

National Renewable Energy and Energy Efficiency Policies and Regulatory Framework for Enhanced coherence of NDCs

Presentation by Lena Mangondo

Setting the Scene

- The tables below outline the levels of global renewable energy deployment and take account of the diversified renewable energy resources.
- This information is derived from a report released by the International Renewable Energy Agency (IRENA).
- This based on a statistical analysis of all the countries in the world and their capacity and production levels in renewable energy.

Setting the Scene – Global Statistics on Installed Capacity & Africa's % Contribution

CAP (MW)	2012	2013	2014	2015	2016
World	1,449,488.00	1,568,742.00	1,693,053.00	1,849,496.00	2,011,332.00
Africa	28,493.00	30,528.00	32,350.00	34,115.00	38,285.00
Africa contribution %	1.97%	1.95%	1.91%	1.84%	1.90%
Africa year on year % ↑/↓	4.03%	6.67%	5.63%	5.17%	10.89%

Setting the Scene – Renewable Energy Technologies as % of Installed RE Capacity

CAP (MW)	2012	2013	2014	2015	2016
Hydropower	2.95%	3.86%	0.31%	0.36%	11.05%
Wind energy	10.54%	34.71%	27.14%	27.47%	13.18%
Solar energy	16.49%	37.01%	52.05%	22.79%	30.04%
Bioenergy	13.13%	3.15%	7.35%	3.02%	0.00%
Geothermal energy	3.76%	0.00%	42.59%	38.68%	46.13%

PARIS AGREEMENT 2015

- In 2015, the Conference of the Parties (COP) at the 21st conference in Paris concluded the terms of the Paris Agreement. An important feature of the Paris Agreement is that it has been elevated to the status of international law due to the fact that it is now a treaty. The implication is that all ratifying countries are legally bound to the terms of the Agreement.
- The Agreement also includes a mechanism for reviewing countries' emissions commitments every five years, and a system for tracking countries' progress towards meeting their mitigation goals.
- The drivers for the Paris Agreement were a common purpose and understanding among the Parties that there needs to be a concerted effort towards mitigating the impacts of climate change.
- The Paris Agreement came into effect on 4 November 2016, thirty days after the date on which at least 55 Parties to the Convention accounting in total for at least an estimated 55 % of the total global greenhouse gas emissions deposited their instruments of ratification, acceptance, approval or accession.

Paris Agreement – continued

- The **main objectives** of the Paris Agreement are:
 - preserving the levels of the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels;
 - increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and
 - Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Paris Agreement - NDC'S

- The Parties commit to achieving global peaking of greenhouse gas emissions as soon as possible with rapid emissions reduction to follow soon thereafter. It is anticipated the reduction of the levels of emissions will be up to a point where there is a balance between emissions and sequestration. This requires countries to ramp up options to sequester greenhouse gas emissions. The higher the rate of sequestration, the more residual greenhouse gas emissions are permissible. Article 4.1 does not limit sequestration to natural carbon sinks, and leaves the door open to technology-driven carbon sequestration solutions, such as carbon capture and storage.
- It was recognized by the Parties that different approaches are needed to be applied in respect of nationally determined contributions ("NDCs") for developed and developing countries as well as least developed countries and the small island states. Support is to be provided to developing countries to enable them to implement their NDCs.

Paris Agreement - NDC'S

- Article 4 sets out the targets of each of these categories of countries:
 - More robust NDCs are expected from developed countries which are required to take the lead by implement economy wide absolute emissions reduction targets.
 - Developing countries are given latitude in peaking their levels of emissions and are required to make progressive commitments with each successive NDC in by enhancing their mitigation efforts and are thereby encourage to overtime transition towards economy-wide emission reduction or limitation targets in line with their national circumstances.
 - The least developed countries and small island states may (but are not obliged to) prepare and communicate strategies, plans and actions for low greenhouse gas emissions development reflecting their special circumstances.

Paris Agreement - NDC'S

- Each countries subsequent NDC will have to represent a progression beyond the Party's last NDC. Parties may at any time review their commitments with a view to make more ambitious commitments with such review.
- **NB: THE IMPLEMENTATION OF NDCS IS NOT A PART OF THE PARIS AGREEMENT - the Paris Agreement and COP Decision provide binding, procedural rules for the preparation and assessment of NDCs – not their execution.**

Paris Agreement – Assessment of Commitments

- In communicating their NDCs, Parties are required to account for their NDCs in a way that ensures environmental integrity – this in part ensures that appropriate attention is paid by Parties without being prescriptive on the content of their NDCs and in part ensures implementation. Parties are furthermore required to provide such information as necessary to ensure clarity, transparency and understanding (Art. 4.8). The process of technical expert review (as contemplated in Art. 13) of the information submitted and progress made by Parties also in part ensures robustness and progressive implementation and higher levels of commitment and progression with each revision of a Parties commitment (NDCs are to be reviewed every 5 years though Parties are also free to progressively review their commitments at any time).
- The technical expert review also enables support mechanisms and tools to be developed for developing countries which have difficulty in meeting their targets in a facilitative and non-intrusive manner.

Paris Agreement – Assessment of Commitments

- The reporting, review and assessment framework created by Art. 13 for the very first time ensures that there is transparency.
- This enables for the first time the establishment of a database of global mitigation actions on emissions on a national and global scale as well as the recording and tracking of the levels of national and global emissions.
- The fact that the Paris Agreement contemplates stock taking on its progress and ensures that the framework contemplated in the Agreement always remains relevant and also allows for adjustment in view of the intended objectives of the Paris Agreement (lowering GHGs and emissions reductions) and the outcomes thereof, challenges and successes – the first stock take is in 2023 and every 5 years thereafter (Art. 14.2)
- Prior to the 2023 stock take there is to be a facilitated dialogue among the Parties in 2018

Paris Agreement – Support

- The Paris Agreement commits developed countries to commit to provide support developing countries to achieve their mitigation goals as set out in their NDCs.
- Appropriate support mechanisms:
 - Funding and financial support through the Financing Mechanism of the Convention to enable appropriate capacity and technology deployment for collaborative approaches to research and development, and facilitating access to technology, in particular for early stages of the technology cycle, to developing country Parties as well as technology transfer for purposes of adaptation and mitigation at different stages of the technology cycle (Art. 10.5 and 10.6). Aside from financial support developing countries shall be provided such other support as maybe required to give effect to this Article;
 - Technology transfer through a Technology Mechanism to be developed in accordance with the Convention to serve the purposes of the Paris Agreement. Such Technology Mechanism to be developed through an overarching technology framework under the Paris Agreement (Art. 10);

Paris Agreement – Support

- Capacity-building under this Agreement should enhance the capacity and ability of developing country Parties, in particular countries with the least capacity, such as the least developed countries, and those that are particularly vulnerable to the adverse effects of climate change, such as small island developing States, to take effective climate change action (Art. 11.1); and
- building of transparency-related capacity (for development, implementation, tracking progress and reviewing of NDCs) of developing country Parties on a continuous basis (Art.13.15)

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES

- According to a new World Bank Report, entitled [RISE \(Regulatory Indicators for Sustainable Energy\)](#):
 - An increasing number of developing countries – Mexico, China, Turkey, India, Vietnam, Brazil, and South Africa – are emerging as leaders in sustainable energy, with robust policies to support energy access, renewables and energy efficiency, according to a new World Bank Report;
 - But there is huge room for improvement across every region in the world and particularly in Sub-Saharan Africa, says the report.

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES

- While many of the countries surveyed in RISE have embraced the sustainable energy agenda, the report identifies important policy gaps across all regions, and highlights opportunities for rapid progress. [Sub-Saharan Africa is the world's least electrified continent, where 600 million people still live without electricity](#). As many as 40 percent of Sub-Saharan African countries surveyed by RISE have barely taken any of the policy measures needed to accelerate energy access, compared to less than 10 percent of Asian countries. Exceptions include Kenya, Tanzania, and Uganda which have strong policy frameworks.
- RISE assesses where additional efforts are most needed – both developed and developing countries need to pull their weight. Among the top 10 high-impact countries for renewable energy and energy efficiency, all have relatively robust policy frameworks in place.

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES

- The same cannot be said for the top 10 high-impact countries for access – both Nigeria and Ethiopia still need to make much progress in policies and regulations
- The report notes that in order to improve electricity access, there must be a better balance between making power both affordable for customers without undermining the financial viability of the utilities that need to invest to provide service.
- The report highlights that, in many countries, policymakers are not paying nearly as much attention to energy efficiency as to renewable energy, particularly in the developing world. Energy efficiency measures are usually the most cost-effective way of greening the energy sector.
- **NB: DUE TO THE INTERVENTIONS AND OPPORTUNITIES ASSOCIATED WITH ENERGY EFFICIENCY (e.g. combined heating and cooling and green city programmes) THIS IS MORE SUITED TO MUNICIPAL INTERVENTIONS – HOWEVER CAPACITY AND FINANCE CONSTRAINTS FOR MOST MUNICIPALITIES IN AFRICA**

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES – SOUTH AFRICA

- In view of the recognition given to the robustness of the South African policies around energy efficiency and renewable energy policies the focus of the coming slides are on South Africa's renewable energy and climate change policies.
- South Africa like other African countries put in place policies and legislation to combat the impact of climate change in advance of the Paris Agreement. Of relevance to the topic under discussion are the following:
 - Renewable Energy White Paper;
 - National Climate Change Response White Paper;
 - Green Energy Accord;
 - National Development Plan;
 - Integrated Resources Plan;
 - NDC

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES – SOUTH AFRICA

Renewable Energy White Paper

- Contemplates that promoting renewable energy will contribute towards the diversification of electricity supply and introduction of greater levels of competition in electricity markets. It encourages investment by the private sector in renewable energy power producers, and in the commercialisation and local manufacturing of renewable energy technologies.

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES – SOUTH AFRICA

National Climate Change Response White Paper

- This policy document acknowledges that South Africa, as a country, is extremely vulnerable to the impacts of climate change and therefore sets out South Africa's vision for an effective climate change response and the long-term, just transition to a climate-resilient and low-carbon economy and society. It proposes that climate change be addressed through interventions that build and sustain the country's social, economic and environmental resilience in order to make a fair contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere.

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES – SOUTH AFRICA

National Climate Change Response White Paper - continued

- The White Paper expressly recognises that South Africa's reliance on coal for electricity generation will continue to be a significant contributor to greenhouse gas emissions. In accordance with the adoption of the PPD trajectory, a shift to low-carbon electricity generation options will only be possible in the medium term, and not immediately.
- The White Paper recognises that new energy infrastructure investments must consider the impacts of climate change. Thus, it advocates that the investments should avoid locking-in emissions-intensive technologies into the future. However, since it *leis* accepted that there will be investment in new coal-fired power plants in the short term, the 2011 White Paper identifies the most promising mitigation options as '*energy efficiency and demand side management, coupled with increasing investment in a renewable energy programme in the electricity sector*'.

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES – SOUTH AFRICA

Green Energy Accord

- Commitment three of the Green Energy Accord deals with the rollout of renewable energy. Government has committed to procure renewable energy as part of the plan to expand the energy-generation capacity of the country. Together with the procurement of renewable energy, government, business, labour and community structures committed to support efforts to increase the local industrial manufacture of components for renewable energy. The sector associations committed to developing a long term renewable energy rollout strategy and programme in partnership with all social partners, within the policy framework set by government.

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES – SOUTH AFRICA

National Development Plan (NDP)

- The NDP was adopted by cabinet and serves as the long term vision and plan for the country. Notwithstanding this, and given that the benefits of building resilience against the effects of climate change are manifest, the NDP reaffirms South Africa's commitment to act responsibly to mitigate the effects of climate change and the commitment to the PPD trajectory. In order to achieve this goal the NDP sets a target of procuring at least 20 000MW of renewable electricity by 2030

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES – SOUTH AFRICA

Integrated Resource Plan (IRP)

- The current IRP was developed in a manner that sought to balance Government objectives. It represented an appropriate balance between the expectations of different stakeholders and considered a number of key constraints and risks, including: reducing carbon emissions; new technology uncertainties such as costs, operability and lead time to build; water usage; localisation and job creation; regional development and integration; and security of supply.
- This IRP sets aggressive targets for amongst others 17800MWs of new electricity generation facilities as well as set targets and requirements for looking at energy efficiency initiatives as part of the medium term risk mitigation framework.

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ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES – SOUTH AFRICA

National Determined Commitment (NDC)

- South Africa's NDC, which was submitted in 2015, expressly acknowledges the country's reliance on coal and anticipates the establishment of further coal-fired power stations and an increased carbon emission rate until 2020. This accords with South Africa's commitment to the peak plateau decline trajectory. In the NDC, South Africa makes an international commitment that between 2025 and 2030 its emissions will be within a range of between 398 and 614 Mt CO₂-eq. This is in line with the current IRP which led to the introduction of renewable energy.

ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICIES – SOUTH AFRICA

CONCLUSION

- From the policy framework set out above it is apparent that the decision to procure renewable energy generation capacity was consciously adopted by government based on a thorough and rational decision-making process and was informed by extensive public participation. This policy approach was adopted with full knowledge that, in the short term, incorporating renewables into the energy mix would impose additional costs on the economy. But in the long term the average cost would decrease and South Africa would realise significant benefits, including diversification of supply, increased competition, stimulation of upstream supply industries, social and economic development benefits, a reduction in greenhouse emissions, and a reduction in other health and environmental externalities and impacts.

Legislation – South Africa

- While South Africa does not have bespoke renewable energy legislation in place, the Electricity Regulation Act as well as the regulations on New Generation Capacity issued in terms of this Act ensure there is robust legislation and regulatory certainty to enable investments.

Policy and Legislation – Other African Countries (Morocco)

- Morocco launched one of the world's largest and most ambitious solar energy plan with investment of USD 9 billion. The Moroccan Solar Plan is regarded as a milestone on the country's path towards a secure and sustainable energy supply which is clean, green and affordable. In 2010, the Moroccan Agency for Solar Energy (MASEN), a public-private venture, was set up specifically to implement these projects. Its mandate is to implement the overall project and to coordinate and to supervise other activities related to this initiative. Stakeholders of the Agency include the Hassan II Fund For Economic & Social Development, Energetic Investment Company and the Office National de l'Electricité (ONE). The Solar Plan is backed by Germany, with funding being provided by German Environment Ministry (BMU) and KfW while GIZ is engaged in skills and capacity-building for industry.

Policy and Legislation – Other African Countries (Morocco)

- The following projects (solar and other renewable energy projects) are already in implementation:
 - The Ouarzazate Solar Complex, also known as Noor CSP (the world's largest solar power plant) with a total capacity of 580 MW will produce an estimated output of 1.2 TWh/year to meet power demand of more than 1 million population when it is completed in 2018;
 - The Ain Beni Mather Integrated Solar Thermal Combined Cycle Power Station, commissioned in 2011, is one of the most promising solar power projects in Africa. The plant combines solar power and thermal power, and has a production capacity of 472 MW; and
 - Two winds projects with installed capacity of 50 MW and 140 MW.

Policy and Legislation – Other African Countries (Uganda)

- The Uganda Get – FiT Programme has enabled Uganda within a short space of time to establish various renewable energy projects. This programme is being implemented by the Government with the support from the German Government and is project managed by KfW.
- The programme has enabled 17 projects of 158 installed capacity to be established in Uganda. To date six (6) of the seventeen (17) projects have been commissioned with significant construction progress registered on the majority of the remaining projects. The commissioned projects include:
 - three (3) hydropower plants of total installed capacity 18.1 MW;
 - two grid connected solar PV projects totalling 20MW;
 - A Co-generation plant (Kakira) of 20MW

Private Sector Perspective for Investment

- In view of the significant levels of capital required to be deployed for infrastructure private sector participants are always concerned about protection of their investments while balancing risk with appropriate return associated with risk.
- In this context the following are key considerations for any private sector participant in considering investments:
 - Clarity and certainty of policy;
 - Political Risks (political will and support);
 - Institutional Framework and capacity;
 - Legal and Regulatory;
 - Investment protection;

Private Sector Perspective for Investment

Key considerations continued.....

- Exchange Control and repatriation of funds;
- Barriers to market entry (ease of doing business);
- Economic conditions (ability to recoup investment and ability of end user to pay);
- Credit worthiness of off-taker
- Credit Enhancement instruments including government support and guarantees;
- Independence of Regulator;
- Technology (track record of deployment and performance) and integration with existing systems (in the case of grid integrated renewable energy issues of grid integration, availability and stability of the grid).

Lessons Learnt from Uganda

- Uganda has one of the more liberal market structures when compared with other electricity supply industry (ESI) market structures in Africa in that:
 - Independent Regulator;
 - Fully unbundled ESI;
 - Concession agreements with private concessionaires for generation and distribution; and
 - REFiTs, renewable energy capacity targets, fiscal incentives for renewable energy, various forms of governmental guarantees and support available
- Despite all the building blocks being in place Uganda was unable to get private investments due to:
 - Perceptions of risk by the Private Sector (commercial and political risk);
 - Incomplete reforms and incentives to attract private sector investors;

Lessons Learnt from Uganda

- With the support of KfW Uganda put in place the following which led to renewed appetite from private sector participants:
 - Reconsideration of project agreements with standardised agreements being put in place (PPA, IA, DA)
 - Credit enhancement through commercial risk insurance products (World Bank PRG Program);
 - Identification and removal of legal and regulatory barriers for private sector investments ;
 - Mitigate political and commercial risks
 - Provide an attractive risk-adjusted return for first mover investors;
 - Provision of grants and concessional loans

Lessons Learnt from South Africa

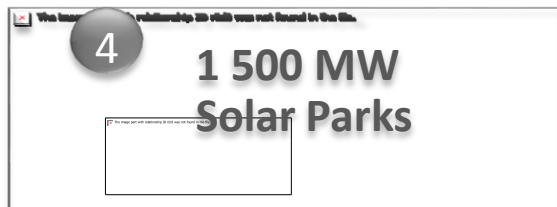
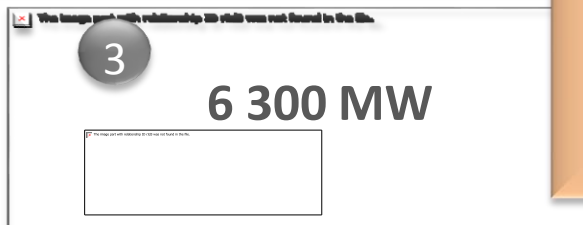
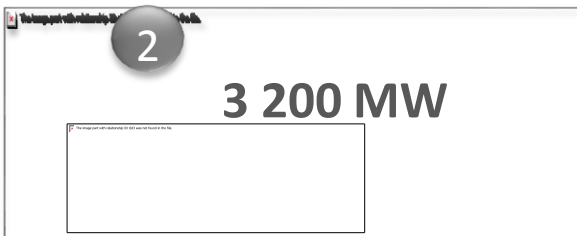
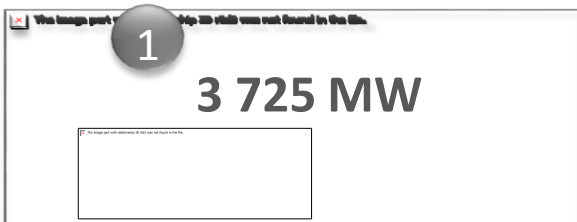
- In line with the IRP, South Africa started its path to introduce and aggressively pursue the deployment of renewable energy as part of its electricity generation capacity.
- The initial years (2011 – 2014) saw significant deployment of these technologies. The Renewable Energy IPP Programme received various accolades internationally and locally.
- From 2015 – March 2018 the pace of deployment halted due to the Utility (Eskom) refusing to sign projects procured in 2013 and 2014. This resulted in a slow down in the industry and closure of manufacturing plants which were a positive spin off from the Renewable Energy IPP Programme as well as negatives in the industry.

Lessons Learnt from South Africa

- With a new political leadership in Government as well as a new board in Eskom the impasse has now been resolved and the 27 outstanding projects were signed on 4 April 2018.
- Aside from what has been procured to date, future roll out and trajectory of this programme is dependent on a revised IRP though there are still Ministerial Determinations which need to be implemented.

Achievements to Date on the Renewable Energy IPP Programmes

14 725 MW Renewable Energy through 4 determinations



PROCURED 6 376 MW to date through the rolling bid-window programme

6 Bid rounds **completed** Large REIPPP Bid Windows 1, 2, 3, 3.5, 4 Smalls BW1 and 2)

112 Projects Procured

62* **Operational** IPPs - 3 774MW reached Commercial Operation by 31 March 2017

SIGNED 4 001** MW to date

64 Projects signed from Large REIPPP Bid Windows 1 (28 projects), 2 (19 projects), 3 (16 projects) and 3.5 (1 project)

PROCURED, ANNOUNCED BUT NOT YET SIGNED 2 421 MW

48 Projects contracted from Large REIPPP Bid Windows 3 (1 project), 3.5 (1 project), 4 (26 projects), Smalls BW1 (10 projects) and Smalls BW2 (10 projects)

PROCURED, NOT YET ANNOUNCED 1 775 MW

19 Expedited Bid Window projects

CURRENT & PLANNED

- Get approvals to complete procurement process and financial close of 67 projects – immediate approvals from DPE / ESKOM for BW3.5 & BW 4 required;
- Release Requests for Proposals for Large REIPPP Bid Window 5, Smalls Bid Window 3, and Solar Parks Programme

* This includes the 2 sites out of 5 sites of the Landfill Gas Project that has reached Commercial Operations.

**4 006MW as per Bid Submission but Landfill Gas project reached financial close with 13MW instead of 18MW at Bid Submission.

Thank you