

WOMEN AND THE ENERGY VALUE CHAIN

OPPORTUNITIES FOR A MORE INCLUSIVE
RENEWABLE ENERGY SECTOR IN AFRICA

Asmita Parshotam & Hanneke van der Westhuizen



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The Global Economic Governance (GEG) Africa programme is a policy research and stakeholder engagement programme aimed at strengthening the influence of African coalitions at global economic governance forums such as the G20, BRICS, World Trade Organization and World Bank, among others, in order to bring about pro-poor policy outcomes.

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GEGAFRICA is funded by the UK Department for International Development and managed by a consortium consisting of DNA Economics, the South African Institute of International Affairs and Tutwa Consulting.

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Cover image: Solar panels can be seen on the roofs of residences in Khayalitsha Township in Cape Town, South Africa, 2005 © Chris Jackson/Getty Images



DISCUSSION PAPER
OCTOBER 2018

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EXECUTIVE SUMMARY

This paper assesses efforts by Rwanda and South Africa to incorporate women into energy value chains, specifically the renewable energy (RE) sector. It looks at the need for sustainable infrastructure development in Africa, as well as the meaningful role women can play through their participation in, contribution to and inclusion in the energy value chain. Rwanda's solar energy sector and South Africa's Renewable Energy Independent Power Producer Procurement programme are examined to identify challenges and potential best practices. The paper concludes with a gender mainstreaming toolkit with practical steps for donors, policymakers and the private sector to include women in the RE value chain over the short, medium and long term.

While South Africa and Rwanda have made some progress towards gender equality, in order to improve and comprehensively address gender mainstreaming in the energy sector both countries need to consider further measures specific to their contextual challenges, as identified in the respective case studies.

- There is a disconnect between policy formulation and implementation in South Africa and Rwanda, reflected by the insufficient evaluation of projects and government policies.
- Despite a stronger focus from development finance institutions, donors and government actors since 2001, gender mainstreaming efforts do not sufficiently address the inclusion of women in the energy value chain. Both countries face challenges in implementing gender mainstreaming at every stage of the project cycle. One reason for this is that many of the private sector representatives interviewed (often the implementers of RE projects) do not see the value of adopting a gender-inclusive approach to energy infrastructure development.
- For women-owned businesses, access to finance is an ongoing restraint. Although the Facility for Investment in Renewable Small Transactions (FIRST) fund is a critical step forward in terms of making financing more accessible and diversifying the industry for newer entrants, it does not have the specific mandate to provide funding to women-led businesses. Nevertheless, FIRST is an important collaboration between private (Rand Merchant Bank) and public (KfW Bank) funders.
- While it was essential to facilitate foreign participation and expertise to kick-start the RE industry in South Africa, policymakers need to consider how programme requirements can be better utilised in future to further skills transfer and encourage the meaningful participation of women.
- One of the avenues to support greater gender inclusivity in the energy value chain is through women-owned vendors' providing the necessary input services and technical expertise in the energy value chain.



- Finally, ensuring that women are able to participate fully in RE from a technical and management vantage point requires a comprehensive approach to educational opportunities in science, technology, engineering and maths (STEM) degrees. Limited access to STEM education from secondary to tertiary level for women in Rwanda and South Africa may be contributing to the low number of women entering the sector and requires attention in both countries.

The gender toolkit provides a three-tier approach to gender mainstreaming in the energy sector, based on the challenges identified. The first tier addresses challenges of political mandate, insufficient financial mechanisms for women-owned businesses, project design requirements and monitoring and evaluation. The second tier addresses the need for an educational trust fund and increased support for STEM educational bursaries for young women, job creation and enterprise development. The third tier addresses broad-based female engagement in the energy value chain through the creation of industry bodies and the collaboration of industry actors.

ACKNOWLEDGEMENTS

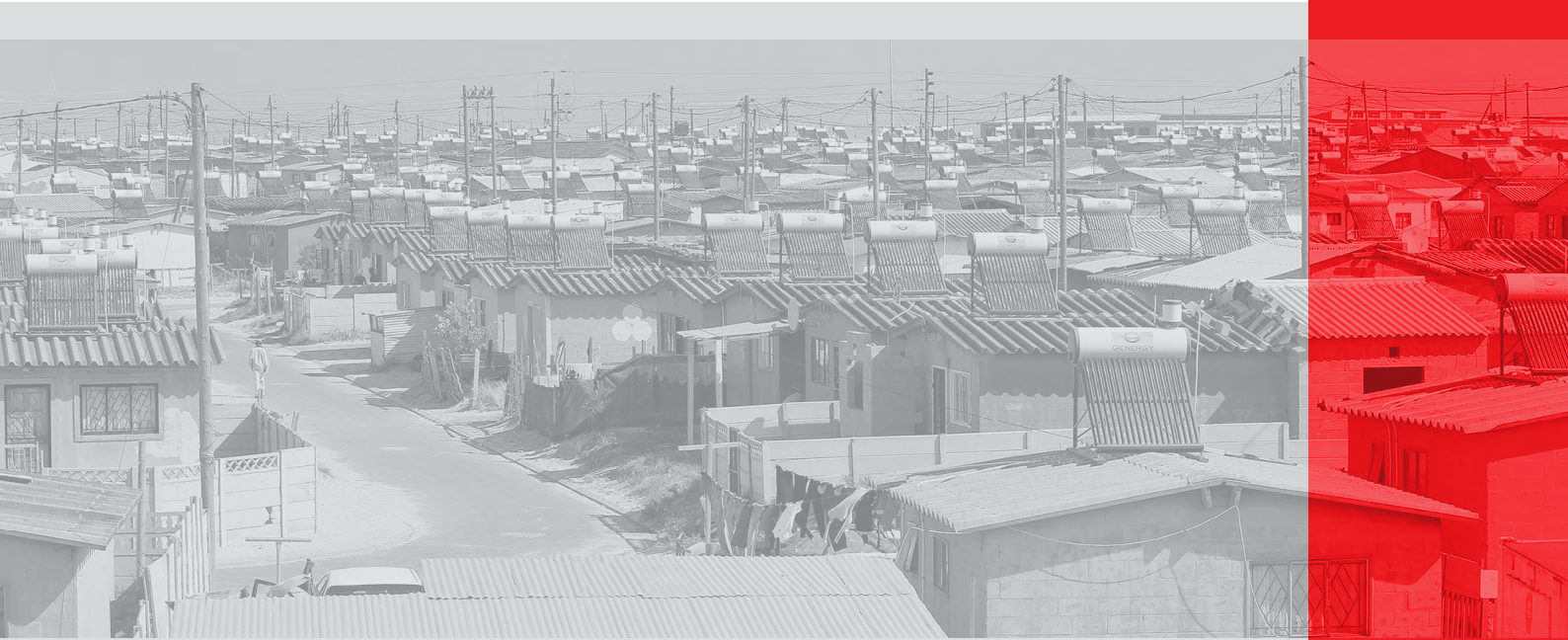
The authors are grateful to Dr Sharron McPherson, a seasoned investment and infrastructure practitioner who has worked on some of Africa's largest infrastructure and energy projects. She is also a co-founder and director of Women in Infrastructure Investment and Energy (WINDE). This paper has benefited from her expertise and guidance over the writing and research process of this paper and her insights into the practical realities of women inclusion in large-scale energy infrastructure projects.

The authors are grateful to Vanguard Economics for their partnership and contribution in preparing the Rwandan case study.

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INTRODUCTION: THE CASE FOR SUSTAINABLE DEVELOPMENT IN AFRICA

The need for sustainable and inclusive development has gained significant global traction given the impact of climate change, limited resources, expanding global populations and an increasing awareness of the dividends gained from the meaningful participation of women in the formal economy. This traction is reflected in the Sustainable Development Goals (SDG) agenda¹ and the G20's commitment to improving gender-based considerations throughout its agenda.² The AU's Agenda 2063 prioritises industrialisation and infrastructure development through its Programme for Infrastructure Development in Africa (PIDA), which is focused on achieving renewable and environmentally friendly energy access through PIDA energy projects and regional power pools.³ The African Development Bank's (AfDB) 2017 estimates suggest that financing Africa's infrastructure needs

- 1 An analysis of performance of African countries in meeting the SDG targets can be accessed at SDG Index and Dashboards 2018, <http://www.sdgindex.org/reports/2018/>, accessed 15 October 2018.
- 2 G20 Argentina 2018, *Overview of Argentina's G20 Presidency 2018: Building Consensus for Fair and Sustainable Development*, 1 December 2017, <https://www.g20.org/en/overview-argentina-g20-presidency-2018>, accessed 15 October 2018.
- 3 AU, *The PIDA Vision for Renewable Energy*. Addis Ababa: AU.

requires \$130–\$170 billion per year, with a financing gap of \$68–\$108 billion,⁴ thus elevating infrastructure financing to a top priority.⁵

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For African countries, well-designed, -maintained and -operated infrastructure is crucial in addressing those basic needs associated with growing populations, increased migration and rising urbanisation levels. Estimates from McKinsey show that the number of urban sub-Saharan African households is likely to grow at an annual rate of 4.1% until 2025 – a growth rate for which many African governments are unprepared.⁶ While there is no fixed definition of 'sustainable infrastructure', it is best understood as a comprehensive approach tailored to local economic, social and ecological needs; one that is both effective and efficient while taking into consideration users' preferences and needs in the project design phase.⁷ Sustainable infrastructure can have a positive impact on poverty alleviation and may support inclusive growth in five key ways:

- improving access to key facilities;
- creating additional jobs and economic activities;
- expanding overall production capacity;
- reducing production costs through improvements in transport and connectivity; and
- connecting markets and other economic facilities.⁸

4 AfDB (African Development Bank), 'Africa's infrastructure: Great potential but little impact for inclusive growth', in *African Economic Outlook 2018*. Abidjan: AfDB, 2018.

5 Estache A & G Garsous, 'The Impact of Infrastructure on Growth in Developing Countries', IFC (International Finance Corporation) Economics Notes, 1, April 2012; Perkins P, 'The Role of Economic Infrastructure in Economic Growth: Building on Experience', Helen Suzman Foundation, January 2011, <http://hsf.org.za/resource-centre/focus/focus-60-january-2011-making-south-africa-work-rules-of-the-game/PPerkins.pdf>, accessed 14 August 2018.

6 Egler HB & J Juraj, 'Sustainable infrastructure: A driver to achieve the Sustainable Development Goals in Africa?', *Bridges Africa*, 6, 2, 2017.

7 IADB (Inter-American Development Bank) Blogs, 'What do we mean by sustainable infrastructure?', *Ciudades Sostenibles* blog, 3 March 2015, <https://blogs.iadb.org/ciudadessostenibles/2015/03/03/mean-sustainable-infrastructure/>, accessed 14 June 2018.

8 Saghir J, 'Sustainable Infrastructure Development in Sub Saharan Africa: A View from the Ground', Research to Practice Policy Brief, PB-2017-02. Montreal: ISID (Institute for the Study of International Development), 2017.

The need for sustainable infrastructure development is supported by the fact that Africa's infrastructure deficit disproportionately impacts the poor and, more specifically, women. In the developing world almost half of the buyers of solar lighting systems are women.⁹ As the primary users of biomass products women control the productive activities of households. Cleaner sources of energy allow them to make positive changes to their environmental conditions and mitigate harmful climate change effects.¹⁰

Nevertheless, academics and policymakers are concerned that the patterns of non-gender awareness seen in Africa's traditional energy sector could be replicated in the renewable energy (RE) sector, diminishing the capacity of Africa's women to harness the growth of RE technologies to drive economic development.¹¹

Women are not a special interest group in RE; they are the mainstream users and often producers of energy. Without their involvement, RE projects risk being inappropriate and failing ... Energy researchers who leave women out of energy research and analysis will fail to understand a large part of energy consumption and production.

This paper examines the efforts of governments and the private sector to incorporate women into Africa's energy value chain, and the challenges they encounter, with a specific focus on the RE industry. The paper takes a broad perspective, focusing specifically on large-scale infrastructure projects rather than small-scale/communal RE projects at the household level. The second section discusses the need for sustainable infrastructure development and the inclusion of women as drivers of sustainable development, after which the paper examines current approaches to gender mainstreaming in the energy sector. It then provides an overview of Rwanda's inclusion of women in its growing solar energy, and analyses South Africa's RE sector through a women inclusivity prism. It concludes with a gender mainstreaming toolkit that provides recommendations to development finance institutions (DFIs), government and the private sector on how to better implement policy changes to improve women's engagement in sustainable infrastructure development.

THE ROLE OF RENEWABLE ENERGY IN SUSTAINABLE AND INCLUSIVE DEVELOPMENT

Intrinsic to sustainable development is the need for renewable and sustainable forms of energy. In 2016, the International Energy Agency (IEA) estimated that RE

9 Rojas A, Prebble M & J Siles, 'Flipping the switch: Ensuring the energy sector is sustainable and gender responsive', in *Roots for the Future: the Landscape and Way Forward on Gender and Climate Change*. Washington DC: IUCN (International Union for Conservation of Nature) Global Gender Office, 2015.

10 Habtezion S, *UNDP Training Module 4: Gender and Sustainable Energy*. New York: UNDP (UN Development Programme), 2016.

11 Macfarlane Smith G & C Hart, *The Central Role of Women In Achieving Energy-Related Sustainable Development Goals*. California: Berkeley University, 2016.

sources accounted for almost two-thirds of new net capacity additions globally, with solar photovoltaic (PV) and wind energy constituting the vast majority.¹² According to 2017 IEA data, as many as 600 million people in Africa (approximately 60% of the continent's total population) have no access to energy.¹³ The AfDB and the UN

According to 2017 IEA data, as many as 600 million people in Africa (approximately 60% of the continent's total population) have no access to energy. The use of RE technologies such as solar PV and mini-hydro could help to address this energy deficit

Environment Programme estimate that an average of \$41 billion per year is required to finance the energy sector in Africa.¹⁴ The use of RE technologies such as solar PV and mini-hydro could help to address this energy deficit, especially in less-developed countries that struggle to expand the main grid because of prohibitively high costs,¹⁵ while also contributing to the more effective use of African resources that accelerate the economic inclusion of women, youth and disabled persons. RE technologies also open up the possibility of creating energy value chains through backward and forward linkages, including manufacturing, assembling RE technologies, installation, repairs and maintenance.¹⁶

Global initiatives such as the 1992 Rio Declaration for Sustainable Development, the SDGs and the 2015 Paris Climate Agreement are also mirrored in the G20's actions. Green investment and RE have featured prominently in the G20 agenda since 2012, which includes the G20 Voluntary Action Plan on Renewable Energy and the AU's Africa Renewable Energy Initiative.¹⁷ At a continental level, regional economic communities such as ECOWAS and SADC have established centres for RE and energy efficiency to support RE development in their regions. The Renewable Energy Access Programme (REAP) under the AU's Programme for Infrastructure Development in Africa (PIDA) provides development and implementation assistance to national RE project owners across the continent.¹⁸ As the implementing arm of the REAP, the New Partnership for Africa's Development (NEPAD) provides

12 Valensisi G, 'Renewables in least developed countries: More arrows in the quiver?', *Bridges Africa*, 7, 3, April 2018.

13 Kaluba DC, 'Financing renewable energy in Africa in the SDG era', *Bridges Africa*, 7, 3, April 2018.

14 *Ibid.*

15 Valensisi G, *op. cit.*

16 *Ibid.*

17 *Ibid.*

18 NEPAD (New Partnership for Africa's Development) Agency, AU Commission & AfDB, *PIDA Progress Report 2017*. Midrand: NEPAD, 2017.

technical assistance to develop projects to bankability and arranges for investor roundtables to raise finance for their implementation.

WOMEN AS DRIVERS OF SUSTAINABLE DEVELOPMENT AND KEY PLAYERS IN THE RE SECTOR

Women are often overlooked as key drivers of sustainable development, owing to their unmeasured, unseen and unremunerated activities in the community. Yet countries with greater gender parity have more competitive economies, grow faster and experience higher levels of social well-being.¹⁹

Women's contribution to sustainable development was first recognised at the 1995 Beijing Declaration and Platform for Action.²⁰ Most recently, the World Trade Organization recognised the importance of incorporating a gender perspective when promoting inclusive growth in its 2017 Joint Declaration on Trade and Women's Economic Empowerment.²¹ The G20, currently under Argentinian presidency, states that 'as a result of structural inequality, policy action has different implications for women and men. That is why it is mandatory for our presidency to foster a gender mainstreaming strategy across the whole G20 agenda.'²²

There are numerous ways in which women can participate in and contribute to a more inclusive energy value chain:

Access to energy for women correlates with a 59% increase in wages – reinforcing the link between women's socio-economic development and access to clean energy

- From a livelihoods perspective, women are disproportionately affected in the energy–poverty nexus, which can be understood as 'the absence of sufficient choice in accessing adequate, affordable, reliable, high quality, safe and

19 Tyson L & S Zahidi, 'The slow march to gender parity', Project Syndicate, 31 October 2014, <https://www.project-syndicate.org/commentary/closing-gender-gap-economic-participation-by-laura-tyson-and-saadia-zahidi-2014-10?barrier=accesspaylog>, accessed 27 August 2018.

20 The Beijing Declaration acknowledged the inequality and poverty endured by women and the need to advance their SED. It highlighted 12 key areas where urgent action was needed to ensure gender parity and equal opportunities for men and women. See UN, 'Fourth World Conference on Women: the Beijing Declaration', <http://www.un.org/womenwatch/daw/beijing/platform/declar.htm>, accessed 14 June 2018.

21 WTO (World Trade Organization), 'Joint Declaration on Trade and Women's Economic Empowerment on the Occasion of the WTO Ministerial Conference in Buenos Aires in December 2017', https://www.wto.org/english/thewto_e/minist_e/mc11_e/gender_declarationmc11_e.pdf, accessed 14 June 2018.

22 G20 Argentina 2018, *op. cit.*

environmentally benign energy services to support economic and human development'.²³ According to a study by O'Dell *et al*, access to energy for women correlates with a 59% increase in wages – reinforcing the link between women's socio-economic development and access to clean energy. In sub-Saharan Africa an average of 85.7% of households rely on environmentally hazardous fuels for lighting, cooking and heating,²⁴ and use labour-intensive activities that prevent women from engaging in economic activities and keep girls out of school, further entrenching their poverty.²⁵ Enabling women's access to clean energy is therefore essential to improving their livelihoods and standard of living.

- As energy consumers and beneficiaries, their ability to contribute to household energy technologies such as stove programmes and solar cookers has resulted in more effective product design.²⁶
- As micro-entrepreneurs and on-sellers of RE, women have used RE to increase profits and efficiency in their informal sector enterprises and have proven themselves capable of independently operating and constructing RE technologies when provided with the appropriate training and support.²⁷ Solar Sister's work in Nigeria and Tanzania is testimony to this, while the ECOWAS Centre for Renewable Energy and Energy Efficiency has also implemented projects targeting women as sellers of off-grid solar RE.²⁸

However, challenges remain, and those discussed above highlight the need for a different approach to development, as well as for an understanding of the way in which infrastructure development has differential impacts on and outcomes for women compared to men. Gender mainstreaming is one such approach, defined by the UN Economic and Social Council in 1997 as:²⁹

23 Clancy J, Skutsch M & S Batchelor, *The Gender–Energy–Poverty Nexus: Finding Energy to Address Gender Concerns in Development*. London: DFID (UK Department for International Development), 2002.

24 UN Women, *Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development*. New York: UN Women, 2018.

25 EEP (Energy and Environment Partnership), *Understanding the Role of Women and Girls in Renewable and Energy-Efficiency Projects: An In-depth Study of Gender in the EEIP Portfolio*. Pretoria: EEP, 2017.

26 Cecelski C, *The Role of Women in Sustainable Energy Development*. Colorado: National Renewable Energy Laboratory, 2000.

27 *Ibid.*

28 Telephonic interview, Solar Sister representative, 1 June 2018. See also IRENA (International Renewable Energy Agency), 'Empowering women in Nigeria with solar energy', 8 March 2018, <http://www.irena.org/newsroom/articles/2018/feb/Empowering-Women-in-Nigeria-with-Solar-Energy>, accessed 30 August 2018. For more information on Solar Sister's work in Africa see Gray L, Boyle A & V Yu, *Turning on the Lights: Transcending Energy Poverty Through the Power of Women Entrepreneurs*. San Francisco: Miller Centre for Social Entrepreneurship, 2016.

29 ECOSOC UN Economic and Social Council), '1997 ECOSOC International Declaration on Gender Mainstreaming', <http://www.gamechangenetwork.info/documents/Gender-Mainstreaming/Frameworks/1997%20ECOSOC%20Declaration%20on%20gender%20mainstreaming.pdf>, accessed 18 October 2018.

The process of assessing the implications for women and men of any planned actions, including legislation, policies or programmes in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation (M&E) of policies and programmes in all political, economic and societal spheres, so that women and men benefit equally and inequality is not perpetuated.

Gender mainstreaming is not an end in itself; rather, it is a strategy used to achieve the goal of gender equality and the inclusion of women in sustainable development. The next section analyses existing gender mainstreaming toolkits in infrastructure and identifies the challenges encountered in implementation.

GENDER MAINSTREAMING IN SUSTAINABLE INFRASTRUCTURE PROJECTS

MAKING SENSE OF GENDER MAINSTREAMING

Feenstra identifies six enabling conditions for engendering (ie, gender equality, gendered development and gender inclusivity) in a national energy policy:³⁰

- participatory planning: the inclusion of women's viewpoints in policymaking (this can take the form of consultations with local communities with the view to unearth gendered biases in a community's infrastructure needs);³¹
- gender methodology: the collection of gender-disaggregated data;
- broad-based gender equality legislation passed by Parliament;
- political commitment to international conventions and implementation at a domestic level;
- institutional support: commitment towards gender mainstreaming in all sectors, and collaboration with civil society organisations and non-government organisations (NGOs); and
- allocation of sufficient financing for enabling gender mainstreaming to ensure that efforts are successful as a broad-based initiative.

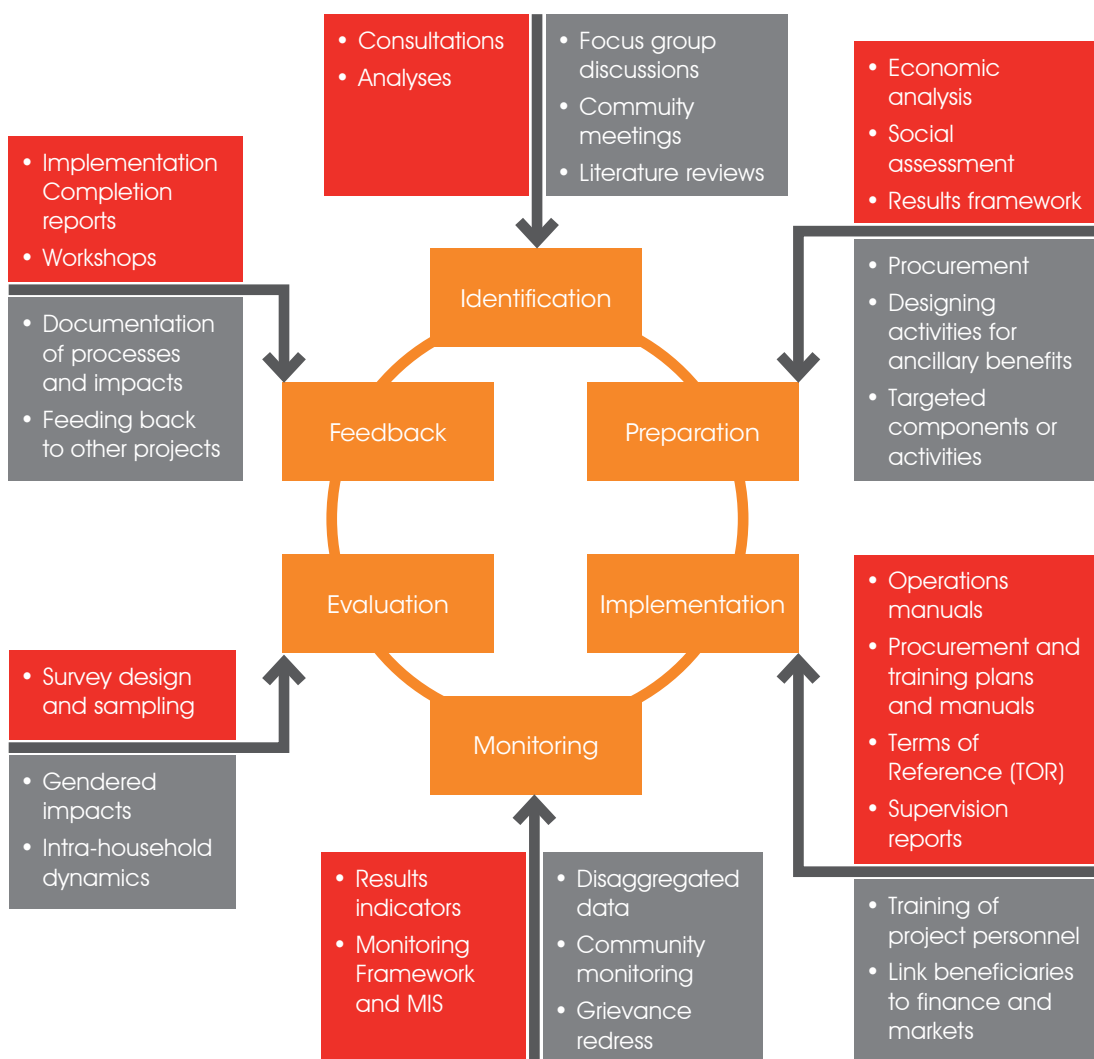
Several multilateral development banks (MDBs) have taken steps to mainstream gender in their infrastructure financing. For example, the World Bank adopted a sector-wide gender approach and first implemented its gender mainstreaming strategy in 2001. The AfDB's Gender Strategy 2014–2018 targets gender inequalities through three main pillars: women's capacity building and knowledge management,

30 Clancy J, *Late Developers: Gender Mainstreaming in the Energy Sector*. Eschede: University of Twente, 2009.

31 Sola M et al., *Mainstreaming Gender Equality to Improve Infrastructure Development Impact*. London: PIDG (Private Infrastructure Development Group), 2018.

legal and property rights, and economic empowerment.³² This strategy was preceded by a checklist for gender mainstreaming in the infrastructure sector released in 2009, which identifies a gendered mainstreaming approach at each stage of the project cycle (ie, project design, project-related employment and the participation of women-owned businesses in the procurement of work and services).³³

FIGURE 1 PROJECT-LEVEL ENTRY POINTS FOR GENDER MAINSTREAMING



Source: World Bank, *Steps to Stride: The Sustainable Development Networks' Companion to the World Development Report 2012*. Washington DC: World Bank Group, 2012

32 AfDB, Office of the Special Envoy of Gender, *Investing in Gender Equality for Africa's Transformation 2014–2018*. Abidjan: AfDB, 2014.

33 *Ibid.*

THE ABSENCE OF GENDER MAINSTREAMING IN THE INFRASTRUCTURE SECTOR

Project design and implementation

While gender mainstreaming has become more common in sectors such as sanitation and health, large-scale energy infrastructure has not received the same level of attention. The literature shows that this is primarily because:

- The energy industry is dominated by male participants who set the infrastructure development agenda and often discount the need to address women-related issues. Of the World Energy Council's (WEC) 92 country members, women hold only 4% of chair positions and 18% of secretary positions.³⁴
- Large-scale solar and wind RE projects specifically require solar arrays or wind turbines that are often situated on land that women have little access to or control over.³⁵
- The role of women as key energy managers (whether at household level or on a larger scale) is often overlooked.³⁶

Donors, business, governments and DFIs/MDBs sometimes adopt a tick-box approach for the total female headcount in projects or struggle to incorporate clearly defined gender mainstreaming targets in infrastructure projects

- Donors, business, governments and DFIs/MDBs sometimes adopt a tick-box approach for the total female headcount in projects³⁷ or struggle to incorporate clearly defined gender mainstreaming targets in infrastructure projects.³⁸

The absence of gender-disaggregated monitoring and evaluation (M&E) data can also result in little or no follow-up to check whether a project has successfully implemented its gender-based targets, as evident in the Ouarzazate solar project in Morocco. This project failed to implement gender-based targets, reduce gender

34 Rojas A, Prebble M & J Siles, *op. cit.*

35 Nelson S & A Kuriakose, *Gender and Renewable Energy: Entry Points for Women's Livelihoods and Employment*. Washington DC: CIF (Climate Investment Funds), 2017.

36 Clancy J, *op. cit.* See also Rojas A, Prebble M & J Siles, *op. cit.*

37 SDSN (Sustainable Development Solutions Network), *Women's Role in Economic Development: Overcoming the Constraints*, 2013 <http://unsdsn.org/resources/publications/womens-role-in-economic-development-overcoming-the-constraints/>, accessed 18 October 2018.

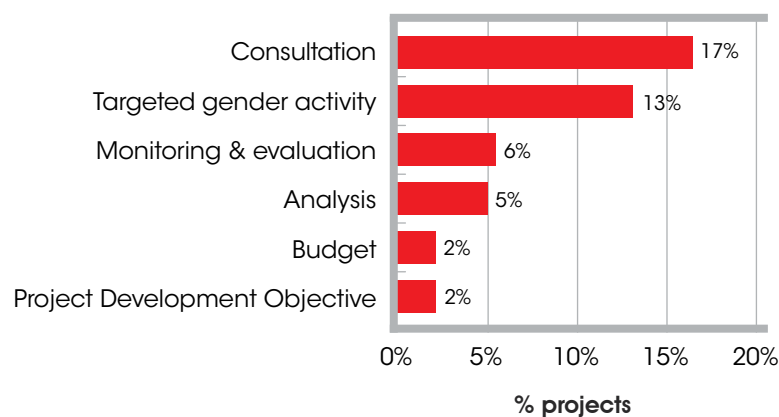
38 Grown C *et al.*, 'Aid for gender equality and development: Lessons and challenges', *Journal of International Development*, 28, 2016.

disparities and promote the socio-economic integration of women through indirect and various planned training programmes despite a commitment from the Moroccan Agency for Social Development to strengthen gender expertise during project implementation. An absence of gender-disaggregated data in programmes and gender-aware energy policies and practices ultimately (and often inadvertently) discriminates against women.³⁹

Similarly, although national legislation can account for gender parity (as in Rwanda), changing fundamental cultural beliefs that perpetuate traditional gender-based divisions of roles and responsibilities remains a challenge at grassroots level and can negate policy advancements or efforts made by government in this regard.

The World Bank's review of its infrastructure projects from 1995 to 2009 illustrates the use of gender consultation as the most popular gender mainstreaming tool, although it remains uncertain whether such inputs have shaped actual project activities.⁴⁰ The World Bank is also criticised in some quarters for focusing exclusively on female inclusivity from a neoliberal economic transformation viewpoint, which fails to account for broader issues of political and social empowerment.⁴¹

FIGURE 2 USE OF GENDER METHODS IN 1 246 WORLD BANK INFRASTRUCTURE PROJECTS, 1995–2009



Source: Ahmed N *et al.*, *Making Infrastructure Work for Women and Men: A Review of World Bank Infrastructure Projects 1995 to 2009*. World Bank: Washington DC, 2009

39 Clancy J, *op. cit.*

40 Ahmed N *et al.*, *Making Infrastructure Work for Women and Men: A Review of World Bank Infrastructure Projects 1995 to 2009*. Washington DC: World Bank, 2009.

41 Ferguson L & S Harman, 'Gender and infrastructure in the World Bank', *Development Policy Review*, 33, 5, 2015.

The AfDB acknowledges that there are no measures in place to ensure compliance with the bank's gender equality policy, which can be treated as an optional extra by individual task managers, and that inconsistent approaches to M&E on gendered results have hampered reporting and learning.⁴² The AfDB is, however, aware of these constraints and in 2016 implemented a \$12.4 million grant that forms part of its Affirmative Finance for Women in Africa (AFAWA) project. AFAWA aims to create a networking platform dedicated to women entrepreneurs that will enable women to start, grow and scale their businesses through networking and exchanging ideas, while also promoting financial inclusion and their participation in the formal economy.⁴³

The need for gender-responsive financing, budgeting and investing

A key finding is that the absence of gender-responsive budgeting (GRB), investing and financing is an important factor accounting for the lack of success in gender mainstreaming across the infrastructure sector. GRB is a tool that ensures gender equality in outputs and programmes by incorporating a gendered perspective into the regular budgeting processes. Successful implementation of GRB requires

Gender-responsive budgeting is a tool that ensures gender equality in outputs and programmes by incorporating a gendered perspective into the regular budgeting processes

determining (i) how funds are raised; (ii) how they are used; and (iii) who benefits from them, and then using taxation or spending measures to address gender inequalities in the budget process.

Although initially implemented for social sectors, GRB policies are increasingly applied to infrastructure development as the effects of infrastructure provision on gender inequality have become more widely known. On the African continent, public sector GRB efforts have been implemented in infrastructure development in Uganda, South Africa, Rwanda, Benin, Mali, Kenya and Tanzania. Given that RE development has only recently been integrated into national development strategies, examples of GRB targeting RE projects are scarce. Although implementation remains an ongoing challenge there are, nevertheless, positive signs of development underway to improve GRB across Africa, as detailed in the case studies below.

42 AfDB, Office of the Special Envoy of Gender, *op. cit.*

43 AfDB, 'AfDB funds a platform to support women empowerment in 36 African countries', 18 July 2016, <https://www.afdb.org/en/news-and-events/afdb-funds-a-platform-to-support-women-empowerment-in-36-african-countries-15957/>, accessed 1 July 2018.

MOVING TOWARDS INCLUSIVITY: RE IN RWANDA

AN OVERVIEW OF RWANDA'S ENERGY LANDSCAPE

Rwanda's efforts in promoting women's rights and pursuing gender equality across all spectrums are supported by the country's strong gender equality strategies, as reflected in its Vision 2020 Strategy and Economic Development and Poverty Reduction Strategy II (2013–2018). Rwanda has well-established gender mechanisms located within the Ministry of Gender and Family Promotion (MIGEPROF), the Gender Monitoring Office and the National Women's Council aimed at strengthening women's economic empowerment through policy, technical support and/or advocacy.

However, as a low-income country, enabling sustainable development and access to infrastructure is a challenge: 2017 data from the government of Rwanda notes that 9 million people (70% of the population) lack access to electricity, 88% of whom reside in rural areas.⁴⁴ The government is working with the private sector towards 100% electrification by 2024 using on- and off-grid supply sources.⁴⁵ It has also implemented a number of policies that support increased electrification:

- Rwanda Energy Policy 2015: Provides high-level direction on the longer-term goals, priorities and approaches needed in the sector.
- Rwandan Electricity Access Roll-Out Program: Aims to increase grid connections in the country. The first phase (2009–2012) reached 17% of households, up from 6%. The second phase (2012–2018) was concluded in June 2018 and the results are not yet available.
- Rural Electrification (REP) Strategy 2016: The electricity access target is set at 70% of households by 2017/18 (through on- and off-grid supply) and 100% access is targeted by 2020. These targets were revised under the Strategy for National Transformation (2017–2024).

The Rwandan government's efforts to grow the country's energy sector is strongly supported by numerous MDB and donor-led initiatives, including the World Bank's Renewable Energy Fund 2017–2024 (targeting 445 000 off-grid connections for sustainable development and productivity growth in urban and rural areas) and

44 IEA (International Energy Agency), 'Energy Access Outlook 2017: From Poverty to Prosperity', 2017, https://www.iea.org/publications/freepublications/publication/WEO2017_SpecialReport_EnergyAccessOutlook.pdf, accessed 15 June 2018.

45 Republic of Rwanda, 'National Strategy For Transformation, NST 1' 26 September 2017, http://www.parliament.gov.rw/fileadmin/templates/document/Important_Doc/Gahunda_ya_Guverinoma_y_lmyaka_7.pdf, accessed 15 June 2018. The Strategy for National Transformation (2017–2024) targets 100% electricity access by 2024, of which 48% is planned to be off-grid versus 52% on-grid.

Power Africa's Gigawatt Global in Rwanda.⁴⁶ Social enterprises lead the way in using gender approaches in business modelling by including women in project design and involving them as professionals or end-users throughout the energy value chain.⁴⁷ Their efforts, however, are often limited to rural initiatives targeting women as retailers of home solar systems or solar-powered retail outlets operated by women (for example Solar Kiosk and WakaWaka).

Given the speed at which the government wishes to electrify the country, off-grid technologies are considered the main solution for those areas not reachable by the grid, although high prices and low affordability are the main barriers in the off-grid solar market.⁴⁸ National strategies rely heavily on private sector participation in implementing off-grid technologies. Policies have contributed to a rapidly growing solar private sector, and the policy environment for the solar energy sector is generally perceived as positive, enabling and consultative by the private sector.⁴⁹ Through a series of consultation processes and working groups led by either the government or the Energy Private Developers Association, private companies actively participate in policymaking. Strong public–private collaboration has furthered RE sector growth in Rwanda.

GENDER MAINSTREAMING AND GRB IN RWANDA'S RE SECTOR

Access to electricity in Rwanda exists predominantly in urban areas and favours men: 70% of male-headed households have access to electricity, compared to 56% of female-headed households.⁵⁰ In rural areas, 5% of female- and 7% of male-headed households have access to electricity.⁵¹ Overall, only 12% of female-headed households use on-grid supplied electricity as their main source of lighting, compared to 19% of male-headed households.⁵²

Access to electricity in Rwanda exists predominantly in urban areas and favours men: 70% of male-headed households have access to electricity, compared to 56% of female-headed households

46 Gigawatt Global in Rwanda is an 8.5MW solar photovoltaic power plant connected to the grid and has increased power generation capacity in the country by approximately 6%. See USAID, 'Rwanda: Power Africa factsheet', <https://www.usaid.gov/powerafrica/rwanda>, accessed 17 June 2018.

47 Personal interview, WakaWaka and Solar Kiosk, Kigali, 19 June 2018.

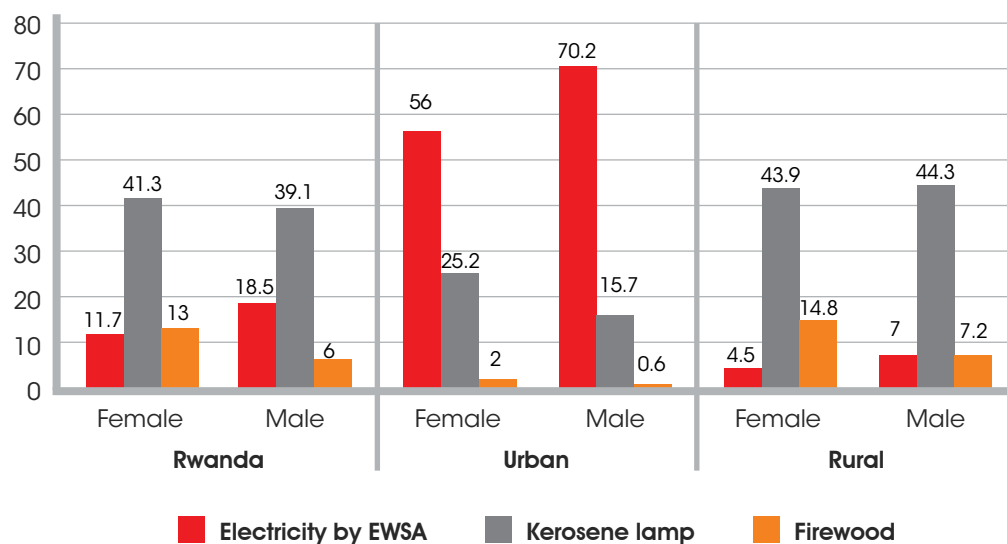
48 Disch D & J Bronckaers, 'An Analysis of the Off-grid Lighting Market in Rwanda: Sales, Distribution and Marketing'. London: GVEP International, 2012.

49 Personal interviews, stakeholders in the solar energy sector, Kigali, June 2018.

50 MININFRA (Ministry of Infrastructure), 'Infrastructure Gender Mainstreaming Strategy (2017/18–2021/22)'. Kigali: MININFRA, 2017.

51 *Ibid.*

52 *Ibid.*

FIGURE 3 PERCENTAGE OF FEMALE- AND MALE-HEADED HOUSEHOLDS' ACCESS TO ELECTRICITY

Note: EWSA = Energy, Water and Sanitation Authority

Source: MININFRA, *Infrastructure Gender Mainstreaming Strategy (2017/18–2021/22)* (draft). Kigali: MININFRA, 2017

As part of its gender-wide approach towards development, the Rwandan government has taken steps to engender its energy policies. In 2018 the Ministry of Infrastructure (MININFRA) implemented the Infrastructure Gender Mainstreaming Strategy 2017–2022 (IGM Strategy). The IGM Strategy provides for the equal participation of women and men in infrastructure activities with the aim of furthering employment, skills development and overall socio-economic development. An implementation plan and M&E matrix present several outputs linked to specific GRB and infrastructure-planning outcomes and capacity-building training for staff in gender sensitisation.

TABLE 1 IGM STRATEGY: OUTCOMES UNDER EACH STRATEGIC AREA LINKED TO WOMEN'S INVOLVEMENT AND PARTICIPATION IN THE ENERGY SECTOR

| STRATEGIC AREAS | | OUTCOME |
|-----------------|---|---|
| 1 | Capacity development for gender mainstreaming | Strengthened capacity of infrastructure institutions to address gender issues in design, implementation, monitoring and evaluation of policy, programmes and projects |
| 2 | Employment and job creation | Improved access to job opportunities and earning more income from different infrastructure investments by females and males |
| 5 | Energy | Ensure safe, sufficient, reliable, sustainable and affordable supply of energy to women and men |

Source: MININFRA, *Infrastructure Gender Mainstreaming Strategy (2017/18–2021/22)* (draft). Kigali: MININFRA, 2017

Measures proposed in the REP aim to address the gap in women's involvement in the energy value chain, from end-users to decision makers, and the need for the financial inclusion of women through credit and micro-finance tailored programmes. The REP establishes MIGEPROF and the Gender Monitoring Office as the main institutions in charge of monitoring gender equity directives and compliance in line with energy sector programmes and policies, followed by MININFRA and the Rwanda Energy Group (REG) Limited.⁵³

TABLE 2 PROPOSED MEASURES FOR GENDER MAINSTREAMING UNDER THE RWANDA ENERGY POLICY (2015)^a

MEASURES FOR GENDER MAINSTREAMING IN THE RWANDA ENERGY POLICY

| | |
|---|--|
| 1 | Considering gender issues at every stage of the energy project cycle and in all major sub-sector strategies and action plans |
| 2 | Addressing energy concerns in a gender-sensitive manner shall be undertaken in the process of identifying and evaluating appropriate technologies for any given service |
| 3 | Proactively targeting female-headed households in awareness-raising and behavioural change programmes focused on sustainable energy and clean cooking technologies |
| 4 | Undertaking education, outreach, and awareness-raising activities focused on identifying and altering cultural norms, behaviours, structures and practices that can lead, whether intentional or not, to inequitable energy access |
| 5 | Addressing knowledge gaps in gender and energy, through research and advocacy programmes and providing information support to improve women's access to energy services in Rwanda |
| 6 | Developing credit enhancement and micro-finance programmes specifically targeting women for driving investments in clean energy technologies, such as solar powered lamps, and promoting women as energy entrepreneurs |
| 7 | Incorporating meaningful roles to women in the planning, design and execution of energy programmes, including those relating to energy efficiency and conservation |
| 8 | Encouraging girls to study science and mathematics and courses related to building knowledge of energy technologies and basic engineering |

- a It is worth noting that measure 1 is quite broad, acting as a catch-all target, stressing the need to conduct gender analysis throughout the project cycle. However, measure 1 does not specify what these 'gender issues' are. The Energy Policy mentions that infrastructure development projects are subjected to environmental impact assessment, but does not specifically refer to women and minority groups, and considerations of displacement owing to infrastructure development do not seem to be addressed in main policy documents. However, this issue has been given priority under the Rwanda Renewable Energy Fund Project, to be managed by the World Bank, which has an internal Resettlement Policy Framework.

Source: MININFRA, *Rwanda Energy Policy*. Kigali: MININFRA, 2015

53 REG Limited is responsible for the generation of electricity, its transmission and distribution, and the connection of costumers. See Lenz L *et al.*, 'Does large-scale infrastructure investment alleviate poverty? Impacts of Rwanda's electricity access roll-out program', *World Development*, 89, January 2017.

In a positive development, employment policies targeting a 50:50 ratio are frequently required by investors and donors, and companies adhere to this.⁵⁴ For example, four interviewed companies had a 50:50 ratio as a human resource target and short-term goal. From an employment perspective, most of the big private players in the solar energy arena are actively incorporating women in their human resources. For example, Ignite Power is working in conjunction with the Rwandan government to provide home solar systems to 250 000 households by the end of 2020.⁵⁵ It currently employs 495 staff in Rwanda, 16% of whom are women. Ignite Power managers are trained at field level to hire sales agents to achieve an internal 50:50 ratio. Five out of 24 registered solar energy companies in Rwanda are owned by women, and several of them have a significant number of women in top management positions.⁵⁶

In terms of national GRB measures, Rwanda is ahead of many of its African peers. In 2008 the government launched a GRB programme to complement gender mainstreaming efforts and medium-term plans and budgets. All public entities

In terms of national GRB measures, Rwanda is ahead of many of its African peers. In 2008 the government launched a GRB programme to complement gender mainstreaming efforts and medium-term plans and budgets

are required to submit a gender budget statement as part of budget framework papers, according to Law 12/2013 instituting the GRB. Under the IGM Strategy's implementation plan more than \$5 billion has been allocated to gender-related interventions in several infrastructure initiatives, including increased capacity building for professionals and electricity access for women and men. Unfortunately, while Rwanda's approach is an important step in ensuring that national budgets account for GRB and the differentiated needs of men and women in infrastructure project design, construction and end results, these requirements have not trickled down to the private sector, as discussed below.

CHALLENGES IN GENDER MAINSTREAMING: RWANDA

Challenges in government implementation

Despite policy documents' incorporating measures to mainstream gender, there is a disconnect between policy formulation and implementation. The REP, for example, has no M&E framework to track the progress or impact of government policies

54 For example, Mobisol is required to achieve a 50:50 ratio in recruitment, as established in the grant contract signed with the EU.

55 Personal interview, Ignite Power, Kigali, 19 June 2018.

56 Ignite Power, BBOX and Mobisol have 28%, 40% and 50% women in top management positions, respectively.

and regulations. No enforcement mechanisms appear to be implemented by the government or enforced on private sector players. The disconnect between policy documents and on-the-ground realities may be explained by (i) institutions' lack of capacity to train staff; (ii) a lack of professionals with deep gender expertise who could help the government to implement its policies; and (iii) insufficient prioritisation by the government to apply and implement measures described in policy.

It is also difficult to track progress in Rwanda because of the relative newness of initiatives. For example, while the IGM Strategy is an important step forward, it is a relatively new initiative and progress reports are not yet available. Similarly, the government-owned REG Limited launched a Gender Mainstreaming Programme in March 2018.⁵⁷ This programme too is in its initial stages and no measureable impact results are available yet.

Challenges in private sector engagement on GRB and gender mainstreaming

Unfortunately, the Rwandan government's efforts thus far have been limited to government projects and have not integrated or required the private sector to implement gender mainstreaming and GRB, despite the importance of private sector players in the government's RE sector initiatives. The 2018 GRB Programme,

Unfortunately, the Rwandan government's efforts thus far have been limited to government projects and have not integrated or required the private sector to implement gender mainstreaming and GRB

for example, does not require private companies to implement GRB in their infrastructure programmes. Some private sector representatives perceive gender-responsive financing as a potential bottleneck in maximising their operations, because GRB and gender-based investments can become a competitive constraint.⁵⁸

A similar picture emerges for institutions financing RE projects, where there are no specific enabling programmes or services for women in place.⁵⁹ Under the RE Fund project targets set by the government and the Development Bank of Rwanda (BRD), 52% of loan beneficiaries must be women, although no information could

57 Personal interview, Gender Focal Point, REG, 29 June 2018. Energy Utility Corporation Limited and Energy Development Corporation Limited are responsible for energy development and utility service delivery, and their programme receives support from ENABEL, the Belgium Development Agency.

58 Personal interviews, BBOX, Muryax Eco and Energy Private Developers, Kigali, 27 June 2018.

59 Personal interview, energy expert at I&M Bank, Kigali, 21 June 2018.

be found on how this target will be monitored or achieved.⁶⁰ In June 2018, the BRD and the Swedish International Development Cooperation Agency signed two Energy Portfolio Guarantee agreements to establish an on-lending guarantee facility of \$30 million. The fund aims to increase financial access for small, medium and micro-sized enterprises (SMMEs) wanting to sell solar products.⁶¹ It makes special provisions for women and covers up to 70% of their loans, in comparison to 50% for men. However, M&E for the implementation of these initiatives is not clearly defined and there is insufficient clarity on the extent and ease with which women are able to access this designated funding.

Unfortunately, Rwanda is not alone in facing challenges in GRB and gender mainstreaming in Africa. South Africa's Renewable Energy Independent Power Producer Procurement (REIPPP) programme also faces significant challenges on this front.

THE RE SECTOR IN SOUTH AFRICA

OVERVIEW OF SOUTH AFRICA'S GENDER FRAMEWORKS

South Africa has a wide variety of gender-focused institutions, policies and frameworks driving gender equity and equal inclusion in the economy. The government's national, regional and global commitments on women's rights, women's empowerment and gender equality form the basis for furthering women's engagement in sustainable development and the energy infrastructure sector specifically.

The South African government's efforts to address gender-based issues are cross-cutting and span various departments. Programmes that seek to enhance women's inclusion and participation in the economy are spearheaded by the Department of Trade and Industry (dti). Initiatives thus far include the Isivande Women's Fund, which targets formally registered enterprises that are women-owned/managed,⁶² infrastructure programmes and export marketing and investment assistance. The dti's efforts build on its 2011 report 'Towards an Enabling Environment for Women Economic Empowerment in South Africa', which recognises that efforts towards women's empowerment must cover a broad range of efforts across all levels of society and government. Targeted action should include:

60 BRD (Development Bank of Rwanda), 'Rwanda Renewable Energy Fund Project: Environmental and Social Management Framework (ESMF)', April 2017, <http://documents.worldbank.org/curated/en/283611492062900666/pdf/SFG3265-REVISED-EA-P160699-Box402902B-PUBLIC-Disclosed-4-19-2017.pdf>, 18 June 2018.

61 *Hope Magazine*, 'BRD and Swedish Cooperation sign energy agreements', 22 June 2018, <http://www.hope-mag.com/index.php?com=news&option=read&ca=1&a=3666>, accessed 27 June 2018.

62 South Africa, dti (Department of Trade and Industry), 'Isivande Women's Fund (IWF)', https://www.thedti.gov.za/financial_assistance/financial_incentive.jsp?id=50&subthemeid=2, accessed 3 September 2018.

- enabling gender mainstreaming with women-specific programming;
- targeting women for economic empowerment through enterprise development;
- enabling their access to financial and business development services;
- developing women's leadership skills and education levels; and
- improving overall governance frameworks through the use of M&E, gender audits and capacity development for policymakers.⁶³

TABLE 3 OVERVIEW OF SOUTH AFRICA'S GENDER-BASED COMMITMENTS RELATED TO ECONOMIC EMPOWERMENT

| INTERNATIONAL CONVENTIONS | |
|---|--|
| UN Convention on Elimination of All Forms of Discrimination Against Women | Signatory to the Convention, which aims to promote women's equal access to opportunity and eliminate discrimination |
| Protocol to the African Charter on Human Rights and Rights of Women in Africa | Provides for the protection of women and girl-children and the eradication of discrimination against women |
| SADC Protocol on Gender and Development | South Africa played an instrumental role in drafting the Protocol, which highlights regional commitment to gender equality |
| NATIONAL LEGISLATION | |
| Department of Women | Tasked with championing the socio-economic advancement of women and promoting gender equality |
| Institutions mandated to promote gender equality | Human Rights Commission, the Commission for Gender Equality and civil society organisations (such as Sonke Gender Justice and Gender Link) |
| Constitution of the Republic of South Africa 1996 | Section 9 enshrines the right to equality |
| Promotion of Equality and Prevention of Unfair Discrimination Act 2000 | Section 13 prohibits discrimination on the grounds of gender |
| Employment Equity Act 1995 | Promotes equal opportunity and fair treatment for women within the workplace |

Source: SAHRC (SA Human Rights Commission), 'Research Brief on Gender and Equality in South Africa 2013–2017'. Johannesburg: SAHRC, 2017

Other dti-developed initiatives now form part of the Department of Small Businesses Development. These include a wide range of activities beyond the energy sector, such as Technology for Women in Business, the B'avumile Skills Development Initiative, the SEDA Technology Programme and the South African Women Entrepreneurs Network.⁶⁴

63 South Africa, dti, *Towards an Enabling Environment for Women Economic Empowerment in South Africa*. Pretoria: dti, 2011.

64 South Africa, dti, 'Gender Mainstreaming in Development Support Programmes of the dti: Presentation to the Portfolio of Women Committee', 23 June 2015, https://www.thedti.gov.za/parliament/2015/Gender_Mainstreaming_Programmes.pdf, accessed 3 September 2018.

POLITICAL ECONOMY OVERVIEW OF SOUTH AFRICA'S ENERGY SECTOR

The National Development Plan 2030 (NDP) is South Africa's overarching policy framework for encouraging development and reducing poverty and inequality. The NDP identifies key energy goals in order to achieve the framework's developmental objectives, including: ensuring sufficient energy for competitive industrial development and access to energy for poor households, reducing South Africa's carbon footprint and improving climate change resilience, incorporating a larger share of RE into the energy mix, and developing RE technologies.⁶⁵

South Africa's energy sector is dominated by Eskom, the parastatal responsible for generating 90% of the country's coal-fired electricity.⁶⁶ Eskom is also responsible for electricity transmission and distribution. Until the REIPPP programme was launched in 2011, Eskom was the sole power generator in South Africa. While the country's energy sector is dominated by the use of fossil fuels, the government's climate change commitments and its adoption of the *New Growth Path* framework in 2010 and the *Green Economy Accord* in 2011 have influenced its movement towards cleaner energy sources and green economic development.⁶⁷ Electricity planning is spearheaded by the Department of Energy (DoE) through its Integrated Resource Plan (IRP), which details the government's electricity, implementation and technology choices. The IRP is a subset of the Integrated Energy Plan, which guides and develops energy policy and frameworks, including provisions for RE capacities.⁶⁸

The REIPPP is globally regarded as a highly successful initiative for procuring RE and has managed to attract investment into the RE sector worth more than ZAR⁶⁹ 195 billion (\$14 billion), with 73% (ZAR 141 billion [\$10.03 billion]) from

The REIPPP is globally regarded as a highly successful initiative for procuring RE and has managed to attract investment into the RE sector worth more than ZAR 195 billion (\$14 billion), with 73% (ZAR 141 billion [\$10.03 billion]) from domestic and 27% (ZAR 53 billion [\$3.97 billion]) from international investors

65 National Planning Commission, *National Development Plan 2030*, February 2015, https://nationalplanningcommission.files.wordpress.com/2015/02/ndp-2030-our-future-make-it-work_0.pdf, accessed 14 August 2018.

66 Montmasson-Clair G & G Ryan, *Repositioning Electricity Planning at its Core: An Evaluation of South Africa's Integrated Resource Plan*. Pretoria: TIPS (Trade and Industrial Policy Strategies), 2014.

67 Motara S, 'Situational Analysis of Economic Empowerment of Women in Green Industries in South Africa', Background Paper. Vienna: UNIDO (UN Industrial Development Organization), 2017.

68 Montmasson-Clair G & G Ryan, *op. cit.*

69 Currency code for the South African rand.

domestic and 27% (ZAR 53 billion [\$3.97 billion]) from international investors.⁷⁰ To date, 6.4GW of energy has been procured, including Round 4.⁷¹ The REIPPP has received institutional and political support from government and industry stakeholders, including the National Treasury, the dti, the DoE, the Department of Environmental Affairs, project developers and the National Energy Regulator.

While the REIPPP is commended for diversifying South Africa's energy supply, it is a programme with competing views and interests on how the industry should be developed. Several cabinet changes in the ministerial energy post and allegations of corruption at Eskom under then chief executive officer (CEO) Brian Molefe threw the REIPPP programme into three years of disarray and near shutdown.⁷² However, In April 2018 Minister Jeff Radebe signed a ZAR 56 billion (\$4.64 billion) contract with the 27 remaining independent power producers (IPPs), kick-starting the REIPPP again.⁷³ Eskom initially refused to sign the last round of power purchase agreements (PPAs) because of its financial difficulties and its belief in a surplus of available electricity; however, it eventually signed the PPAs for a purchase price of ZAR 77c/IWh (\$0.063).⁷⁴

The newly revised IRP draft was released in August 2018 and forecasts South Africa's energy needs until 2030. While the draft IRP recognises that coal power stations will continue to constitute the bulk of South Africa's energy supply mix, it does not cater for the construction of new nuclear and coal plants.⁷⁵ However, the pace and scale of new capacity developments until 2030 will have to be curtailed compared to previous predictions: the draft IRP suggests a least-cost plan with the retention of annual build limits (1 000MW for solar PV and 1 600MW for wind) for the period

70 Eberhard A, Kolker J & J Leigland, *South Africa's Renewable Energy IPP Procurement Program: Success Factors and Lessons*, Public-Private Infrastructure Advisory Facility (PPIAF), World Bank, 2014, <https://www.gsb.uct.ac.za/files/ppiafreport.pdf>, accessed 19 July 2018. See also Green Cape, *Utility-scale Renewable Energy: 2017 Market Intelligence Report*. Cape Town: Green Cape, 2017.

71 Green Cape, *op. cit.* See also IPP (Independent Power Producers) Office, 'Independent Power Producers Procurement Programme: An Overview as at 31 December 2017'. Centurion: IPP Office, 2017. Round 4 refers to the fourth round in the IPP bidding process.

72 Burkhardt P, 'How Zuma wrecked the world's fastest growing renewables programme', *Business Day*, 1 February 2018, <https://www.businesslive.co.za/bd/national/2018-02-01-how-zuma-wrecked-the-worlds-fastest-growing-renewables-programme/>, accessed 26 June 2018.

73 Creamer T, 'New-look IPP bid documents will need to strike delicate balance', *Engineering News*, 22 June 2018, <http://www.engineeringnews.co.za/article/new-look-ipp-bid-documents-will-need-to-strike-delicate-balance-2018-06-22>, accessed 27 June 2018. Historical rate calculated at exchange of ZAR 12.07 to \$1.

74 Groenewald Y, 'Eskom: We will sign renewable deal', *Fin24*, 8 September 2017, <https://www.fin24.com/Economy/Eskom/eskom-we-will-sign-renewable-deal-20170908>, accessed 27 June 2018.

75 Creamer T, 'No new nuclear in IRP update as time horizon trimmed to 2030', *Polity News*, 27 August 2018, <http://www.polity.org.za/article/no-new-nuclear-in-irp-update-as-time-horizon-is-trimmed-to-2030-2018-08-27>, accessed 30 August 2018.

up to 2030.⁷⁶ This means that the proposed generational capacity could be far less than IPPs’ expectations of RE makeup in the country’s energy mix, potentially raising concerns over the growth and significance of the industry going forward.

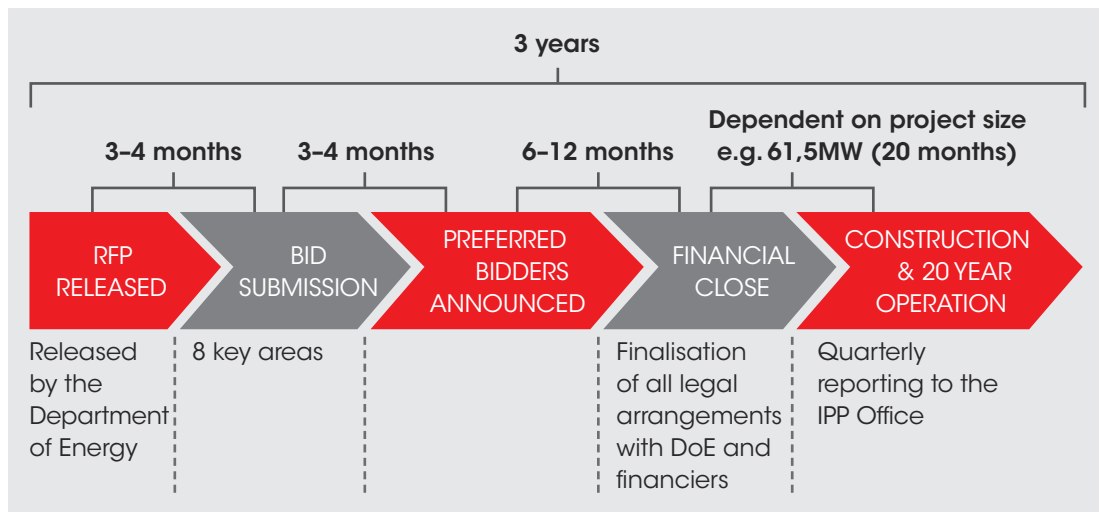
OVERVIEW OF THE REIPPP: SOUTH AFRICA

The REIPP’s transparent and private-sector friendly bidding process, with clearly defined minimum qualifying criteria and a broad-based black economic empowerment (BBBEE) component for local shareholding and content requirement,

The REIPP’s transparent and private-sector friendly bidding process is considered to be a model for other developing countries

is considered to be a model for other developing countries. The bidding round takes approximately three years to complete, from request for proposal release to operation (see Figure 5).

FIGURE 4 OVERVIEW OF REIPPP BIDDING AND CONSTRUCTION PROCESS



Source: Angela Hobbs, Altgen consultant presentation

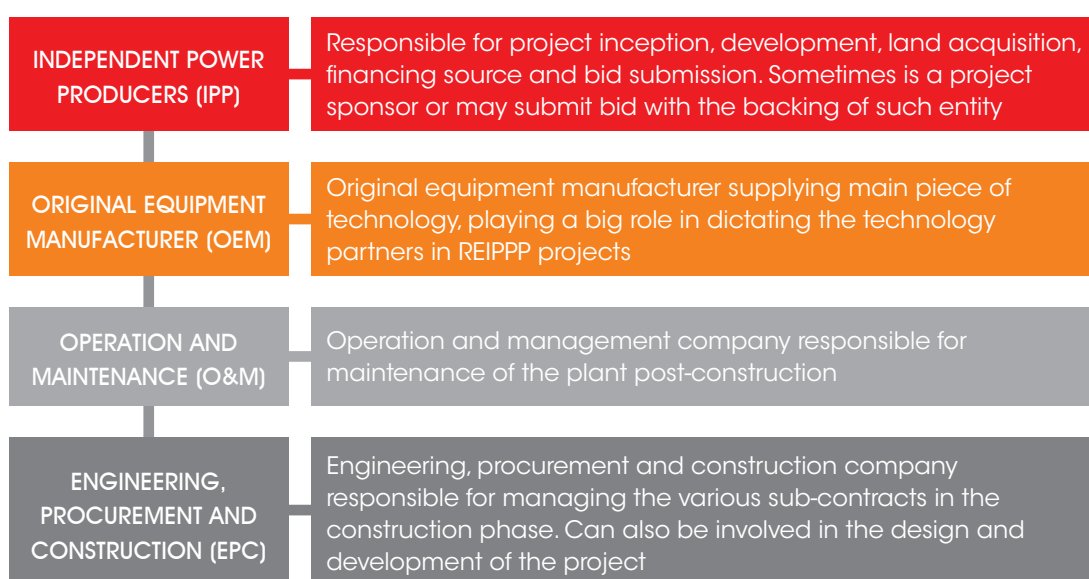
76 South Africa, Department of Energy, 'Request for Comments: Draft Integrated Resource Plan 2018', 2018, http://us-cdn.creamermedia.co.za/assets/articles/attachments/75771_irp-update-2018-draft-for-comments.pdf, accessed 24 August 2018.

TABLE 4 STAGES IN THE IPP BIDDING PROCUREMENT PROCESS

| | |
|---|--|
| <p>THE BID WINDOW OPENS WITH A REQUEST FOR PROPOSALS (RFP). IN ORDER TO SATISFY THE MINIMUM QUALIFICATION CRITERIA, EVERY PROJECT HAS TO SHOW:</p> | |
| (i) | Secured land rights to the project site via ownership, leases or options; finalised project structures and environmental authorisations; secured technology suppliers, contractors and financiers (both equity and debt); having fulfilled a range of technical requirements such as a yield assessment based on at least 12 months of measurements or data; |
| (ii) | Meeting minimum economic development requirements such as job creation, localisation, ownership and management control; |
| (iii) | Offering an electricity tariff that is equal to or less than the applicable technology tariff cap ZAR/kWh; and |
| <p>Qualifying bid submissions are adjudicated during an extensive evaluation process using independent advisors, after which preferential bidders are announced by the DoE. The preferred bidders are then required to finalise and sign all project and financing agreements and meet all required conditions contained in them, to reach financial close.</p> | |
| <p>The REIPPP process increased government’s standard 10% to 20% BBBEE requirement to 30%, and the development criteria includes seven sub-elements with different weightings: job creation (25%), local content (25%), ownership (15%) and management control (5%), preferential procurement (10%) enterprise development (5%) SED (15%). In sum, bids must satisfy a 70% price to 30% economic development weighting.</p> | |
| <p>Following financial close of the project and financing agreements, construction commences and projects must achieve commercial operation by not later than the dates set out in the RFP.</p> | |

Source: IPP Office representative

FIGURE 5 DIFFERENT PLAYERS IN THE REIPPP PROCESS



Source: Green Cape, *Utility-scale Renewable Energy: 2017 Market Intelligence Report*. Cape Town: Green Cape, 2017

The REIPPP has also been commended for significantly reducing the tariff rate from the required price ceiling. Reasons for the reduction include project developers' improved knowledge of the REIPPP process, increased maturing of technologies and IPPs' greater familiarity with the programme's requirements over the years.

| TABLE 5 TARIFFS OFFERED BY SOLAR PV, WIND AND CONCENTRATING SOLAR POWER PROJECTS OVER THE BID WINDOWS ^a | | | | | |
|--|-----------------------------|---------|---------|---------|----------|
| TECHNOLOGY | AVERAGE BID PRICE (R c/kWh) | | | | |
| | Round 1 | Round 2 | Round 3 | Round 4 | Round 4B |
| Wind (R c/kWh) | 145 | 112 | 77 | 65 | 75 |
| Total reduction from round 1 (%) | -49% | | | | |
| Solar PV (R c/kWh) | 352 | 206 | 104 | 82 | 89 |
| Total reduction from round 1 (%) | -75% | | | | |
| Concentrated solar power (R c/kWh) | 343 | 314 | 173 | n/a | |
| Overall price reduction from round 1 | -50% | | | n/a | |

a Prices are indexed to 2016 terms, adjusted by inflation

Note: Conversion rate ZAR 13.3209/\$1.00

Source: Green Cape, *Utility-scale Renewable Energy: 2017 Market Intelligence Report*. Cape Town: Green Cape, 2017

| TABLE 6 STRENGTHS AND CHALLENGES OF THE REIPPP PROGRAMME | | |
|--|---|----------------------------------|
| STRENGTHS | CHALLENGES AND CONCERNS FROM INDUSTRY STAKEHOLDERS | POTENTIAL CHANGES ON THE HORIZON |
| <p>Competitive and rigorous tender process resulting in large-scale FDI</p> <p>This weeds out investors that are unable to deliver RE at competitive prices, resulting in increasingly pro-poor energy pricing during successive rounds.</p> | <ul style="list-style-type: none"> There are concerns that government and the private sector have not paid enough attention to developing the technical skills needed to sustain the industry in the long term.^a | |
| <p>Enterprise development (ED) and job creation</p> <p>The REIPPP has steadily increased construction employment opportunities since the programme's inception, resulting in a one-year employment in a total of 35 702 jobs in 2017.^b</p> | <ul style="list-style-type: none"> ED is expected but not obliged to create long-term, skilled jobs within the RE sector that will further the longevity of the energy sector. Weighting for socio-economic development (SED) is 4.5 points compared to ED at 1.5 points. Skills transfer is difficult to achieve in rural communities that lack sufficiently skilled members.^c | |

| STRENGTHS | CHALLENGES AND CONCERNS FROM INDUSTRY STAKEHOLDERS | POTENTIAL CHANGES ON THE HORIZON |
|---|---|--|
| <p>BBBEE shareholding</p> <p>IPP Office records show that up to 61% of top management positions are filled by black people. Black South Africans own, on average, 30% of projects that have reached financial close (reaching the 30% target), while shareholding by black people has reached the 20% target thus far.^d</p> | <ul style="list-style-type: none"> • Some IPP companies expressed concern at the widespread practice of fronting throughout the RE sector in order to achieve higher scores, as confirmed by numerous IPP interviewees. • A current weakness of the IPP monitoring and reporting system is the absence of means to measure/track women-based ownership, shareholding, and management positions in IPP companies. This is essential in order to understand where the gaps are in terms of women-led management and how they can best be addressed in future rounds. | <p>The dti has recommended to DoE/IPP Office the creation of a special dispensation under the BBBEE Codes for the IPP industry designed to address existing implementation and job creation challenges under the REIPPP.^e</p> |
| <p>M&E and impact evaluation</p> <p>The IPP Office requires quarterly reports from IPP companies together with proof of payments allocated to their SED and ED projects, in order to verify that expenditure matches the set targets.^f Where IPP companies cannot account for their spending they are required to pay a fine.</p> | <ul style="list-style-type: none"> • While the IPP Office does undertake M&E and auditing of IPPs, there is a need for impact evaluation assessments as well. | |
| <p>Local content and industrialisation</p> | <ul style="list-style-type: none"> • Initially, there was a very loose definition that included the procurement of services (engineering, project management, assembling of imported parts, etc.) in Round 1. The original scope of 'local content' was expanded to include items imported and assembled in South Africa (steel was considered local regardless of origin) under Round 3.^g • In 2014/2015 the IPP Office challenged this definition, arguing that local content spend does not automatically translate into localised industrialisation. | <p>For Round 5 the dti has made suggestions to the DoE and IPP Office to change the local content requirements to reflect an economics multiplier and identified components within products in each RE value chain that should be localised.^h</p> |

| STRENGTHS | CHALLENGES AND CONCERNS FROM INDUSTRY STAKEHOLDERS | POTENTIAL CHANGES ON THE HORIZON |
|--|--|---|
| <p>Community trusts</p> <p>Communities are entitled to shareholding of up to 5% (minimum target of 2.5%) on all IPP projects through community trusts, which are 100% funded by the Development Bank of Southern Africa (DBSA), the Industrial Development Corporation (IDC) or the Public Investment Corporation.</p> <p>The community trust is managed by a board of trustees that include community representatives, IPPs and other independent members.ⁱ</p> | <p>Academic reviews of community trusts have found that:</p> <ul style="list-style-type: none"> • A lack of limitations on the number of community trusts within one community could promote perverse development not centred on community development but rather on achieving the highest points for IPP projects themselves.^j • Income generated from the RE plant is reinvested into local communities for SED spending. Dividend income from community ownership in a project, however, often flows after loan repayment, implying that it can be several years until the communities earn an income, which can cause frustration.^k | <p>There are concerns among IPP companies that in Round 5 the government will refocus efforts away from SED and ED towards grooming black industrialists within the RE sector. IPP companies fear that community trust targets will be dismantled, to the detriment of local community development.^l</p> |
| <p>SED</p> <p>The minimum compliance threshold for SED contributions is 1% of project revenue once the RE plant becomes operational and is generating revenue, with 1.5% as the targeted level over the 20-year project lifespan.^m Non-compliant projects incur penalties that can result in termination of contracts.</p> | <ul style="list-style-type: none"> • The IPP Office pushed the responsibility for SED plans to the IPPs, while IPPs expressed a need for stronger guidance from government.ⁿ • Industry representatives are concerned that the SED structure as a scorecard creates a tick-box mentality for some developers and investors, and there is a need for improved M&E of SED projects.^o • IPP companies experience difficulties in managing local communities' expectations regarding the SED projects they will receive as beneficiaries. • A concentration of IPP companies in the same areas means there is an oversupply of SED projects in some areas compared to others, but the competitive bidding process has had the unintended effect of IPPs' not sufficiently collaborating and pooling efforts for SED initiatives in the same area in order to achieve maximum impact for local development.^p | <p>All IPP companies interviewed had implemented comprehensive SED projects based on the needs of the surrounding communities. While these do not always explicitly target women, programmes include early childhood development centres, healthcare, solar heating, lighting and geysers and bursaries for tertiary education for the youth.^q</p> |

| STRENGTHS | CHALLENGES AND CONCERNS FROM INDUSTRY STAKEHOLDERS | POTENTIAL CHANGES ON THE HORIZON |
|-----------------------------|--|---|
| Gender mainstreaming | <ul style="list-style-type: none"> Not identified as a particular policy goal specific to the REIPPP programme. | The DoE is currently working on a draft gender mainstreaming strategy for the energy sector that will include gender-based targets. |

- a Personal interview, IPP company representative E, Cape Town, 4 June 2018.
- b IPP Office, 'Independent Power Producers Procurement Programme: An Overview as at 31 March 2018'. Centurion: IPP Office, 2018.
- c Montmasson-Clair G & R Nair, 'Channelling Economic Regulation to Stimulate Inclusive Growth: Lessons from South Africa's Renewable Energy Experience', Paper submitted to the Biennial Conference of the Economic Society of South Africa, Cape Town, 3–4 September 2015.
- d IPP Office, 2018, *op. cit.*
- e Personal interview, dti representative, Pretoria, 20 June 2018.
- f Personal interview, IPP Office, Centurion, 19 July 2018.
- g Montmasson-Clair G & R Nair, *op. cit.*
- h Personal interview, dti official, Pretoria, 20 June 2018.
- i Tait L, Wlokas L & B Garside, *Making Communities Count: Maximising Local Benefit Potential in South Africa's Renewable Energy Independent Power Producer Procurement Programme*. London: International Institute for Environment and Development, 2013.
- j Montmasson-Clair G & R Nair, *op. cit.*
- k Tait L, Wlokas L & B Garside, *op. cit.*
- l Personal interview, IPP company representative F, Cape Town, 6 June 2018.
- m IPP Office, December 2017, *op. cit.*
- n Ebdard A, Kolker J & J Leigland, *op. cit.*; personal interview, IPP company representative B, Cape Town, 7 June 2018.
- o Personal interview, IPP company representative A, Cape Town, 6 June 2018; telephonic interview, industry representative, 11 June 2018.
- p Tait L, Wlokas L & B Garside, *op. cit.*; personal interview, IPP company representative D, Johannesburg, 13 June 2018.
- q Personal interview, IPP company representative A, Cape Town, 6 June 2018; personal interview, IPP company representatives I, Cape Town, 6 June 2018.

WOMEN AND THE REIPPP: ROOM FOR IMPROVEMENT

During the interview process it became clear that many REIPPP players had not considered women's inclusion in the energy value chain, although there were notable exceptions. Interviews approached the topic of women's inclusion through the prism of smaller players, women-owned vendors (WoVs) and BBBEE shareholding, for which there are currently requirements in the REIPPP scoring and weighting process. Challenges identified in relation to ensuring BBBEE and smaller players' participation were also understood to cover some of the challenges in women-based engagement in RE industries. The interviews revealed three fundamental factors driving the failure to include women in the RE sector in South Africa:

- a lack of leadership to mainstream gender throughout the RE value chain;
- an absence of appropriate financing mechanisms; and
- insufficient entry-level gender-based initiatives.

The design of the gender mainstreaming toolkit in the paper's final section is informed by these factors, along with the Rwandan case study findings, desk-top analysis and the literature review.

Institutional will, policy uncertainty and leadership in inclusive RE

Enabling the inclusion of women in the energy value chain requires clear political leadership at every level to enhance their participation in the economy, improve livelihoods and enable them to contribute to sustainable development. Broad-based government support for gender mainstreaming is essential in driving gender-based

It is crucial that women-led inclusion be championed by the government and the management of IPP companies and financiers. In numerous government departments, policies are insufficient to support gender inclusivity

political commitments. Hence, it is crucial that women-led inclusion be championed by the government and the management of IPP companies and financiers. In numerous government departments, policies are insufficient to support gender inclusivity and mainstreaming fails to deliver results.⁷⁷

- The 2018 draft IRP does not include gender considerations, while the previous IRP document did not consider the impact of the energy-poverty nexus on women.⁷⁸ This raises the question of how the DoE will enforce gender-based

77 Personal interview, AfDB representative, Centurion, 30 May 2018.

78 Montmasson-Clair G & G Ryan, *op. cit.*

requirements in the energy sector without a policy framework on women's inclusion in the RE sector. As a positive step forward, the DoE is currently working on a gender mainstreaming strategy for the energy sector, and recent months have seen the DoE increase its efforts to enhance women's participation in the energy sector.

- Government programmes do not account sufficiently for the root causes contributing to women's lack of participation and employment in the industrial sector, and their absence from highly skilled positions.⁷⁹

Leadership is another critical area in which the gender agenda in RE is stultified. Among IPP companies, women are mostly members of socio-economic development teams and environmental assessment experts. To date, there is only one female CEO of an IPP company (BioTherm Energy) and only three IPP companies interviewed had professional female employment levels of 40% and above. One respondent noted that low-level sexism against female professional staff was fuelled by the severe under-representation of female technical experts.⁸⁰ An informal survey conducted by Green Cape in 2017 of female representation in the staff of IPP companies and private solar PV companies yielded the results listed in Table 7.⁸¹

TABLE 7 AVERAGE BREAKDOWN OF WOMEN-TO-MEN RATIO IN IPP COMPANIES (ACROSS THE VALUE CHAIN AND INCLUDES ASSUMPTIONS/ROUGH CALCULATIONS), 2017

| RE COMPANY | WOMEN : MEN RATIO |
|----------------|-------------------|
| Company 1 | 60% |
| Company 2 | 30% |
| Company 3 | 40% |
| Company 4 | 20% |
| Company 5 | 38% |
| Company 6 | 20% |
| Company 7 | 50% |
| Company 8 | 45% |
| Company 9 | 25% |
| Company 10 | 17% |
| Company 11 | 30% |
| Company 12 | 22% |
| Company 13 | 28% |
| Average | 33% |

Source: Green Cape personnel data collection

79 Personal interview, independent researchers, Johannesburg, 1 June 2018.

80 Personal interview, commercial solar company representative A, Cape Town, 4 June 2018.

81 The companies interviewed by Green Cape were (in no particular order): Solareff; Greenability; ABB; Mulilo Energy; Energy Partners; JinkO Solar (South African operations only); Building Energy; SOLAFuture; Terra Firma; Afrisun; Enel; Emergent Energy; and Sustainable Power Solutions.

This data, although informal, provides a useful indication of female representation within the solar industry. In the absence of a strong female presence in decision-making positions or the championing of gender-based policies, implementing gender mainstreaming in RE projects will remain a challenge. In terms of project design, manufacturing, O&M and EPC requirements, PPAs should incorporate specific requirements that target women's engagement and participation across the energy value chain. However, gender-based considerations also raise questions as to how these requirements can be implemented throughout the project cycle, and how responsibility should be distributed among industry players to address engendering the energy value chain.

Lack of appropriate financing mechanisms

Role of risk allocation in excluding smaller players and women shareholders:

In terms of the REIPPP's project financing structure, PPAs are held for a 20-year period (tariff is agreed upon awarding of preferred bidder status and is indexed to the inflation rate for the duration of the contract with Eskom) in ZAR value. The agreement with Eskom is underwritten by the National Treasury should Eskom default on the agreement. However, if IPPs default on timely delivery, operation and project construction owing to weather instability, plant degradation or destruction, the liability lies with the developers and project financiers.

Owing to the high levels of risk vested with the private sector, interviews conducted with a range of commercial banks and private equity companies underscored the importance of project bankability above all other considerations. On average, South African commercial banks provide 70–80% of the required debt financing (and a total of 86% of the debt for the first three REIPPP rounds)⁸² and equity companies the remaining amount. Commercial banks assess project bankability based on the developer's expertise and experience, EPC contractors with sufficient analogous experience, the balance sheets of international investors or developers, the risk profile of other consortium members and the profiles of the proposed EPC companies.⁸³

Debt financing for infrastructure projects usually entails stringent criteria imposed by credit providers (and is a feature of large-scale infrastructure projects), and has acted as a barrier to women's inclusion

Debt financing for infrastructure projects usually entails stringent criteria imposed by credit providers (and is a feature of large-scale infrastructure projects), and has acted as a barrier to women's inclusion. The REIPPP's auction process requires

82 Ebhard A, Kolker J & J Leigland, *op. cit.*

83 Personal interview, commercial bank representative A, Johannesburg, 24 May 2018; personal interview, commercial bank representative B, Johannesburg, 31 May 2018.

upfront administrative and transaction costs that cover feasibility studies, land permits and environmental studies, which act as entry barriers for smaller, independent South African entities that cannot afford such costs.⁸⁴

Unfortunately, not all private financiers and equity interviewees had an interest in or an understanding of the way in which gender mainstreaming can be a useful tool for furthering women's inclusion in the energy sector, or recognised the need for women's inclusion in the energy value chain. Some private equity interviewees acknowledged that attention to gender-based issues had been a result of top-down pressure arising from the need to comply with the requirements of DFIs/MDBs (such as the International Finance Corporation), with little meaningful engagement beyond treating gender as a tick-box exercise.⁸⁵ A commercial bank representative conceded that the REIPPP programme had not been able to achieve its broad-based development mission because new players faced significant barriers to entering the industry.⁸⁶ Lastly, the DBSA and the IDC also faced criticism for not offering financing on terms that acknowledge and cater for the entry-level difficulties that WoVs and smaller businesses face. These issues raise questions regarding who should bear the risk for new, small entrants into the energy sector.

In order to address these issues, creative solutions to opening the market to new entrants need to be found. For example, women's participation in the market could be facilitated through the use of standardised documentation and the creation of one-stop shops for small businesses, or multi-institutional partnerships and blended finance that connect the Small Enterprise Development Agency to financial institutions and development agencies to create funding instruments that specifically target SMMEs, WoVs and new entrants to the energy sector.

Signs of positive change on the horizon?: In order to be effective, the implementation of gender mainstreaming has to start with financial requirements for large-scale infrastructure development. To ensure an inclusive approach to sustainable development initiatives, the Global Environmental Facility Fund (GEF) and the Green Climate Fund (GCF) require DFIs to incorporate gender requirements as preconditions for infrastructure loans. Both the AfDB and the DBSA receive funding from the GCF, which has clear gender-based financial targets for the DFIs it supports and their recipient borrowers. As a result, the AfDB is currently assessing whether to include a provision for WoV procurement, while acknowledging that without inserting gender-based requirements as contractual requirements, gender targets will remain an optional target and therefore unlikely to be implemented or fulfilled by recipients of AfDB loans.⁸⁷

DBSA compliance with GCF requirements has resulted in its revamped Environmental and Social Safeguard Standards (ESSS), released in May 2018. Under

84 Montmasson-Clair G & R Nair, *op. cit.*; Ehard A, Kolker J & J Leigland, *op. cit.*

85 Personal interview, private equity financier representative B, Johannesburg, 7 June 2018.

86 Personal interview, commercial bank representative A, Johannesburg, 24 May 2018.

87 Personal interview, AfDB representative, Centurion, 30 May 2018.

the new ESSS all prospective DBSA clients need a dedicated gender action plan in their projects and gender mainstreaming must feature throughout the project lifecycle and M&E stages of a project,⁸⁸ in terms of which ‘the project sponsor will in addition embed gender considerations in the project concept, and in all measures implemented to support ESSS 1-11 and the financing proposal’.⁸⁹ The AfDB hopes that its AFAWA programme, launched in 2016, will incorporate women-led SMMEs into the RE industry and address the financing shortfall for SMMEs by creating an enabling environment that includes access to technical assistance, capacity building and business training⁹⁰ – although fundraising of \$300 million for the programme is still underway.⁹¹

As a positive step forward, the Facility for Investment in Renewable Small Energy Transactions (FIRST) is an important avenue for future considerations of how small entrants can be incorporated into the energy sector. FIRST is supported by Rand

As a positive step forward, the Facility for Investment in Renewable Small Energy Transactions (FIRST) is an important avenue for future considerations of how small entrants can be incorporated into the energy sector

Merchant Bank and the German KfW Development Bank, and is currently funded at ZAR 1.3 billion (\$97.6 million), with potential to access additional funding of ZAR 2 billion (\$150.15 million).⁹² KfW has specifically provided ZAR 350 million (\$ 26 million)⁹³ that will be used to de-risk the loans to smaller players. Although FIRST was originally established to fund the Small Projects IPP Procurement Programme (SPIPPP) projects, its mandate is now seen as a broader response to the smaller segment of the RE sector and will include funding for commercial RE projects as well.

88 Personal interview, DBSA (Development Bank of Southern Africa) representatives, Midrand, 20 June 2018.

89 Dreyer L, ‘DBSA Environmental and Social Safeguard Standards 2018’. Midrand: DBSA, 2018. The ESSS 1-11 includes, inter alia, stakeholder engagement and Information disclosure, gender mainstreaming standards, labour standards and environmental issues.

90 AfDB, *AFAWA: Unleashing Women’s Entrepreneurship through Strategic Partnerships*, [https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/AFAWA - Unleashing women%E2%80%99s_entrepreneurship_en_.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/AFAWA_-_Unleashing_women%E2%80%99s_entrepreneurship_en_.pdf), accessed 18 October 2018.

91 Personal interview, AfDB representative, Centurion, 30 May 2018; see also *APA News*, ‘AfDB resolves to mobilise \$300m for women programme’, 7 March 2018, <http://apanews.net/index.php/en/news/afdb-resolves-to-mobilise-300m-for-women-programme>, accessed 27 June 2018

92 Personal interview, FIRST representative, Johannesburg, 4 September 2018.

93 Dollar value calculated at historical average of ZAR 13.32 to \$1.00.

It is important to note that although FIRST does not specifically target black-owned or women-owned businesses, it does provide financing to all qualifying small, new entrants whose bids fulfil the qualifying criteria for financing. It offers loans at commercial bank rates and fills a market gap by (i) providing loans between ZAR 50 million (\$3.75 million) and ZAR 300 million (\$22.5 million) to small-scale energy players for both utility-style projects and corporate/industrial projects; (ii) offering a technical assistance facility to assist SMMEs with funding development costs; and (iii) offering simplified financing and administrative processes that include pre-approved standard documentation as the basis for final agreements (for example, its basic loan document is only 41 pages long).⁹⁴ FIRST only started operations in February 2018, and currently has six potential small-scale projects to finance (one mini-hydro, one biogas and four solar projects). However, FIRST has not been without its challenges – for example, getting potential borrowers to trust its financial model and competing with commercial banks that provide financing to smaller participants in the RE sector.⁹⁵ Nevertheless, the creation of FIRST and its mandate to enable small players to access the RE sector is an important step forward for all new players, including women-owned businesses seeking financial assistance to enter the RE industries.

Enabling women's inclusion in the energy sector

This section examines three structural issues, identified from interviews, that prevent women's inclusion in the REIPPP programme and the energy sector in general: the absence of female professionals in the industry owing to educational reasons; the failure of WoVs to be utilised together with enterprise development to enable greater initiatives in the energy sector; and the DoE's delay in implementing the SPIPP.

Lack of education - engendering the sector through women experts and professionals: The RE sector is generally male-dominated at leadership and technical levels, particularly in EPC and O&M companies. Challenges that women face in qualifying as technical experts begin at secondary and tertiary education levels, where young boys and girls do not always have similar opportunities to pursue science, technology, engineering and maths (STEM) subjects. Experts have determined that STEM education is key in feeding the pipeline of women who can lead in STEM-related sectors. Many IPP companies interviewed recognised the

Many IPP companies interviewed recognised the need for improved educational opportunities for both sexes in the communities in which they operate. IPPs spend up to 40% of their socio-economic/enterprise development commitments on education and skills development

94 *Ibid.*

95 *Ibid.*

need for improved educational opportunities for both sexes in the communities in which they operate. IPPs spend up to 40% of their socio-economic/enterprise development commitments on education and skills development, which can include providing tertiary bursaries, paying teachers' salaries and buying better school equipment.⁹⁶ For example, the South African Wind Energy Association has implemented a mentorship programme and is working on building commitments towards enhancing support for women-led enterprises in the RE industry.

Another positive example is Globeleq, an IPP pushing for increased female participation in the RE value chain. Globeleq spends up to 40% of its socio-economic development allocation on skills development,⁹⁷ and administers a bursary and internship programme that has witnessed a significant rise in women's participation.⁹⁸ The percentage of awards to women rose from 20% in 2014 to 51% in 2017 and 55% in 2018. To date, 38% of total awards have gone to women. Given that 111 of the 198 awards (56%) were in the traditionally male-dominated engineering field, this is a positive step towards furthering the inclusion of professional women in the energy industry. Similarly, the South African Renewable Energy Technology Centre, established to develop local skills for the O&M of the REIPPP projects, is an excellent example of the kind of training facility needed to address the skills shortage in the energy sector.

The REIPPP's focus on local ownership should not neglect building capacity, creating local technical experts and enhancing operational skills, which, in the long term, would contribute towards creating an enabling environment for the participation of women and other previously disadvantaged persons.⁹⁹ While the creation of previously disadvantaged equity is important, it could be far more impactful for the government and the REIPPP programme to also invest in technical capacity building and skills development, which will serve the long-term aim of ensuring the sustainable development of the RE sector in South Africa.

Capacitating women-owned vendors - a way to improve women's inclusion

in the REIPPP: Procurement from WoVs is an optional scoring in the REIPPP process and an IPP's decision to procure from WoVs is based on the strategy set by its board. For example, one interviewed IPP company requires contractors for its RE plants to be 100% female black owned, in order to support female businesses.¹⁰⁰ Industry representative Women in Oil and Energy South Africa (WOESA) uses its business network to enhance women's presence in the oil and energy sector through

96 IPP Office, 2018, *op. cit.*

97 Personal interview, Globeleq representative, Cape Town, 8 June 2018.

98 Globeleq South Africa Management Services (GSAMS) administers the funds from the SED component of the IPP plants on behalf of five funding entities: Jeffreys Bay Wind Farm, De Aar Solar Power, Droogfontein Solar Power, Globeleq Education Trust (a shareholder in GSAMS) and GSAMS itself.

99 Personal interview, IPP company representative I, Cape Town, 6 June 2018; personal interview, IPP company representative H, Cape Town, 8 June 2018.

100 Personal interview, IPP company representative I, Cape Town, 6 June 2018.

TABLE 8 GLOBEIQ FUNDING, GENDER-BASED DISTRIBUTION

| FINDING ACTIVITY | GENDER | 2014 | 2015 | 2016 | 2017 | 2018 |
|------------------------------|--------|------|------|------|------|------|
| Engineering bursaries | M | 20 | 19 | 16 | 12 | 5 |
| | W | 5 | 5 | 6 | 15 | 8 |
| Education bursaries | M | N/A | N/A | N/A | 7 | 6 |
| | W | N/A | N/A | N/A | 10 | 8 |
| Other bursaries | M | N/A | N/A | N/A | 1 | 1 |
| | W | N/A | N/A | N/A | 2 | 1 |
| Internships | M | N/A | 8 | 10 | 11 | 7 |
| | W | N/A | 3 | 1 | 5 | 6 |
| Total | M | 20 | 27 | 26 | 31 | 19 |
| | W | 5 | 8 | 7 | 32 | 23 |
| | M + W | 25 | 35 | 33 | 63 | 42 |

Source: Globeiq internal data

its shareholding in relevant firms, which enables it to place appropriately skilled women in management and technical expert positions.¹⁰¹

IPP companies have not been successful in increasing their socio-economic development points through preferential procurement from WoVs: only 3% procurement has been achieved in construction and 5% in operations.¹⁰² The

The absence of professional opportunities for women in the RE sector is most notably expressed by many IPPs' ticking the WoV box through the procurement of cleaning and cooking services, which is insufficient to ensure women's inclusion in the energy value chain

absence of professional opportunities for women in the RE sector is most notably expressed by many IPPs' ticking the WoV box through the procurement of cleaning and cooking services, which is insufficient to ensure women's inclusion in the energy value chain. Those IPP companies seeking to change 'business as usual' practices have faced an uphill battle in trying to get their EPC contractors to actively seek women-based preferential procurement and to create mechanisms that enable

¹⁰¹ Personal interview, WOESA representative, Johannesburg, 29 May 2018.

¹⁰² IPP Office, 2017, *op. cit.*

their BBBEE shareholders to move into the development space.¹⁰³ Requirements on preferential procurement from women do not always take into account the realities on the ground, such as the insufficient number of companies that meet the technical requirements or have the correct risk profile. Even IPPs that actively seek preferential procurement from WoVs often face significant challenges in finding companies with the correct qualifications and profiles: according to 2012 data, South Africa had only 28.5% female enrolment in STEM degrees.¹⁰⁴

IPP companies also said that if they were able to on-sell directly to municipalities instead of Eskom, it would de-monopolise Eskom's hold on the industry and act as a stimulus for smaller players.¹⁰⁵ The question of ministerial determination in allowing municipalities to purchase directly from IPPs is currently the subject of a court dispute.¹⁰⁶ Solar energy of 5MW or less is easier to produce and can be undertaken by female-owned SMMEs or women in stokvels, to be sold on to municipalities as a form of income generation. While the City of Cape Town is reportedly considering 'wheeling' (ie, producing energy on a building and selling the surplus energy back to the municipality) such plans, if implemented, are only likely to come into effect at the end of 2018.¹⁰⁷

The South African government is aware of the challenges facing women's inclusion in the energy sector. In partnership with the dti, the Council for Scientific and Industrial Research has established the National Cleaner Production Centre (NCPC), which supports greater female engagement in the clean energy sector through life-long training, feasibility assessments and financial paperwork applications to start mini-solar plants.¹⁰⁸ However, by their own admission, existing funding mechanisms do not meet the needs of small-scale solar plant owners, and there are ongoing challenges in attracting women to the RE industry.¹⁰⁹ Similarly, UN Women has begun engaging industry representatives and IPPs on how women's engagement within the RE sector can be advanced. Thus far, consultations have been held with IPP companies in conjunction with Seed for Women (an NGO/stokvel from the Northern Cape) and the AfDB, but discussions are still in their infancy.

Small bidders' window - an opportunity to facilitate women's inclusion: A blow to developing SMMEs and women's engagement in the RE industry has been the stagnation in initiating the SPIPP. The SPIPP was designed to act as an entry point for SMMEs and BBBEE companies to enter the RE industry engaging in projects of

103 Personal interview, IPP company representative D, 13 June 2018.

104 South Africa, Department of Women, *The Status of Women in the South African Economy*. Pretoria: Department of Women, 2015.

105 Personal interview, IPP company representative B, Cape Town, 7 June 2018; personal interview, private equity financier representative A, Cape Town, 7 June 2018.

106 Green Cape, *op. cit.*

107 Personal interview, Green Cape representative, Cape Town, 5 June 2018.

108 Personal interview, NCPC/CSIR representative, Pretoria, 29 May 2018.

109 *Ibid.*

a maximum of 5MW. The first round of selected small IPP bidders was announced in October 2015 and is approaching financial close, while the second round of bids was submitted in June 2016 with successful projects announced in January 2017.¹¹⁰ However, interviewees suggested that the project had not really taken off: the SPIPP projects were not included in the group of projects approved by the government in April 2018, although they have the same procurement status.¹¹¹ Pending the finalisation of the current draft IRP greater clarity will be gained on whether the SPIPPP will be implemented, and when. Hopefully, once initiated it will provide an important avenue for both small businesses and women-owned businesses wanting to enter the RE sector and build expertise through the energy value chain.

CONCLUSION

Despite the compelling case for women's inclusion in the RE sector, the gains that women can make within the RE sector remain under-researched. The absence of meaningful research on gender mainstreaming in RE has spill-over effects of two kinds: (i) an inability to understand how RE can contribute on a practical, measurable basis towards improved livelihoods, job creation and socio-economic development for both rural and urban women; and (ii) a limited understanding of the need for, and inclusion of, gender mainstreaming in large-scale RE projects.¹¹² DFI and donor efforts have soft targets such as clean energy in the context of cooking stoves and women employee inclusion in utility companies. While a positive step forward, these efforts have not sufficiently addressed the need to include women in the energy value chain, particularly in the context of large-scale infrastructure projects.¹¹³ In order to address the aforementioned challenges facing the industry, it is important to identify short-, medium- and long-term solutions, which are also considered in greater detail in the toolkit.

Short-term interventions should focus on existing policies and programmes and how they could be improved:

- It is essential that the SPIPP is implemented as soon as possible in order to ensure that new entrants and women-owned businesses have viable avenues enabling their participation in the RE sector. Such participation will lead to the necessary experience and expertise in order to take part in larger and commercial projects in the future.
- There should be greater collaboration between private and public financiers in order to find creative solutions for financing new, small and women-owned businesses in the energy sector. This could be done through standardised

110 Green Cape, *op. cit.*

111 *BusinessTech*, 'Government signs 27 independent renewable energy agreements', 4 April 2018, <https://businesstech.co.za/news/energy/235709/government-signs-27-independent-renewable-energy-agreements/>, accessed 29 June 2018.

112 Nelson S & A Kuriakose, *op. cit.*

113 Personal interview, AfDB representative, Centurion, 30 May 2018.

documentation and the creation of one-stop shops for use by small businesses, or multi-institutional partnerships and blended finance that bring together the Small Enterprise Development Agency with financial institutions and development agencies to create funding instruments that specifically target SMMEs, WoVs and new entrants to the energy sector.

- The existing draft IRP document should contain gender-based considerations in order to build the political mandate required to bring gender mainstreaming issues to the forefront, and included as part of target-driven objectives that industry players are able to satisfy in order to engender the energy sector. The IRP should also identify the necessary skills required to further promote gender mainstreaming in the energy sector – for example, requiring a development practitioner/gender expert to form part of project teams to make inputs into project design and construction, and to help the government prepare gender equality strategies.

Medium-term objectives should improve the positive gains already achieved, while also identifying gaps in existing programmes:

- Education is both a medium- and a long-term goal. A broad educational trust fund should be established that allows for the pooling of financing and tools to fund bursaries for men and women in STEM degrees.
- The socio-economic and enterprise development components should be complementary and support women's inclusion in the energy industry. Enterprise development requirements could be reworked to include the use of technical services and expertise from WoVs from urban areas, as rural areas within which IPP RE plants are located cannot always meet the technical specifications and needs of RE plants. However, the use of urban WoVs must be balanced against continued, broad-based enterprise development within rural areas where IPP projects are located, in order to ensure these communities are not neglected.

Long-term goals require a mix of continued long-term policy engagement targeting education and job creation.

- Educational trusts and facilities should continue to be provided to facilitate take-up STEM-based education at a primary and high-school level, combined with continued opportunities in the energy sector through internships and new jobs for graduates.
- Industry bodies should be created and/or existing industry bodies improved to enhance collaboration between industry representatives and private companies in drawing up and implementing engendering policies across the RE sector. This includes identifying ways in which women's inclusion in the energy sector can be furthered – for example, through providing technical training/capacity building, linking women-led SMMEs with bigger companies, etc.
- Together with the private sector, the government should work towards creating long-term industry guidelines that establish minimum threshold requirements for women leadership and technical experts at parastatal utilities and private companies.

GENDER MAINSTREAMING TOOLKIT

The toolkit is divided into first-, second- and third-tier challenges to gender mainstreaming efforts in order to delineate how gender mainstreaming should be structured. The third tier ties the toolkit together and suggests the continuation of existing programmes such as engendering utilities and ways to improve existing measures to include women's representation in private energy companies. This toolkit is designed for the broader African context and also targets solutions for the Rwandan and South African contexts. Where applicable, this toolkit can be amended to account for the inclusion of youth, SMMEs and disabled persons.

| FIRST TIER CHALLENGES | | |
|--------------------------|--|---|
| LEVEL OF CHALLENGE | QUESTIONS THAT CAN BE ASKED | SUGGESTED RECOMMENDATION |
| Political mandate | Are policies sufficiently aligned with government targets for inclusivity? | Government, as the enforcer of regulations and rules creator, bears the prerogative of establishing an appropriate policy framework that accounts for woman empowerment and their role in sustainable development in the energy sector |
| | Is there regular and annual review of existing gender mainstreaming efforts and policies by government? | Gender Equality Strategies must reflect the appropriate political commitments that are implementable within the private sector. Policy guidelines from government must either be instructive or recommend levels with M&E targets to review companies' commitments to meeting these recommended levels on a regular basis (i.e. every two years) |
| | Has government appointed development practitioners/ gender experts to assist in crafting policies that contain an engendered approach to large-scale infrastructure? | Political certainty is essential: there must be broad-based buy-in from the political spectrum on developmental goals, regardless of the political party in power in order to ensure the viability and long-term tenure of infrastructure. In the absence of political certainty industry participants/potential newcomers will be hesitant to invest and engage in industries that do not demonstrate long-term growth potential |
| | Do equal opportunity strategies also cover the needs of youth, SMMEs and disabled persons? | |

| FIRST TIER CHALLENGES | | |
|-----------------------|---|--|
| LEVEL OF CHALLENGE | QUESTIONS THAT CAN BE ASKED | SUGGESTED RECOMMENDATION |
| Financial | How has government engaged with commercial banks to enable the creation of financing mechanisms? | Government needs to collaborate with DFIs and financiers to create and implement appropriate funding mechanisms to enable SMMEs and woman-owned businesses for example, this could be the same financing mechanism offered across all commercial banks or the involvement of entities that specialise in providing loans to SMMEs |
| | Do large scale infrastructure projects include adequate provisions for financing mechanisms to enable woman, disabled and youth participants? | In order to create such financing tools/ mechanisms, risks need to be appropriately allocated amongst these players (particularly the DFIs) while commercial banks should implement a streamlined, comprehensive financing tool that is accessible across all banks to potential SMMEs, WoVs and other marginalised borrowers. Initiatives like FIRST represent an important step forward that should be further developed |
| | Have suggested financial tools/ mechanisms brought on a gender expert to implement GRB objectives and ensure GRB targets are achievable? | Funding mechanisms to be built in collaboration with gender experts, DFIs and appropriate funders (including, but not limited to, commercial banks) to address women's and SMMEs' specific financial challenges to industry participation |
| | Have DFIs accounted for GRB and gender-based investment requirements in their loan agreements? | Appropriately designed financing mechanisms would contribute to skills development by promoting participation in smaller sized infrastructure projects and enabling participation in large-scale projects would also facilitate diversification of sector players |

| FIRST TIER CHALLENGES | | |
|-----------------------------------|---|--|
| LEVEL OF CHALLENGE | QUESTIONS THAT CAN BE ASKED | SUGGESTED RECOMMENDATION |
| Project design and M&E | Have community consultations informed the project design and accounted for differentiated needs? | Project development and design must include funding mechanisms appropriate for broad-based development (see financing point above) |
| | Is there an appointed gender expert to assist with identifying differential needs of recipients that are incorporated into energy project design? | Large-scale infrastructure projects can comprise smaller off-shoot projects but they require careful assessment of industry capacities (including existing companies with requisite experience and technical capacities) as well as criteria that account for and address challenges pertinent to SMMEs and WoVs |
| | Does each stage of the project identify ways in which SMMEs and WoVs can be incorporated into the energy value chain based on their different services and strengths? | An absence of adequate M&E affects both South Africa's and Rwanda's energy sector. Adequately trained professionals in government and amongst industry representatives must conduct site visits of projects regularly (for example bi-annually) in order to ensure gender targets are being met. This means that GRB must account for such site visits and regular follow ups |
| | Has M&E been incorporated into the project design and project construction, through to operation to allow for continued monitoring of impacts thereafter? | RE companies should have in-house M&E experts or use the services of gender experts within M&E companies in order to fulfil necessary monitoring of projects, from design phase through to construction, operation and impact thereafter. Follow ups should be done for stipulated periods of time (i.e. every one or two years), for which there should be appropriate GRB allocation |

| SECOND TIER CHALLENGES | | |
|---|---|--|
| LEVEL OF CHALLENGE | QUESTIONS THAT CAN BE ASKED | SUGGESTED RECOMMENDATION |
| Education | Government should identify ways in which development objectives can be tied into furthering STEM education opportunities for the youth, specifically young girls | For Rwanda, this could take the context of donor and private sector companies contributing towards an established educational fund that enables the youth to pursue STEM degrees and careers. A proportion of development financing should be allocated to the creation of a broad-based internship programme in order to enable broad-based inclusion of women in the energy sector |
| | Government staff and industry representatives should receive gender mainstreaming training in order to understand how large-scale infrastructure projects can be improved | For South Africa, an IPP-broad education trust fund should be established that will allow for pooling of financing and tools to fund bursaries for men and women in STEM degrees. In order to ensure that funds are used appropriately, the trust fund should be an independent board comprised of education and development practitioners that monitor implementation and report to both government and IPP companies on expenditure on a quarterly basis |
| | Has government implemented sensitisation workshops for private sector/ industry, amongst government staff and within schools to encourage discussion and highlight the need for women inclusion in the energy sector? | Government should implement sensitisation programmes within the energy sector and amongst schools and communities. This could be spearheaded by the Department of Energy in collaboration with vocational colleges, universities and schools in order to break down the cultural/social norms that often act as unseen barriers to women inclusion in technical STEM careers |
| Enterprise development and job creation | Does job creation and ED address the needs of the infrastructure sector in question? | ED should target WoVs that work within the energy sector itself – this therefore requires expanding the ED scope to include WoVs from urban areas, as rural areas within which IPP RE plants are located cannot always meet the technical specifications and needs of RE plants. The Department of Energy's change from 50km radius to provincial level reflects an important step in this regard |
| | How can synergies between development goals, increased diverse participation for smaller players and ED speak to each other? | The SED and Ed components should be complementary and support women's inclusion in the energy value chain. This is achievable through each stage of the project catering for women inclusion at appropriate levels within the energy value chain itself – as opposed to women being passive recipients of energy projects |

| THIRD TIER CHALLENGES | | |
|---|--|--|
| LEVEL OF CHALLENGE | QUESTIONS THAT CAN BE ASKED | SUGGESTED RECOMMENDATION |
| Broad-based women engagement in the energy value chain | How can existing and future programmes be designed for greater women inclusion? | Creation of industry bodies (where they do not exist) so that they can work with the private sector to create engendering policies to be implemented across the RE sector. Where industry bodies do exist, their capacities and engagement on gender mainstreaming issues should be bolstered, and they should engage directly and regularly with their private sector members to identify ways in which women's inclusion in the energy sector can be furthered – for example, through technical training/capacity building, linking women-led SMMEs with bigger companies, etc |
| | How can energy utilities and growing private sector solar companies engender their operations? | Industry guidelines should cater for minimum threshold requirements for women leadership and technical experts at parastatal utilities and private companies |



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