planning, monitoring & evaluation

Department:
Planning, Monitoring and Evaluation
REPUBLIC OF SOUTH AFRICA

SOCIO-ECONOMIC IMPACT ASSESSMENT SYSTEM (SEIAS)

DRAFT FINAL IMPACT ASSESSMENT

11 JUNE 2018

The Draft Final Impact Assessment [Integrated Resource Plan Update]

The Final Impact Assessment provides a more detailed assessment of the ultimately policy/legislative/ regulations/ other proposal. In addition, it identifies **(a)** mechanisms for monitoring, evaluation and modification as required; and **(b)** a system for managing appeals that could emerge around the implementation process.

1. The problem Statement/ Theory of Change

1.1. Summary of the proposal, identifying the problem to be addressed and the root (causes) of the problem that will be addressed by the new rule.

a) The Integrated Resource Plan (IRP) is one of the three sector plans that form the basis of the Integrated Energy Plan. The other plans are the Liquid Fuels Master Plan and the Gas Master Plan. Integrated Energy Planning is required to ensure that current and future energy service needs can be met in the most cost effective, efficient and socially beneficial manner while also taking into account environmental impacts across the three sector plans.

The IRP is an electricity infrastructure development plan based on least cost supply and demand balance taking into account security of supply and the environment (minimize negative emissions and water usage).

The Integrated Resource Plan (IRP) 2010-30 was promulgated in March 2011. It was indicated at the time that the IRP should be a “living plan” which would be revised by the Department of Energy (DoE) frequently.

The IRP 2010-30 is used to roll out electricity infrastructure development through Ministerial Determinations issued under Section 34 of the Electricity Regulation Act of 2006. Ministerial Determinations are policy signals investors use to plan their investments in the country’s energy sector.

Since the promulgation of the IRP 2010-30 there has been developments in the energy sector in the country and the region. One such development is that the electricity demand outlook as forecasted in the IRP 2010-30 has not been realized.

In addition to electricity demand and technology costs assumptions critical to the plan have changed. The process to revise and update these assumptions commenced during last quarter of year 2015.

The IRP update process communicated with all stakeholders including the public includes four milestones. These are:

- Developing the Input Assumptions;
- Modelling and development of a credible Base Case (starting point based on least electricity cost) using agreed input assumptions;
- Modelling and testing of various cases / scenarios, in order to produce least cost balanced scenario for policy adjustment;
- Policy adjustment taking into account other various government policies.

The first milestone which is the development of input assumptions together with parts of the second milestone which is “the modelling and development of a credible base case were approved by Cabinet in October 2017 for public input.

Public consultations commenced on the 7th of December 2016 and ended on the 31st of March 2017. Consultations included presentations as well as written submissions by the public.

Following analysis of input received and adjustment of the assumptions, detailed studies were undertaken and a draft policy adjusted IRP has now been developed. The policy adjusted IRP recommends a plan to be followed for the

period ending 2030 and detailed technical and socio-economic studies to be undertaken to better inform the post 2030 path during the next IPR update iteration.

The policy adjusted IRP together with this SEIAS are now being subjected to public inputs.

b) Problem/s and root causes that the proposal is trying to address

Identified Problem	**Root causes**
Potential costly over-investment due t to lower electricity demand and changed technology costs assumptions.	Key assumptions used in the IRP that include electricity demand projection, new capacity commissioned as well as technology costs have significantly changed. It is in the nature of long term planning that assumptions may not be realised. Assumptions must therefore be monitored on an ongoing basis and significant changes will therefore trigger the necessary reviews and update.
Demand projections for the period up to 2030 have decreased from about 450 thousand megawatt hours (MWh) to around 300 thousand megawatt hours, which is about 33% decrease. Undelying assumptions used in the development of the demand forecast have changed.	This is mainly driven by the reduction in the electricity intensity in the country as many energy intensive users have become efficient in their quest to minimise the impact of increased electricity prices. Electricity users in response to load shedding experienced due to Eskom plant challenges have diversified their supply sources through generation for own use, gas for cooking and heating and or solar water heating.
Existing Eskom plant performance has	A higher than the norm breakdown of plants. The

Identified Problem	Root causes
deteriorated (Plan assumed 80% availability with actual availability below 70% at times)	root cause has been attributed to a number of issues which include amongst others, the age of the plants and poor maintenance workmanship.
Some of the technology costs for generation technologies assumed in the IRP 2010-30 have significantly come down of which on a least cost basis will impact on the electricity energy mix and therefore the IRP.	Globally the cost of technologies such as wind and photovoltaic power generation have significantly decreased to levels below the traditional power generation technologies such as coal, nuclear and hydro.

1.2. The purpose of the IRP Update report is therefore to outline the electricity energy mix in the medium to long term taking a view up to the year 2050. The updated IRP will ensure security of electricity supply taking into account government objectives of affordable low cost electricity, reduced greenhouse gas emissions, reduced water consumption, and diversified electricity generation.

1.3. Describe the groups that will benefit from the proposal, and the groups that will face the cost. These groups could be described by their role in the economy or in society. As a minimum, consider if there will be specific benefits or costs for the poorest households (earning R 7000 a month or less); for black people, youth or women; for small and emerging enterprise; and /or for rural development. Add more rows if required

Groups that will benefit	How will they benefit?
Rural and remote households	• Renewable energy technologies can be deployed closer to points of use and therefore can be used for providing energy in rural and remote areas. • At grid scale, energy mix that includes renewable other forms of distributed energy provides economic opportunities to rural communities in other parts of the country where there was very little or no economic activity.

Groups that will benefit	How will they benefit?
	• These communities will benefit through employment and empowerment opportunities created. • The updated will also ensure that the development of electricity infrastructure which is based on least economic path takes advantage of lower technology costs which will translate into low tariffs for consumers.
Investors and players in the electricity sector	The IRP will give a clear signal on the policy direction of the electricity sector and expected investment opportunities up to the year 2030.
All economic sectors (Manufacturing and Mining Sector)	The economy will benefit from availability of reliable and affordable electricity to drive growth.
Emerging players in the energy sector	• New infrastructure development opportunities will be created on the basis on the IRP. • The recognition of embedded generation for own use will open up the space and remove the red tape experienced by emerging players in their quest to develop small power generation plants. • In line with commitments to improve participation by local players in the grid scale Independent Power Producer Programme, there will be an increased role for emerging companies to partner with large international corporations.
The Unemployed (especially the youth)	New job opportunities will be created in the new infrastructure development

Groups that will bear the cost or lose	How will they incur the costs or lose?
Electricity consumers	• User pays principle applies for the users of electricity. • While consumers will incur the cost, they will benefit because the plan will ensure that costs are minimised (least economic cost).
The Coal to Power Sector	• Employees at old power stations and mines that will be decommissioned at end of their life will have to find alternate jobs. • Contractors and suppliers and their employees across the value chain will have to find alternate markets for their goods and services.

Groups that will bear the cost or lose	How will they incur the costs or lose?
	• Eskom and coal mining companies will incur the costs of decommissioning and rehabilitation of mines and power stations.
Government (National, Provincial & Local)	Government will have to make resources available to ensure that the towns and communities are built on the back of power plants remain economically viable when the mines and power plants are no longer in production.

1.4. Describe the behaviour that must be changed, main mechanisms to achieve the necessary changes. These mechanisms may include modifications in decision making process systems; changes in procedures; educational work; sanctions; and or incentives. Also identify groups inside or outside government whose behaviour will have to change to implement the proposal. Add more rows if required.

Groups inside Government	Behaviour that must be changed (Current Behaviour)	Main mechanism to achieve the necessary changes
Department of Energy (DOE)	• Protracted electricity plan update process • Silo approach to policy development • Reactive approach to policy development	• Develop and agree a shortened IRP review and update process. • Frequent review will be required by monitoring key assumptions such as demand and technology costs. • Integrated approach to energy policy development and planning will be required – focusing on the finalisation of other sector plans required to complete the Integrated Energy Plan (IEP).
Government Departments	• Energy agenda / initiatives outside of the Department mandate which duplicate efforts. • Policies that impact on Energy passed without full impact assessment on energy affordability and security.	• Collaboration strategy in support of existing plans and the energy transition will have to be developed and agreed.
State Owned Entities (SOEs)	• Silo approach to energy / electricity issues	• Streamlining and review of SoEs will go a long way to ensure clear objectives for

Groups inside Government	Behaviour that must be changed (Current Behaviour)	Main mechanism to achieve the necessary changes
	• Lack of collaboration & duplication of efforts	each SoE in the energy space. • Collaboration strategy in support of existing plans and the energy transition will have to be developed and agreed.
National Energy Regulator of South Africa (NERSA)	• Improve compliance enforcement	• Working with policy Department (DoE), review and update laws and regulations to ensure industry efficiency.

Groups outside Government	Behaviour that must be changed (Current Behaviour)	Main mechanism to achieve the necessary changes
Investors / Independent Power Producers	• Assumption that procurement of generation capacity will happen in perpetuity ignoring prevailing supply and demand balance. • Winner takes all approach that seems to support only one form of energy on the basis that it is the cheapest.	• Ministerial Determinations to be issued taking into account actual demand and supply balance at the time and not on the basis of IRP only. • Communicate clearly the link between demand for power and procurement of new generation. • Develop long tern transition plan that is based on least economic cost options and not just least financial cost
Labour Unions	• Protection of jobs in various energy sectors which manifest as resistance to the energy transition. (Jobs in certain sector may decline in the long term but new opportunities for jobs are created in other sectors).	• Develop a transition path in consultation labour with a focus to shift from job protection to job creation and skills training. • Engage with labour on their concerns (e.g. Nedlac Job Summit)
Civil Society	• Winner takes all approach that seems to support only one form of energy.	• Increased, frequent and transparent engagement with the general public to communicate government plans and reasons and drivers for choices made.
National Research Councils and Academic Institutions	• Energy research activities to be aligned to government imperatives.	• Funding should impose the research agenda that will support the agreed transition path.

Groups outside Government	Behaviour that must be changed (Current Behaviour)	Main mechanism to achieve the necessary changes
Donor Countries	• Supported or funded activities weighed more towards Donor country requirements with duplication between donors at times. • National agreements used at local level without the involvement or endorsement of National Departments	• Integrated donor funding strategy aligned to National Energy strategy must be developed to ensure consistency across.

1.5. Report on consultations on the proposal with the affected government agencies, business and other groupings. What do they see as the main benefits, costs and risks? Do they support or oppose the proposal? What amendments do they propose? And have these amendments been incorporated in your proposal?

In October 2016 Cabinet approved public consultations on the assumptions to be used in the review and update of the IRP.

Verbal and written comments received from the public consultations process were analysed and where applicable used to adjust the assumptions. Appendix D in the draft IRP report details how the input fromm the public was addressed and incorporated into the final draft plan.

Table on consultations:

Affected Stakeholders	**What do they see as main <u>benefits, costs and risks?</u>**	**Do they <u>support</u> or <u>oppose</u> the proposal?**	**What <u>amendments</u> do they propose?**	**Have these amendments been <u>incorporated</u> in your proposal?**
1. Government (Economic cluster departments)	General view is that renewable energy and gas provides the least cost electricity path that which supports commitments to reduce emissions and water use. The unavailability of gas and the likely reliance on import gas was flagged as a risk from a security of supply point of view as well as balance of accounts as gas is likely to be priced in foreign	There is support for least cost path based on renewables and gas.	Participants emphasised the need to retain least cost plan that takes into account the need to reduce Greenhouse Gas emissions. Risks associated with a gas dominated plan were discussed and agreed that the initial volumes for the gas to power may have to be curtailed initially subject to the completion of a detailed gas master plan.	Yes this was a considered in the process of developing the proposed policy adjusted plan.

Affected Stakeholders	What do they see as main benefits, costs and risks?	Do they support or oppose the proposal?	What amendments do they propose?	Have these amendments been incorporated in your proposal?
	currency.			
2. Business (BUSA & Banking Association of SA)	Business during consultations on assumptions held in 2016 raised concerns about the cost of some of the technologies. Business also cautioned against mega projects like Medupi and Kusile and their risks. Business also called for not constraining renewables.	Draft plan still to be tabled at Nedlac before finalisation and approval by Cabinet in August 2018.	That renewable energy must not be constrained as it provides the least cost path.	Yes this was a considered in the process of developing the proposed policy adjusted plan.
3. Labour	Job losses due to the	Draft plan still to be tabled	That old Eskom plants	Yes, the proposal is to

Affected Stakeholders	What do they see as main benefits, costs and risks?	Do they support or oppose the proposal?	What amendments do they propose?	Have these amendments been incorporated in your proposal?
	closure of coal fired power plants	at Nedlac before finalisation and approval by Cabinet in August 2018.	must not be closed down and that renewable energy must be owned by workers	include some quantity of coal power (1000MW) as part of policy adjustment. Worker and community participation is encouraged through procurements programme.
4. Civil Society	General view is that renewable energy and gas provides the least cost electricity path that which supports commitments to reduce emissions and water use. There was clear objection to Coal and Nuclear.	Draft plan still to be published for public comments before finalisation and approval by Cabinet in August 2018.	That renewable energy must not be constrained as this is a way of allowing coal and nuclear into the energy mix.	Yes, the scenario without renewable energy constraints was included as part of the assessments.

Affected Stakeholders	What do they see as main benefits, costs and risks?	Do they support or oppose the proposal?	What amendments do they propose?	Have these amendments been incorporated in your proposal?
5. The Public	The main risk or concern was committing to mega projects which they believe are more expensive compared to current renewable energy projects.	Draft plan still to be published for public comments before finalisation and approval by Cabinet in August 2018.	The main input from the general public was for the least cost plan as indicated by the "CSIR plan" Other comments were around the outdated demand projection which indicated a slightly higher demand compared to the already realised year 2016 and 2017 demand.	Yes this was a considered in the process of developing the proposed policy adjusted plan. Demand was revised accordingly to reflect the actual lower demand.
6. Other groupings Groupings for other technologies (CSP, Biomass, Battery Storage)	The plan must make space for their respective technologies as the least cost approach will only favour wind and PV.	Draft plan still to be published for public comments before finalisation and approval by Cabinet in August 2018.	They are proposing that explicit allocations be made for their technologies even though they don't result in least	One of the proposals proposed to be adopted for policy adjustment is that some of the wind, PV and gas capacity be

Affected Stakeholders	What do they see as main benefits, costs and risks?	Do they support or oppose the proposal?	What amendments do they propose?	Have these amendments been incorporated in your proposal?
			cost. They argue that the certainty will in long run result in economies of scale and learning which will lead to reduced costs.	considered for these technologies and other technologies when issuing Ministerial Determinations.
7. Other groupings (Proponents of baseload power)	Projected electricity demand growth is considered conservative by some as they believe electricity infrastructure development must precede demand stimulate growth instead of lagging demand. They argue that abundance of electricity will attract investment in other	They oppose a proposal that advocates for high levels of renewable energy.	They argue that South Africa needs Coal and Nuclear as part of the energy mix	No, as no information supporting this view has been provided. Available information supports the approach currently adopted. Overinvestment will lead to higher electricity prices as "the user pays" prince applies. This will lead to further grid deflection, energy switching or even

Affected Stakeholders	What do they see as main benefits, costs and risks?	Do they support or oppose the proposal?	What amendments do they propose?	Have these amendments been incorporated in your proposal?
	sectors such as mining. Renewable energy does not provide the necessary baseload power needed by South Africa			disinvestment by intensive energy users. Yes. Some baseload in the form of coal and hydro is recommended as part of policy adjusted plan. The plan also recommends detailed studies beyond 2040 that will respond adequately to the concerns raised.

1.6. Describe possible disputes arising out of the implementation of the proposal, and system for settling and appealing them. How onerous will it likely be for members of the public to lodge a complaint and how burdensome and expeditious is the proposed dispute-settlement procedure?

The current proposal is not final as it will be issued for publication for comments.

2. Impact Assessment

2.1. Describe the costs and benefits of implementing the proposal to the groups identified **in point 1.5 above**, using the following chart. Add more rows if required

Group	**Implementation Costs**	**Costs of changing behaviour**	**Costs/Benefits from achieving desired outcome**	**Comments**
Department of Energy	Additional capacity in the form of human resources	Very minimal	Policy certainty brought by up to date plans far outweigh the cost of additional resources required to monitor update the plans regularly.	
Other Government Departments	None	Alignment to same strategies and plans	This will result in efficiencies which will release duplicated resources for use or application whey they are needed the most.	
SoEs	Yes	Alignment to same strategies	This will result in efficiencies which will	

Group	Implementation Costs	Costs of changing behaviour	Costs/Benefits from achieving desired outcome	Comments
		and plans	release duplicated resources for use or application whey they are needed the most.	
National Energy Regulator of South Africa (NERSA)	Additional capacity in the form of human resources	Minimal	Policy certainty brought by policies or regulations that talk to current industry developments far outweigh the cost of additional resources required to regularly review and update policies and regulations.	
Investors	No	No	The desired outcome will help investors plan better and therefore efficiently manage their expectations and associated costs	
Labour	Financial and human resources associated with necessary details / work to support the discussions	Minimal	The benefits of an agreed transition path / plan far outweigh the cost that the disagreement on IRP can lead to. Which is delayed or no investment in infrastructure which can result in power shortages.	

Group	Implementation Costs	Costs of changing behaviour	Costs/Benefits from achieving desired outcome	Comments
Civil Society	Financial and human resources associated with necessary details / work to support the discussions	Minimal	The benefits of consensus reached through transparent and open engagements far outweigh the cost that the disagreement on IRP can lead to. Which is delayed or no investment in infrastructure which can result in power shortages.	
National Research Councils and Academic Institutions	No	Alignment of research to support current strategies	This will result in efficiencies which will release duplicated resources for use or application whey they are needed the most.	
Donor Countries	No	Alignment of Donor funding to a single strategy and plan	This will result in efficiencies which will release duplicated resources for use or application whey they are needed the most.	

2.2. Describe the changes required in budgets and staffing in government in order to implement the proposal. Identify where additional resources would be required for implementation. It is assumed that existing staff are fully employed and cannot simply absorb extra work without relinquishing other tasks.

The programme to procure new electricity infrastructure is managed through the DoE IPP Office. The office is self-funded through bids fees. Recent delays in signing IPP projects highlighted that the model is not sustainable. The role of the IPP office will have to be firmed up together with governance and funding structure.

Funding will also need to be required for resources to conduct identified detailed studies to better inform the post 2030 electricity / energy path.

2.3. Describe how the proposal minimises implementation and compliance costs.

While the plan is developed ensuring supply and demand balance at least possible costs, the implementation of the plan is a regulated process. New generation capacity is procured in line with Section 34 of the Electricity Amendment Regulation Act of 2006 as well as the New Generation Regulations.

3. Managing Risk

3.1. Describe the main risks to the achievement of the desired ends of the policy/bill/regulations/other and/ or to the national priorities (aims) that could arise from adoption of the proposal. Also describe the measures taken to manage the identified risks. Add more rows if necessary.

Identified Risk	**Mitigation Measures**
Assumptions not holding (especially demand and or Eskom existing plant performance)	Determinations must be informed by prevailing circumstances and not only the assumptions in the IRP.
Overcapacity in the Grid due to increased Grid deflection or fuel switching (LPG).	Provision for generation for own use made in the IRP. NERSA to register or license these installations which will provide information

	needed to review supply and demand prior to issuing Ministerial Determinations.
Risk of perceptions about the IRP	Develop clear communication plan that will ensure all issues that require clarity are attended to in a proactive manner.

3.2. Describe the mechanisms **included in your proposal** for monitoring implementation, evaluating the outcomes, and modifying the implementation process if required. Estimate the minimum amount of time it would take from the start of the implementation process to identify a major problem and remedy it.

The implementation of the IRP is an ongoing process. NERSA through the grid code compels the system operator (Eskom) to file annually medium term system outlook. This provides a medium term (0 to 5 years) view of supply and demand balance together with production plan. The DoE will going forward work with Eskom and NERSA and use this annual plan to assess take stock of the system in relation to assumptions made in the IRP.

4. Summary

4.1. Summarise the impact of the proposal on the main national priorities

National Priority	Impact
1. Social Cohesion	This will initially result in tensions between labour, government and business as the old coal fired power plants are retired. In the long run with a clear transition plan in place these tensions can be managed.

2. Security (Safety, Financial, Food, Energy and etc.)	Increased security of electricity supply required for public safety, food production and economic growth.
3. Economic Growth	Support economic growth through affordable and reliable energy which will support industrial growth.
4. Economic Inclusion (Job Creation and Equality)	Infrastructure development which will create new green jobs.
5. Environmental Sustainability	Reduction in greenhouse gas emissions

4.2. Identify the social and economic groups that would **benefit most** and that would **bear the most cost**. Add more rows if required.

Main Beneficiaries	**Main Cost bearers**
Electricity Consumers (Households & Industry)	Electricity Consumers (user pays)
Investors (local & International)	Government (Government Guarantees)
Project developers	Eskom (decommissioning)
Unemployed	

4.3. In conclusion, summarise what should be done to reduce the costs, maximise the benefits, and mitigate the risks associated with the policy/bill/regulations/other. Note supplementary measures (such as educational campaigns or provision of financing) as well as amendments to the draft itself, if appropriate. Add more lines if required.

a) It should first be acknowledged by all that the IRP is based on assumptions and assumptions can change. Any commitments or pronouncements (Ministerial Determinations) out of the IRP must be checked against prevailing conditions at the time.

b) To reduce costs and maximise benefits, the plan must not only be assessed on the basis of least financial cost but should be considered in the broader economic context.

c) South Africa is an energy intensive country. Electricity forms a large portion of industrial customers cost of production. To ensure low cost electricity, a balance will have to be found between the need to create jobs in energy sector and creating and sustaining jobs in downstream energy intensive indrustries.

4.4. Please identify areas where additional research would improve understanding of the costs, benefits and/ or risks of the policy/bill/regulations/other

The following studies have been recommended to better inform the huge transition post 2030 path. These will equally be applicable for the transition in the short term.

i. Detailed analysis of gas supply options (international and local) to better understand the technical and financial risks and required mitigations for a renewable energy and gas dominated electricity generation mix post 2030.

ii. Detailed analysis of the appropriate level of penetration of renewable energy in the South African national grid to better understand the technical risks and mitigations required to ensure security of supply is maintained during the transition to low carbon future.

iii. Detailed analysis of other clean energy supply options (Coal, Hydro, Nuclear and others) including their associated costs and economic benefits.

iv. Detailed socio-economic impact analysis of the communities impacted by the decommissioning of old coal fired power plants that would have reached their end of life.

For the purpose of building SEIAS body of knowledge please complete the following:

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