

Co-benefits of Renewable Energy Deployment in South Africa

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INTRODUCTION

The “Co-Benefits Project” is an initiative by a consortium of German Partners, i.e. Institute for Advanced Sustainability Studies (IASS, Lead) Renewables Academy AG (RENAC); Independent Institute for Environmental Issues (UfU); and International Energy Transition (IET); funded by the German Federal Ministry of Environmental Affairs. The project is currently being implemented in four countries: India, Vietnam, Turkey and South Africa. The Council for Scientific and Industrial Research (CSIR) has been appointed to act as principal national focal point and national network hub for South Africa in implementing this research and policy advice project.

BACKGROUND AND AIM OF THE PROJECT

The aim of the project is to identify, prioritise and analyse country specific co-benefits of climate mitigation policies, with emphasis on the opportunities presented by renewable power generation, This will assist the current debate within South Africa by moving away from the pure cost of generators to a socio economic and benefit narrative of generators (such as value creation, employment, health, water use, and energy access and energy security). This will assist in building strong alliances and lowering political barriers to effectively implement Nationally Determined Contributions (NDC) to the 2015 Paris Agreement on Climate Change. The project will also enable international mutual learning and capacity building among policy makers, knowledge partners and multipliers on enabling environments to seizing the co-benefits of climate change mitigation. Climate protection measures are largely discussed in the light of burden sharing whereas important benefits in areas such as value creation, employment, health, water use, energy access and energy security are frequently overlooked. South Africa is facing several socio economic challenges, such as unemployment, lack of skills and education, slow economic growth, development backlog in remote communities, etc. Ambitious and effective deployment of renewable energy depend on seizing the social and economic co-benefits, thereby simultaneously meeting projected increases in energy demand as well as development targets.

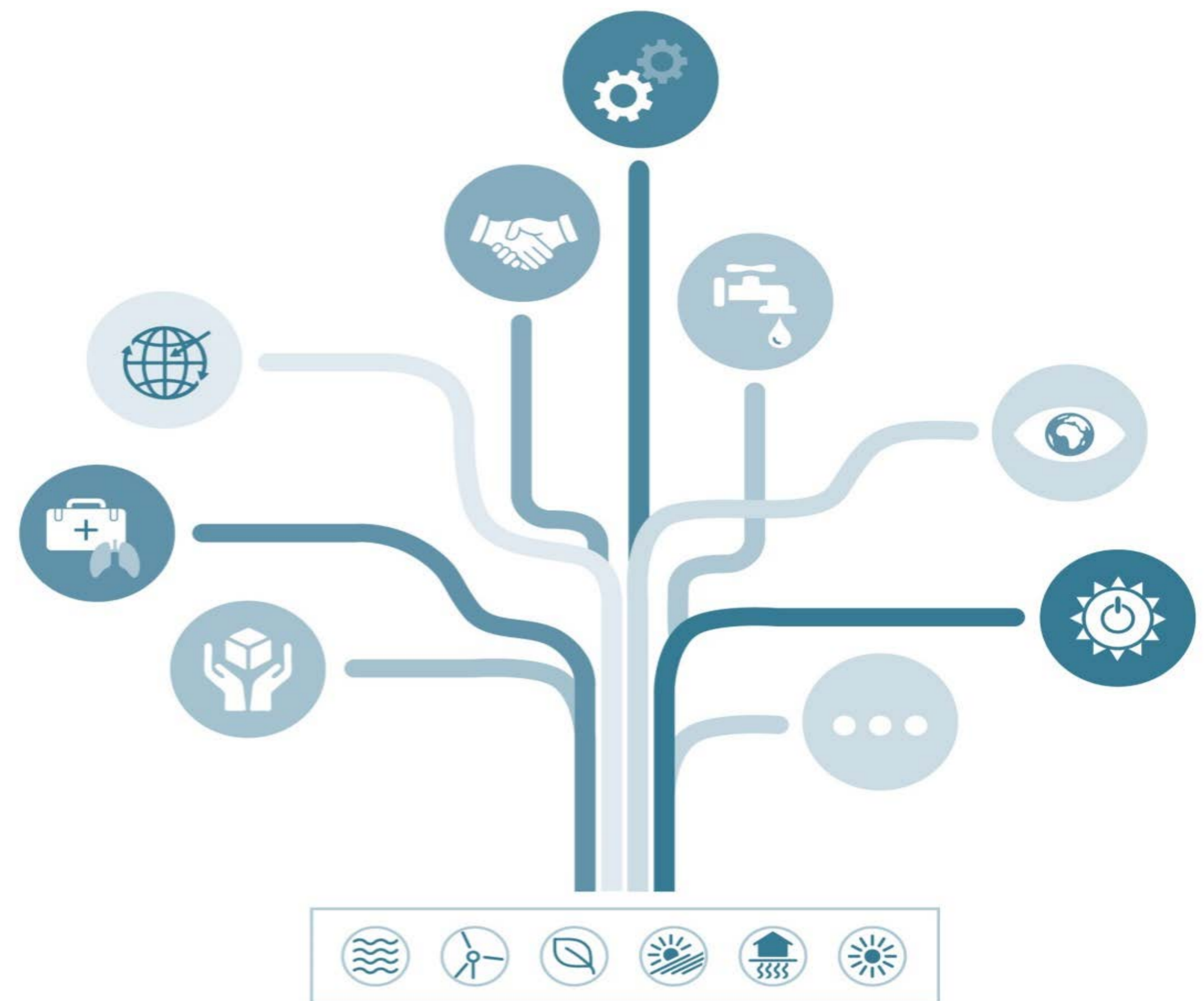


Figure 1: Cobenefits of renewable energy deployment

METHODOLOGY

The focus group method was used for selecting and prioritising co-benefits relevant for South Africa. Relevant government departments were invited into a focus group workshop and the following key questions are asked:

- How is your work related to renewable electricity generation in South Africa;
- How can renewable energy have a positive impact on people’s lives in South Africa.

These steps resulted in a long list of co-benefits which were mentioned by government department representatives during the focus group meeting. In the end only 5 co-benefits were selected. This step will be followed by the in-depth analysis of each selected co-benefit relevant for South Africa. The analysis will follow an IRP (Integrated Resource Plan) scenario based approach that investigates the different co-benefits of renewables according to different scenarios of the IRP. The IRP scenarios that all five projects must simulate in their studies include:

- IRP Base case 2010: Policy adjusted scenario
- IRP Base case 2016
- CSIR 2016 IRP Comments: Least cost scenario
- Department of Environmental affairs Rapid Decarbonisation scenario

The aim of aligning all projects according to the IRP scenarios is to understand how the benefits will differ at different levels of renewable energy deployment.



Figure 2: End objectives of Co-benefits project

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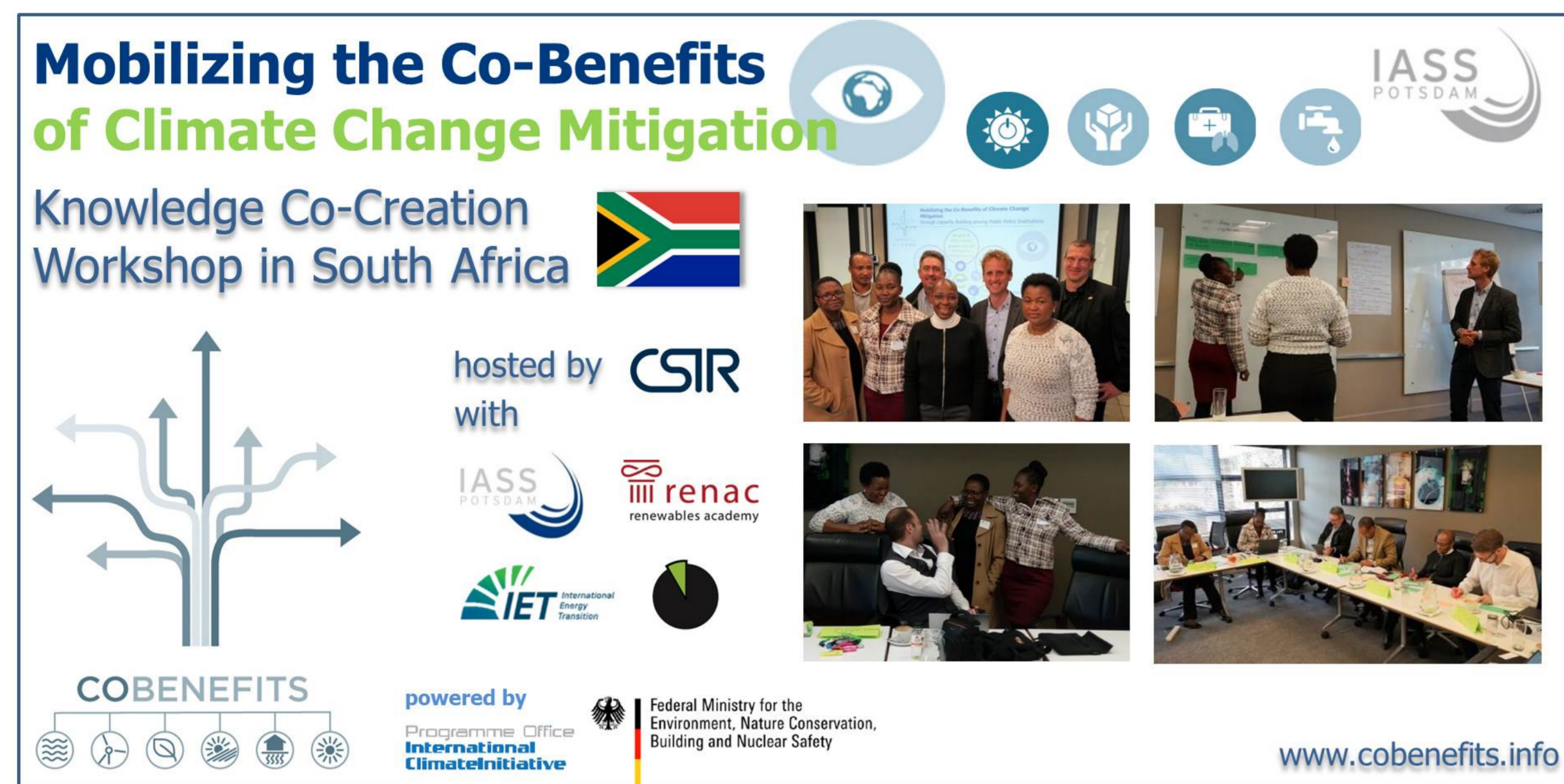


Figure 3: Cobenefits Council Meeting in May 2017, identification and Prioritising Cobenefits relevant for South Africa

PROJECT OVERVIEWS

As mentioned previously, five projects were chosen to identify different co-benefits of renewable energy deployment in South Africa. These included:

- Employment in the power sector and skills needed:

The purpose of this study is to develop a quantitative method to assess the number of employment opportunities, and types of employment opportunities, created by renewable energy deployment in South Africa. The focus of the analysis is on job creation at national level, and must also account for potential job losses that may occur in other sectors of the economy, as a side-effect of the transition of the national energy system to renewable energy supply.

- Economic prosperity in marginalized communities:

The purpose of this study is to understand how renewable energy deployment can affect small and marginalized communities. The study will look at aspects such as direct and indirect jobs created, household income increase, SMME growth, gross value added by project and a in country migration assessment that affect local communities.

- Health benefits

The purpose of this study is to quantify the health benefits resulting from a transition to a green energy mix through larger deployments of renewable energy according to the different IRP scenarios. The study will consider aspects such as decreases in health care costs as well as decreases in indicator pollutants such as particulate matter and sulphur dioxide.

- Self consumption

The purpose of this study is to quantify the savings that commercial and residential consumers may have as a result of self consumption of renewables. The calculation of savings will again be dependant on the deployment of self consumption renewables within the IRP scenarios. Once the scale of deployment is established the load profiles of different consumer types can then be assessed to determine the savings value of self consumption.

- Water scoping study

This scoping study aims to identify the effects that renewable energy deployment may have on water resources in South Africa. South Africa is a water scarce country and with recent droughts in Cape Town and the North West it becomes more important to use water sparingly.

RESULTS

Many social and economic opportunities in SA's energy transition remain unexplored. This project explores how South Africa's transition to renewable energy will unravel long-term trade-offs between economic, social and environmental interests and how South Africa's increasingly leading role in international climate change diplomacy translates back to immediate opportunities for domestic development and welfare. Renewable Energy is already used in socio-economic and rural development strategies in SA, as SED requirements are already incorporated into the REIPPPP. However important social implications of SA's energy transition require additional attention such as environment and health benefits, consumer willingness to pay for green energy as well as the effects of just distribution of socio-economic benefits.

Aligning the project methodology with that of national electricity planning allows a comparison to be drawn between different scenarios supported by the department of energy. This in turn will add to the priorities of government: reducing unemployment, poverty and inequality. The findings of all 5 reports will be combined to have one comprehensive overview of what benefits a transition to renewable energy may have on the South African economy and society.

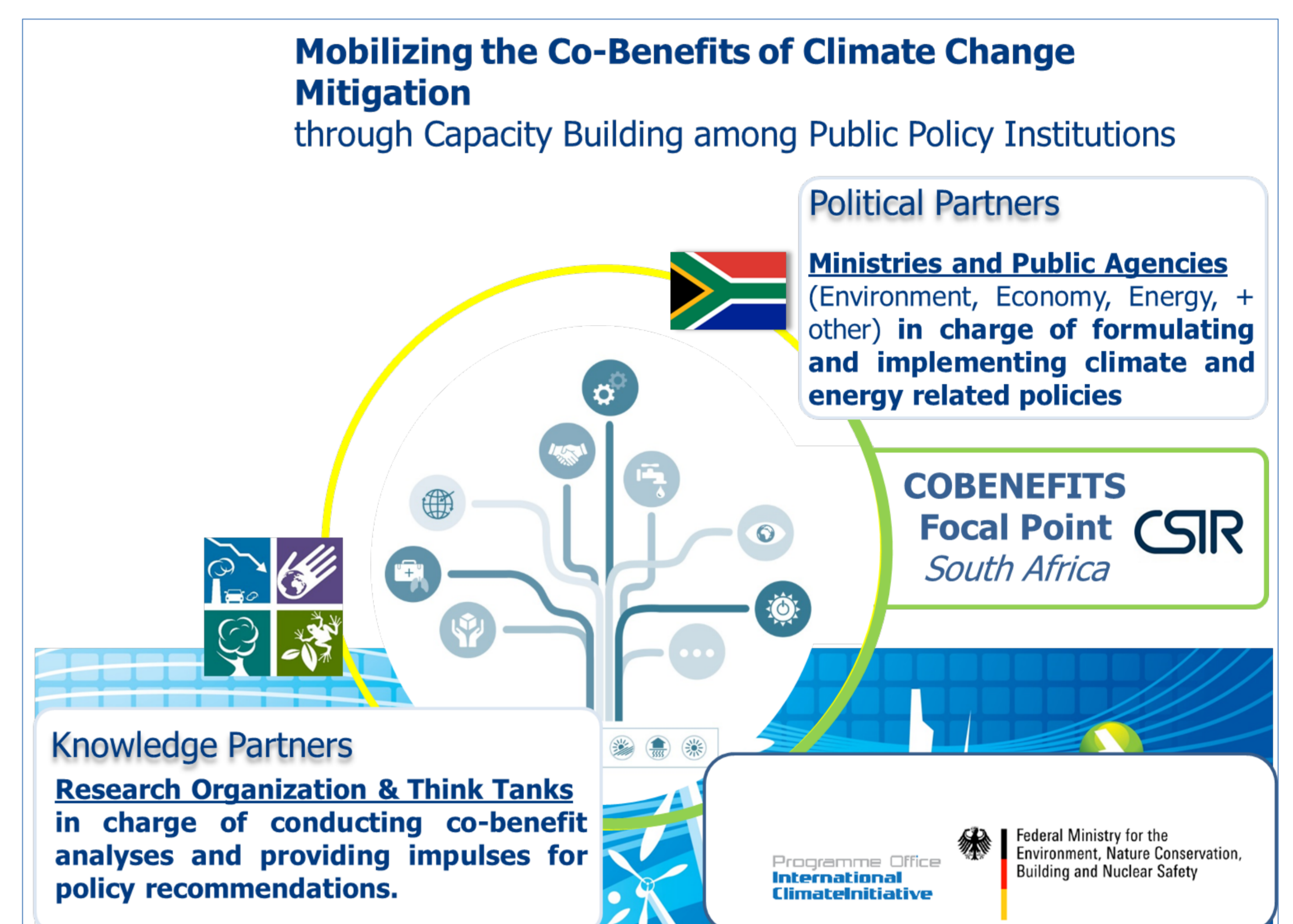


Figure 4: Cobenefits Project Stakeholder Map

Conclusion

Recent climate and energy policies in the South Africa are increasingly considering renewable energy production to meet domestic energy demand while curbing the impacts of climate change. The renewable energy sector has attracted substantially greater investment flows into the SA economy over the past couple of years. The social and economic opportunities presented by renewable energies, such as public health, accelerating access to electricity, improved investment opportunities resulting from plummeting costs for renewable electricity, and local value-creation, are becoming important co-benefits of this climate friendly transition. These co-benefits must be investigated, analysed and reported to all necessary stakeholders within the country. South Africa is at a tipping point between conventional unsustainable generator options and sustainable new renewable generation options. Understanding how a transition will affect the countries economy and people is of the utmost importance.