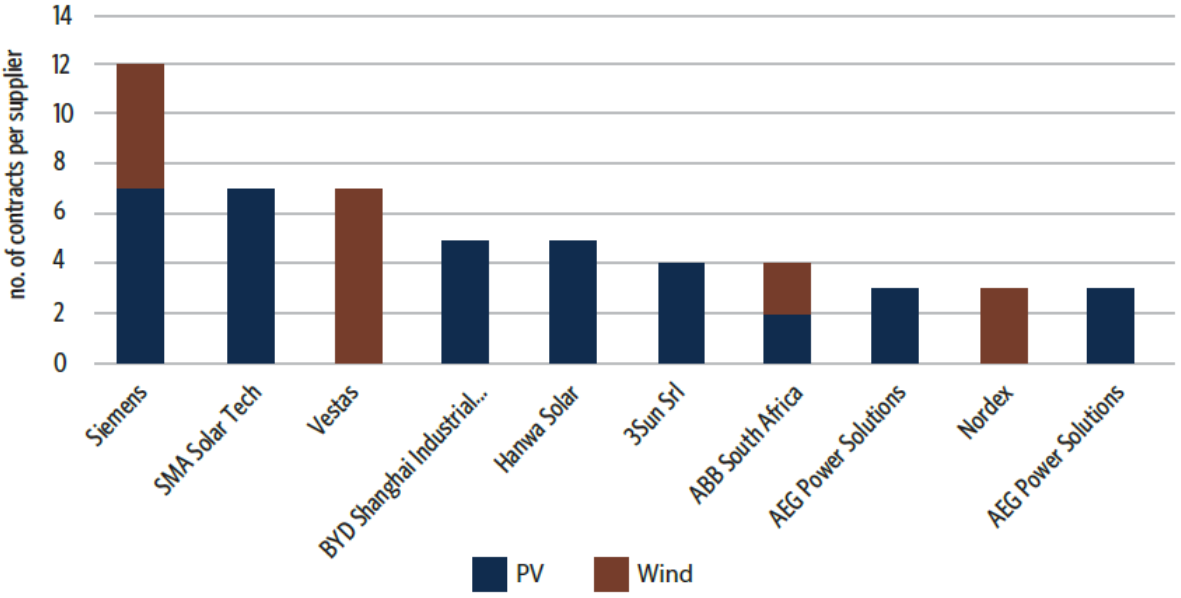
The extensive due diligence required of developers in their bids, as well as its clarity and reliability, have been commended by all stakeholders. The publication of transparent, consistent and independently-reviewed evaluation criteria has emerged as a critical condition for the private sector. The evaluation mechanism has contributed tremendously to creating certainty and ensuring the participation of project

developers to the programme. Clear and consistent criteria have enabled fair competition in the renewable energy market and the selection of the most competitive bids.

Stringent criteria have however had an impact of the participation in the programme. The rigour required to meet evaluation criteria and each step in the bidding process, while welcomed by the private sector, has proven to be extremely time consuming and expensive. Key advisors, such as legal experts, are particularly costly for project developers and can represent up to 15% of project development costs (Montmasson-Clair et al., 2014). The need to reduce the cost of meeting all requirements has arisen for IPPs. Particularly, the mechanisms to prevent the winner's curse phenomena have constituted a hindering factor for the participation of new and/or smaller players. As such, the design of the evaluation criteria, particularly their stringency, is reviewed between every bidding window, factoring market dynamics and local capabilities, notably in terms of local content requirements. In addition, a separate programme for small-scale project is being designed by the Department of Energy to encourage further participation.

Nevertheless, these mechanisms have resulted in some degree of competition with regards to engineering, procurement and construction (EPC) contractors and equipment suppliers, with 49 companies servicing the first 64 projects. Most companies are involved in more than one project, as the primary or secondary contractor. According to Eberhard et al. (2014), main EPC contractors with three or more projects include Vestas (Danish), Acciona (Spanish), Consolidated Power Projects (South African), Group Five Construction (South African), Juwi Renewable Energies (German), Murray and Roberts (South Africa), Abengoa (Spanish), ACS Cobra (Spanish), Iberdrola Engineering and Construction (Spanish), Nordex Energy (Germany), Scatec (Norwegian), Suzlon (India) and Temi Energia (Italian). The number of technology suppliers is also relatively limited, as illustrated by Figure 1. Wind turbine suppliers have included Vestas, Siemens, Nordex, ABB, Guodian, and Suzlon, i.e. mainly European companies and a Chinese and an Indian company. Main solar photovoltaic suppliers have been Siemens, SMA Solar Tech, BYD Shanghai, Hanwha Solar, 3 Sun, AEG and ABB: i.e. European, Chinese, and Korean manufacturers (Eberhard et al., 2014).

Figure 1: Leading wind and photovoltaic equipment suppliers in the first three rounds of the REIPPPP



Source: (Eberhard et al., 2014)

The design of the REIPPPP has therefore been efficient in lowering the barriers to entry and introducing a number of new participants in the electricity generation market. While further analysis is required to grasp the implications in terms of inclusive growth, preliminary conclusions nevertheless suggest that market entry has primarily favoured established domestic and international companies, with little room for the participation of small and medium-sized enterprises. In sum, the programme therefore constitutes a noteworthy improvement but further efforts are required to widen the spectrum of entities participating in the market.

3.3.2. Substantial reduction in prices

The REIPPPP has resulted in considerable progress over time in terms of prices. Tariffs have significantly dropped over the three rounds, well below the required price ceilings, as indicated in Table 4. For example, prices plummeted on average from ZAR 2.75/kWh to 88c/kWh for solar photovoltaic projects, and from ZAR 1.14/kWh to 66c/kWh for wind projects.

In the first bid window, which was utilised in many ways as a round of observation, prices were relatively high, comparatively to previous REFIT considered by the regulator. As explained earlier, no capacity cap (other than the total allocation of the programme) was set, price caps were publicly released and new developers were not yet ready to put forward competitive bids. These combined factors resulted in a lack of competition and the absence of pressure on the bidders to reduce their price offering. As a result, prices in the first round ended up very close to the prescribed ceilings, raising caution with regards to the publication of price caps.

Prices received for the second and third auction rounds were however very competitive and even lower than expected (Lucas et al., 2013). This trend essentially resulted from project developers being more experienced and familiar with the programme, an increased maturity of technologies, aggressive (price)

competition, reduced price ceiling for some technologies, such as wind and solar, and the allocation of a capacity limit for each technology from the second round onwards.

The use of an auction system, with the appropriate risk mitigation mechanisms, has reduced the complexity of price setting for the South African government and allowed for prices to decrease rapidly as a response to increased competition, technology maturity and improved developers' experience. This success story, resulting from a well-crafted combination of price caps, maximum project size and determined allocation, has been one of the major achievements of the REIPPPP. Price caps must however be set appropriately so as not to prevent participation. Price caps set too low played a part in the absence of successful projects in the first two rounds for some technologies, such as landfill gas and biomass.

Table 4: REFIT tariffs (2008-2011) and REIPP price caps

Technology	December 2008	March 2009	March 2011	REIPP R1 Price Cap	Round 1	Round 2	Round 3
Wind	0.66	1.25	0.94	1.15	1.14	0.89	0.66
CSP	0.61	2.10	1.84	2.85	2.68	2.51	1.46
Solar PV	--	3.94	2.31	2.85	2.75	1.65	0.88
Small Hydro	0.74	0.94	0.67	1.03	--	1.03	--
Landfill gas	0.43	0.90	0.54	0.84	--	--	0.84
Biomass	--	--	--	1.07	--	--	1.24

Source: TIPS, based on (DoE, 2013b; Greyling, 2012; NERSA, 2011)

3.3.3. Valuable but limited job creation

As explained in Section 3.2, job creation accounts for 25% of the economic development criteria embedded in the programme (DoE, 2013a). Three main areas which create direct jobs are equipment manufacturing, project construction and installation, operation and maintenance, covering the standard division of project life.

Table 5: Committed job creation for selected technologies over the first three bidding rounds

Round	Project phase	Solar PV		Onshore wind		CSP	
Job creation		**Total jobs**	**Total jobs per MW**	**Total jobs**	**Total jobs per MW**	**Total jobs**	**Total jobs per MW**
Round 1	**Construction period**	2 381	3.8	1 810	2.9	1 883	12.6
	Operational period	6 117	9.7	2 461	3.9	1 382	9.2
	Total project lifespan	8 498	13.4	4 271	6.7	3 265	21.8
Round 2	**Construction period**	2 270	5.4	1 787	3.2	1 164	23.3
	Operational period	3 809	9.1	2 238	4.0	1 180	23.6
	Total project lifespan	6 079	14.6	4 025	7.1	2 344	46.9
Round 3	**Construction period**	2 119	4.7	2 612	3.3	3 082	15.4
	Operational period	7 513	16.7	8 506	10.8	1 730	8.7
	Total project lifespan	9 632	21.4	11 118	14.1	4 812	24.1

Source: (Montmasson-Clair et al., 2014)*, based on* (DoE, 2013b)

Note: job creation is expressed in 12 person-months and 12 person-months per MW capacity of generation procured

Project developers have committed to noteworthy job creation as part of their bids. As detailed in Table 5, solar photovoltaic is set to be the technology generating the largest number of jobs based on the successful projects from the first three rounds. Solar photovoltaic projects should create a total of 24 209 employment opportunities,[11] followed by onshore wind and concentrated solar power projects with respectively 19 414 and 10 421 direct jobs.

In the end, while project developers have committed to job creation, employment opportunities in the construction and operation of renewable energy-based power plants remain however limited. In addition, trade unions have raised concerns about the quality and precarious nature of the jobs generated by the projects, with most employment opportunities created in the communities surrounding projects being for low-skilled security guards (Montmasson-Clair et al., 2014). The allocation of jobs at the community level also appears lacking transparency. Skilled employment is generally sourced from the economic centres of the country, notably owing to the lack of available skills at the community level. While deemed local by the programme, these employment benefits do not benefit the community in which the projects are located. Evidence of contractors bringing their own labour from the economic centres (such as Gauteng) has been witnessed (McDaid, 2014). Although some skills transfer took place, it appears to project-specific and not common practice.

In sum, the contribution of the programme to job creation, while noteworthy, remains relatively limited. Employment is primarily short-termed and low-skilled, and does not benefit local communities. Further efforts are required to maximise the potential for local job creation and foster inclusive growth.

3.3.4. Noteworthy, although constrained, local content

The design of the REIPPPP also aims to stimulate the development of local industries through local content requirements. Local content targets, and accordingly the local content share of projects, have increased over each bid window to encourage further industrialisation, manufacturing and job creation, as illustrated in Table 6. Local content calculations cover all stages of the value chains, with the exception of land costs and finance costs. All domestic expenditure qualify as 'local', including civil works, engineering, project management, the assembly of imported parts, the manufacturing of some or all components, local technology development through innovation and research and development carried out by a domestic firm often in combination with domestic research organisations, and technology transfer from overseas firms via licensing agreement which may or may not include technology know-how.

For example, the rand value for local content inputs and processes for onshore wind have increased by 33% from the first to the second round and by 37% from the second to the third round. Accordingly, these costs as a share of total project costs have risen from around one-fifth to close to half. The first bidding round had set a 25% local content target for onshore wind (DoE, 2012c).

Most developers found the 25% target easy to meet as the majority of civil and electrical activities are undertaken by local companies and a large percentage of local transport is used to achieve this target. However, local content requirements have increased to 40% in Round 3. Turbines, which are generally

[11] One job or employment opportunity is defined as 12 person-months, i.e. one person employed full-time for a period of one year.

imported, make up between 60% and 70 % of project costs (Vermeulen, 2012), rendering the local content requirements difficult to achieve for developers, due to the limited local manufacturing base.[12]

Looking at solar PV, the local content costs have increased to over half of total projects costs, while the rand value of these inputs and processes is falling, in line with smaller allocation and decreasing local content costs due to heightened competition across the entire value chain from module manufacturers to developers (DoE, 2013a).

Table 6: Trend in local content for selected technologies over the first three rounds of the REIPP procurement programme

	Technology	Solar PV	Onshore wind	CSP
Round 1	**Local content value (in million ZAR)**	6 261	2 766	2 391
	Local content cost (in proportion of total project cost)	29%	22%	21%
Round 2	**Local content value (in million ZAR)**	5 727	4 001	1 638
	Local content cost (in proportion of total project cost)	48%	37%	37%
Round 3	**Local content value (in million ZAR)**	3 968	6 283	5 627
	Local content cost (in proportion of total project cost)	54%	47%	44%

Source: (Montmasson-Clair et al., 2014)*, based on* (DoE, 2013b)

Altogether, solar PV, onshore wind and CSP technologies have brought up local content of ZAR 38.6 billion over the first three rounds of the programme. With local content thresholds increasing progressively for all three technologies, the local content costs as a share of total project costs have increased accordingly over the three bid windows.

However, the industrialisation envisioned as part of the programme remains constrained owing to the limited megawatt capacity allocated per technology (to create sufficient aggregate demand for international companies to set up manufacturing sites in the country) and the small existing manufacturing base. While the initial allocations of 6 725 MW represent a substantial volume, the overall capacity is spread across several technologies as well as numerous competing developers and suppliers, thus failing to create enough aggregate demand to encourage large investments in local manufacturing. For example, in the absence of critical mass, manufacturing wind turbines in South Africa remains challenging as every wind turbine model requires a different blade, which means a different mould will be needed for each blade (DLA Piper and Hofmeyr, 2012).

In addition, local content requirements involve short-term trade-offs. As the localisation of green technologies raises the costs of goods, local content requirements can hinder the shift to sustainable development if they are not in line with the country's capacity and capability, and impede the decrease in prices. The ability of developers to meet local content requirements largely depends on whether the local

[12] Additionally, wind farms need to be located on sites that have strong, steady winds throughout the year, good road access and proximity to the electricity grid (DLA Piper and Hofmeyr, 2012). Many of the ideal wind project sites have been secured over the three bidding windows.

industry can manufacture the components of equipment required for their facilities. As such, due to limited domestic capacity, all raw (unprocessed) steel, regardless of origin, is considered to be 100% local. It is further recommended that all raw (unprocessed) aluminium, regardless of origin, be considered to be 100% local (the dti, 2013).

Going forward, long-term certainty on the future of the procurement scheme, in terms of megawatt capacity and technology, must be maintained to maximise industrialisation benefits. The publication in November 2013 of an update of the IRP, while advocating that the current renewable energy programme should be continued with additional annual rounds, has re-introduced a degree of uncertainty by modifying the allocation per technology included in the IRP 2010. While reviewing and updating the country's electricity plan is a necessary ongoing exercise, further certainty on the allocations per technology must be ensured in the process to provide clarity to the sector (Montmasson-Clair and Ryan, 2014).

South African companies are nevertheless well-place to supply blades, gearboxes, generators and controllers for main wind turbines although they still source some parts from external companies (Baker, 2012). The programme has also triggered some noteworthy manufacturing investments which would have been extremely unlikely with it. For example, multi-sector company Corporación Gestamp's wind industrial division, GRI Renewable Industries, invested EUR 22 million in a wind tower manufacturing facility in Cape Town (Kolver, 2014) while engineering group DCD Wind Towers built a ZAR 300-million wind tower manufacturing facility in the Coega industrial development zone in the Eastern Cape (Moodley, 2014). At least five photovoltaic panel assembly plants have also been established in South Africa over the last few years, and some of international suppliers have used these to achieve localisation targets (Eberhard et al., 2014). These investment have moreover triggered some skill transfer towards South Africa at the manufacturing level.

3.3.5. Failed attempts at spurring community development

Last but not least, the REIPPPP includes community development as one of its key objectives. In order to encourage social development in the neighbourhoods that surround the renewable energy project, community trusts need to be made up of members that live within a 50 km radius of the project site (Van den Berg, 2013). This is to prevent nepotism over how community beneficiaries are selected, as well as to ensure that the surrounding communities which often bear the unaccounted ecological, social and economic costs of the project, also benefit from the developments. Most communities will be holding a stake of up to 5% on average per project through community trusts. These community trusts are 100% funded by the Development Bank of Southern Africa (DBSA), the Industrial Development Corporation (IDC) and/or the Public Investment Corporation (PIC) whilst some are classified as free carry. For example, the DBSA provides low-interest financing to community trust to buy shares into the project company. The shares are managed by the DBSA and the community trust leadership, and these two parties decide on how the revenue is to be spent.

Community trusts are set up with the financial assistance of development finance institutions in order for communities living near the projects, to buy shares in the project companies. Associated revenues, estimated at ZAR9.5 billion collectively over the first three bid windows, are set aside for community-led projects (Montmasson-Clair et al., 2014).

The management of community trusts established to meet social development outcomes has created some unintended consequences. Concerns have been raised about the concentration of these funds in a limited number of communities, their monitoring and evaluation, and the capacity of the Department

of Energy and development finance institutions to manage the funds and ensure IPPs meet their commitments.

In addition, the concern is that many community trusts have been established to serve the requirements of the Request for Proposals. Project developers and the DBSA have little experience working with communities and municipalities in these areas, to ensure that development programmes are aligned with community interest and municipality plans. Community participation and ownership aspects of the project can indeed promote perverse development by concentrating large funds in community trusts, without having well thought through developmental objectives. The risk is that such the community trust will receive excessive financial flows with little knowledge of the communities in which they are working. The Implementation Agreement signed with the Department of Energy is to ensure that preferred bidders adhere to their commitments. Each bidder is required to report to the Department of Energy on a quarterly basis with regards to these commitments (EE Publishers, 2012). The REIPPPP awards more points to communities located closer to the renewable energy project and does not place a limit on multiple community trusts for one community. This results in a small number of communities having multiple community trusts assigned to them. The developmental aspects of the community trust projects come second to concentrating community trusts in lucrative areas. This can promote perverse development that is not focussed on the outcomes of the community trust projects, but on renewable energy projects receiving high points in their bid applications.

Due to the competitive nature of the programme, developers are not in a position to share their socio-economic development plans, resulting in several developers engaging with a similar communities and confusion with all parties. In addition, no structured partnership with the local municipality exits and local government is only engaged in a fragmented, peripheral and uncoordinated manner. Dissatisfaction is further compounded as a result of the mistrust between councillors and community representatives and the lack of transparency surrounding the selection of socio-economic projects (McDaid, 2014; Tait et al., 2013).

In addition, some developers have attempted to retain the control of the trusts, while claiming that they were ‘owned’ by the community. The appointment of the trustees and the management of the funds remain problematic appears far from the standards of good governance, with evidence of nepotism, political arrangement, elite capture and lack of communication, transparency and accountability (McDaid, 2014). The quality and relevance of social investment projects have also been questioned at the local level (McDaid, 2014; Tait et al., 2013).

Social issues (such as rising cost of living, indebtedness, diseases, etc.) have reportedly increased around project sites, notably during construction, as a result of increased employment and the influx of workers. Gender issues are not being considered by the programme. No gender specialist is included in the team. Evidence also shows that women may not enjoy many of the benefits (such as employment), but may bear a disproportionate amount of the burden (an increase in gender-based violence for example). Overall, little feedback is provided to project developers on their social development plants as no social scientist or labour specialist are present in the team of independent experts (McDaid, 2014).

Renewable energy projects have the capacity to generate substantial amount of money for local communities. Clearly, the expectation that renewable energy projects, unlike projects based on other energy sources, should take on a complex and onerous responsibility for community development, has introduced numerous unintended consequences. The lack of adequate structures at the local level and of monitoring and evaluation at the national level, along with the inexperience of project developers in

this space has led to the further marginalisation of, and division within, already marginalised and vulnerable communities.

3.3.6. Overall conclusions on the programme

The REIPPPP has been a success with regards to the procurement of large-scale renewable energy-based electricity generation capacity. In terms of inclusive growth, the outcomes of the programme remain however more nuanced, despite the REIPPPP being efficient in harnessing economic regulation to stimulate competition. Economic regulation has been particularly efficient to drive prices down in a very limited amount of time. It has also opened up the market to a wide array of new participants on the electricity generation market, lowering considerably the barriers to entry. Participation are however not be as broad-based as possible with the domination of a few key players.

The REIPPPP has also, through regulation, had noteworthy positive impacts in terms of job creation, industrial development and community development. These positive outcomes remain however limited (and in some cases hampered by unintended consequences), illustrating the difficulty in maximising several objectives at the same time.

4. Conclusions

This case study on the large-scale renewable energy industry in South Africa has demonstrated the active role that regulation can play to stimulate competitive outcomes, increased participation and inclusive growth objectives. It has highlighted the potential as well as the difficulties of using economic regulation to stimulate competition and inclusive growth.

In this sense, regulation has been successful in introducing competition in the electricity generation market. This is the result of a long, dynamic learning process from all stakeholders, from government and the regulator to the utility and the private sector. South Africa has successfully learned from local and international past mistakes and designed a procurement programme both in line with international best practices and domestic realities.

The economic development objectives of the REIPPPP have focussed on ensuring that South Africans participate, own and benefit from renewable energy activities in the country. The structure of the programme has been explicit in facilitating this, although economic development criteria remain secondary to price.

Beyond prices and market entry, the direct translation of this increase in competition into inclusive growth appears however not automatic. While the REIPPPP has made a noteworthy contribution to inclusive growth in South Africa, the potential remains much more significant, notably in terms of skills transfer, job creation, local development, industrialisation and the participation of smaller local players. Further research is needed to investigate in detail the direct and indirect impact of the REIPPPP on inclusive growth in South Africa. A more detailed analysis of the outcomes in terms of market entry and participation, job creation and skill transfer and local economic and industrial development is required to better grasp the contribution of the programme to inclusive growth. Furthermore, greater participation is restricted due to delays in regulation which prevent IPPs and South African companies from selling

electricity directly to third party consumers, such as mining and industrial complexes. This serves to maintain Eskom's dominant position in the electricity supply industry.

In line with international experience, the preliminary findings from the case study illustrate the potential as well as the difficulty in channelling economic regulation to stimulate competition for economic development and inclusive growth. In this respect, this case study carries substantial lessons for the procurement of large-scale infrastructure in South Africa and other developing and emerging economies.

In the end, the programme could notably strengthen its impact on inclusive growth, particularly in terms of local manufacturing and community development, by establishing strong monitoring and evaluation frameworks and further capacitating project developers in meeting economic development requirements. Setting the appropriate instruments to create aggregate demand (required for the development of local manufacturing) could further contribute to enabling the type of economic development and skilled employment envisioned for this programme. In the short term, however, this is likely to come at the expense of other policy objectives attached to the programme, such as cost affordability and the transition to a green economy, and trade-offs between various objectives must be carefully considered in order to maximise benefits to the country.

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