COBENEFITS of the new energy world of renewables for the people in South Africa

South Africa is in the midst of an energy transition, with important social and economic implications, depending on the pathways that are chosen. Economic prosperity, business and employment opportunities as well as health impacts, issues related to the water–energy–food nexus and global warming impacts: through its energy pathway, South Africa will define the basis for its future development. Political decisions on South Africa's energy future link the missions and mandates of many government departments beyond energy, such as environment, industry development, science and technological innovation.

Importantly, the whole debate boils down to a single question: **How can renewables improve the lives of the people in South Africa?** Substantiated by scientific rigor and key technical data, the study at hand contributes to answering this question. It also provides guidance to government departments and agencies on further shaping an enabling environment to maximize the social and economic co-benefits of the new energy world of renewables for the people of South Africa.

Under their shared responsibility, the CSIR Energy Centre (as the COBENEFITS South Africa Focal Point) and IASS Potsdam invited the Department of Environmental Affairs (DEA) and Department of Energy (DoE), together with the Independent Power Producers (IPP) Office, the Department of Trade and Industry (DTI), Department of Science and Technology (DST) and the South African National Energy Development Institute (SANEDI) to constitute to the COBENEFITS Council South Africa in May 2017 and to guide the COBENEFITS Assessment studies along with the COBENEFITS Training programme and political roundtables.

We particularly highlight and acknowledge the strong dedication and strategic guidance of the COBENEFITS Council members: Olga Chauke (DEA); Nomawethu Qase (DoE); Gerhard Fourie (DTI); and Lolette Kritzinger-van Niekerk, Frisky Domingues, Thulisile Dlamini and Lazarus Mahlangu (IPP Office). Their contributions during the COBENEFITS Council sessions guided the project team to frame the topics of the COBENEFITS Assessment for South Africa and to ensure their direct connection to the current political deliberations and policy frameworks of their respective departments. We are also indebted to our highly valued research and knowledge partners, for their unwavering commitment and dedicated work on the technical implementation of this study. The COBENEFITS study at hand has been facilitated through financial support from the International Climate Initiative of Germany.

South Africa, among 185 parties to date, has ratified the Paris Agreement, to combat climate change and provide current and future generations with opportunities to flourish. Under the guidance of the National Planning Commission, municipalities, entrepreneurs, citizens and policymakers are debating pathways to achieve a just transition to a low-carbon, climate-resilient economy and society in South Africa. With this study, we seek to contribute to these important deliberations by offering a scientific basis for harnessing the social and economic co-benefits of building a low-carbon, renewable energy system while facilitating a just transition, thereby **making the Paris Agreement a success for the planet and the people of South Africa**.

We wish the reader inspiration for the important debate on a just and sustainable energy future for South Africa!

Ntombifuthi Ntuli
COBENEFITS Focal Point
South Africa
CSIR Energy Centre

Sebastian Helgenberger
COBENEFITS
Project Director
IASS Potsdam

Executive Summary

Economic prosperity for marginalised communities through renewable energy in South Africa

Assessing the co-benefits of decarbonising the power sector

South Africa's renewable energy (RE) procurement policy is unique globally in its emphasis on providing benefits for communities in the vicinity of projects participating in the RE Independent Power Producer Procurement Programme (REIPPPP). RE projects are primarily located in rural communities, frequently categorised as "marginalised communities".[1] The REIPPPP has created a legal framework to incentivise IPPs to channel benefits to communities near RE project sites through a range of means, including local employment quotas, community ownership in RE projects, as well as contributing a proportion of their revenue towards development spending, known as socio-economic development (SED) and enterprise development (ED) spend.

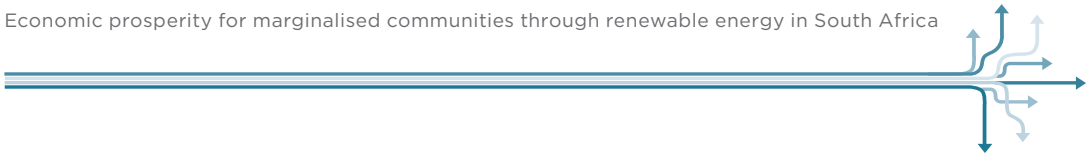
This study assesses the SED and ED impacts of renewable energy deployment in marginalised communities in South Africa; this was carried out in the context of the COBENEFITS project with the aim of assessing the range of additional benefits[2] resulting from a low-carbon energy transition in the country. It entails the assessment of selected socio-economic impacts, realised to date, in three REIPPPP project areas, along with projections and modelling the assessed impacts (up to 2030 for the medium term, and 2050 for the long term) across a range of power sector decarbonisation scenarios.

Four scenarios for the future development of the electricity sector in South Africa were analysed: Council for Scientific and Industrial Research Least Cost planning scenario (CSIR_LC); Department of Environmental Affairs Rapid Decarbonisation scenario (DEA_RD); Integrated Resource Plan 2016 (IRP 2016); and Integrated Resource Plan Policy Adjusted scenario 2018 (IRP 2018). The COBENEFITS study also sought to provide insights on further improving the various benefits that should accrue to

The four scenarios considered two timelines consistent with the DOEs reporting of the draft IRP 2018: The short-term timeline up to the year 2030 which is based on the expected electricity generation mix to meet the rising demand in the country and which is aligned with the National Development Plan 2030. The long-term timeline considers the timeframe up to 2050, based on the electricity generation mix predicted to meet the projected growth in energy demand in the country within this timeframe. It also considers the predicted decommissioning timeline of coal power plants in the country by 2050. "Test case variables input parameters" stated in the draft IRP 2018 (for public comments) such as the RE annual limits were applied for the reference IRP 2018 scenario stated in this study.

[1] In this report, the term 'marginalised communities' refers strictly to a "previously disadvantaged community" as applicable. These communities represent typical areas with underdeveloped and disenfranchised populations targeted by the South African Government for accelerated development.

[2] The term 'co-benefits' refers to simultaneously meeting several interests or objectives resulting from a political intervention, private-sector investment or a mix thereof (Helgenberger et al., 2019). It is thus essential that the co-benefits of climate change mitigation are mobilised strategically to accelerate the low-carbon energy transition (Helgenberger et al., 2017).



- **Key policy message 1:** By the year 2050, IRP 2018 will have created almost 5,000 jobs through socio-economic and enterprise development (SED and ED) and enabled 19,000 individuals to benefit from access to education-related programmes. These socio-economic benefits for marginalised communities could even be increased by an additional 100 % and 50 % respectively, by scaling up the adoption of renewable energy (RE) in line with the more ambitious low-carbon energy pathways.
- **Key policy message 2:** Without stronger guidance, large-scale REIPPPP[3] projects may not deliver the anticipated level of significant benefits for marginalised communities: The IPP Office should be better positioned to lead engagement with the local and district municipalities that host independent power producers (IPP), to ensure a detailed understanding of the REIPPPP mechanisms and the intended role of power producers within the communities.
- **Key policy message 3:** Prior engagement of IPPs with the various community stakeholders, in pre- and post-project commissioning, forms the basis for renewable energy projects to deliver on their socio-economic promises. Codifying these requirements by means of a REIPPPP Practice Guide would strengthen the delivery of more direct and measurable socio-economic and enterprise-related benefits to the host and marginalised communities.

KEY FIGURES:

- Up to 30 000 individuals in marginalised communities can benefit from access to education-related programmes through REIPPPP by the year 2050.
- More than 3 000 local enterprises in marginalised communities can be supported through REIPPPP until the year 2050.
- Up to 10 000 local jobs can be created in marginalised communities through REIPPPP SED and ED spend until the year 2050.
- Local communities own an average of 11% of active IPP projects.

COBENEFITS South Africa (2019): Economic prosperity for marginalised communities through renewable energy in South Africa. Assessing the co-benefits of decarbonising the power sector

available on www.cobenefits.info

[3] REIPPPP: Renewable Energy Independent Power Producer Procurement Programme of South Africa

KEY FINDINGS:

The employment benefits of RE deployment are distributed nationwide – which is not the case for fossil-fuel power plants. Jobs associated with the solar PV value chain mostly occur in inland areas of the country, while marginalised communities in coastal regions of the country benefit more from jobs created in the wind value chain.

Ambitious renewable energy pathways generate the largest impacts for beneficiaries in marginalised communities.

- In terms of literacy access in marginalised communities: By the year 2050, IRP 2018 will enable 19 000 individuals to benefit from access to education-related programmes. This benefit could be further increased by 34 % by following the CSIR Least Cost pathway, and by more than 50% through the DEA's rapid decarbonisation pathway.
- In terms of enterprise support: IRP 2018 will support more than 2200 local enterprises in the year 2050. This benefit could be further increased by 17% by following DEA's rapid decarbonisation pathway and by more than one-third by following the CSIR Least Cost pathway.
- In terms of local job benefits through SED and ED spend: By the year 2050, IRP 2018 will enable almost 5000 additional jobs in local enterprises. This benefit could be further increased by more than 60% by following CSIR Least Cost pathway; and even doubled – to a total of almost 10 000 jobs in local enterprises – by following the DEA's rapid decarbonisation pathway.
- Within the context of the sites assessed, the types of jobs created locally through SED and ED spend include non-core services offered to projects, such as cleaning and catering services. In communities with other significant opportunities for economic activity, job creation may not necessarily support renewable power generation. For example, supported enterprises may create retail jobs or service jobs for other industries, including the mining industry.

With its socio-economic co-benefits the REIPPP programme makes important contributions to meeting the objectives of the UN 2030 Sustainable Development agenda. While the REIPPP programme is most directly associated with SDG 7 (Sustainable Energy for All), through its socio-economic co-benefits it also makes important contributions to meeting other objectives, such as SDG 1 (No Poverty), SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth) and SDG 10 (Reduced Inequality).