



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

FREQUENTLY ASKED QUESTIONS (FAQs)

1. INTEGRATED ENERGY PLAN (IEP)

1.1 What is the IEP? What are the expected outputs from the IEP?

The IEP is a multi-faceted long term energy policy which has multiple objectives:

- The IEP should guide the development of energy policies and where relevant set the framework for regulations in the energy sector.
- The IEP should guide the selection of appropriate technologies to meet energy demand (i.e. what types and size of new power plants and refineries should be built and what prices should be charged for fuels).
- In so doing the IEP should therefore also guide the investment and development of energy infrastructure in South Africa.

The IEP is therefore a national plan which describes the recommended future energy roadmap for South Africa.

At the very least it will contain the following information:

1.2 **Estimated Demand per fuel type per sector:** Estimated demand for Electricity; Petroleum products (Petrol, Diesel, LPG, Jet Fuel); and based on information available Biomass per major demand sector (commercial, industrial, residential, transport.).

1.3 **Proposed technologies and energy resources to meet demand:** Based on the projected demand for different energy services, the optimal energy mix will be recommended. The energy mix will be a combination of secondary energy technologies (supply-side and demand-side); and primary energy resources/energy carriers/fuels that ensure that the future energy demand of the country is met.

For the recommended energy mix, the following information will be provided:

- The primary energy resources usage.
- Total production of each secondary energy source/carrier/fuel.
- Water usage.
- Emissions.
- Technology costs.

1.4 Proposed policy interventions to supply future energy technology roadmap: In order to ensure effective implementation of the plan and realisation of the recommended energy mix, certain policy interventions may need to be put in place as will be required. Possible policy interventions that should be put in place to support this roadmap will be provided.

1.5 Why was the IEP not developed before the IRP (did DoE put the cart before the horse)?

The IEP is an umbrella plan which, amongst other factors should guide policy development in South Africa, set the framework for regulations and also inform the selection of technologies to meet future energy demand. The IEP in scope therefore covers the entire energy sector and considers all elements of the energy value chain.

The Integrated Resource Plan (IRP) can therefore be viewed as a subset of the IEP in that 1) it considers only the future demand and supply of electricity and proposes capacity expansion plan to ensure that the energy demand needs are met in the most effective way.

It is indeed correct that the IEP should have been developed before the IRP and, therefore, provided the framework within which the IRP should be developed. However, the electricity supply challenges that the country is experiencing, meant that ensuring security of supply for electricity has to be prioritised. For this reason Cabinet decided to expedite the development of the IRP in order to address immediate electricity supply challenges that the country is still facing. In addressing these immediate challenges it was natural that long-term issues be considered as well.

However given the substantial scope of the IEP and the fact that a multitude of factors need to be considered, development of the IEP is a much more extensive process in that the availability of the energy resources must be taken into consideration and demand for **all** fuels must be included.

1.6 In the absence of an IEP what informed the IRP?

The IRP only considers the electricity supply sector, and is in effect only “optimised” for the electricity sector. Because the energy sector is largely impacted by other policies outside of the energy sector such as Climate Change

Policies, Water Infrastructure Policies, etc. The impact of these policies were taken into consideration during the development of the IRP. These same policies will also be taken into consideration in the IEP as many have not changed since the publishing of the IRP. The IRP was also informed by overarching national objectives such as job creation, localisation and economic development. The same aspects will inform the IEP – the only difference is that forecasts which have subsequently changed since the development of the IRP such as GDP forecasts by National Treasury will be effected into the IEP.

1.7 Will future iterations of the IRP be informed by the IEP?

Yes, the plan is to have the IEP inform all the sub-plans such as the IRP, the Liquid Fuels roadmap and the Gas plan.

1.8 How quickly will the IEP be completed?

Work on the IEP has started and the methodology for developing the IEP has been determined and a framework for evaluating different options has been developed and will be shared at the energy planning colloquium. The majority of the work which still needs to be done is the development of the models and the collation and configuration of supporting data. The Department estimates that it will take approximately another 6 months to collate the relevant data, and develop the models, and conduct the modelling exercise to test different scenarios and test cases. From that point another month would be taken to evaluate the results, and re-run the models through an iterative process. It is only after that point that recommendations can be made and a draft report tabled at Cabinet. So in essence it is estimated that starting from 1 April 2012, it will take a further ten (10) months for a draft to be finalised before being tabled in Cabinet.

1.9 What assurance is there that public/sector opinions/comment will be taken into consideration?

The energy planning colloquium is the first stakeholder forum wherein input from the public will be considered. The presenters at the colloquium include private companies, organisations, local government, subject matter experts and technical experts. The various sessions have been setup to ensure that focused issues are presented and discussed. On Day 2 of the colloquium, the sessions will be more interactive and the Department will share with stakeholders some of the work which they have done with the objective of obtaining the relevant input. Once the draft IEP has been tabled in Cabinet, another round of stakeholder consultations will take place. The plan at that stage will be to conduct workshops in each of the nine provinces. The planned stakeholder engagement approach is a rigorous and all-inclusive one.

1.10 Who will be responsible for the final content of the document?

The Department of Energy is responsible for the final content, however input from other government departments, industry, experts and the general public will be taken into consideration.

1.11 What process outside the colloquium will DoE follow in completing the IEP?

Refer to FAQ #1.9.

1.12 Will there be other opportunities for the public to be involved in the IEP process?

Yes, after Cabinet has approved the draft IEP public stakeholder engagement workshops will be held to solicit inputs from the public. Refer also to FAQ #1.9

1.13 How often will the Department of Energy develop the IEP?

As outlined in the National Energy Act, 2008 the Minister is empowered to develop the IEP and review it on an annual basis. The extent of the revisions from one year to the next will be informed by key developments affecting the supply and demand dynamics within the energy sector (e.g. new policies, new technologies, impacts of global events) which have occurred during the preceding year.

1.14 Which technologies will be included in the IEP?

All known current and future technologies will be included in the energy model provided that there is sufficient data available which allows them to be configured within the energy model. This includes information such as capital and operating costs, lead times, efficiency and operational life. For future technologies where there are still uncertainties in terms of cost and the penetration rates of the technologies into the market – assumptions on the learning rates will be made based on similar technologies that have been introduced in the past. Additional studies may also need to be conducted to determine the learning rates and penetration rates of these future technologies.

1.15 Will renewable energy technologies be included in the IEP?

Refer to FAQ # 1.14

1.16 Will the IEP include nuclear?

Refer to FAQ #1.14

1.17 Is the IEP going to include Project Mthombo (New refinery at Coega)

All known current and future technologies that convert crude oil, natural gas, coal and biomass or any other feedstock to produce petroleum products will be included in the energy model. The characteristics of these technologies (including capital and operating costs, lead times, efficiency, operational life, emission factors and water usage) will be captured into the model. Given the estimated future demand for liquid fuels, the model will select the most optimal mix of such technologies to meet future liquid needs. Multiple factors, such as security of supply, potential for job creation, emissions and costs will be taken into consideration.

The proposed crude oil refinery at Coega (also known as Project Mthombo) is one such technology and, therefore, will be included as an option in the model. However, before the full analysis has been conducted, it is premature to state whether or not it will form part of the proposed future energy mix based on the given set of criteria.

Also refer to FAQ #1.14

1.18 Will IEP consider synfuels?

Syfuel technologies (i.e. GTL and CTL) will also be included as technology options in the model.

Refer to FAQ # 1.14 and 1.17

1.19 Will IEP take into consideration Clean Fuels? And if so, how?

Clean fuels specifications specify the maximum allowable particulates in motor fuels (petrol and diesel). The impact of clean fuels will be considered in a number of ways:

- The total reductions in the emission of greenhouse gases and equivalent will be quantified.
- The capital costs and operating costs for green field refineries will be considered.
- The capital costs and operating costs for upgrading existing refineries will also be considered.
- However, the required investments in logistics (pipelines, rail tank cars and storage tanks) infrastructure and the downstream market (i.e. fuel pumps at retail stations) will not be determined as part of the IEP but, will be determined as part of the 20-year liquid fuel roadmap.

1.20 Will the impact of jobs in the energy sector be considered in the cost of providing energy?

Where information is available, the number of jobs that can be created with the construction and commissioning and deployment of particular energy technologies will be provided. However, secondary and tertiary job creation is often location-specific and because, the IEP will not specify the location of technologies, generic assumptions will have to be made.

1.21 Will energy efficiency targets be considered in the IEP, and how?

Yes energy efficiency targets will be included. These will be considered as test cases within the model where predetermined criteria for the minimum efficiency of technologies will be imposed.

1.22 Will rural energy and off-grid electricity be considered?

Based on the availability of data and studies which have been conducted, demand for all energy services (including that in rural areas) will be estimated. At this stage this data is sparse. Data on off-grid electricity is currently sparse but, isolated pilot studies have been conducted.

1.23 Will peak oil be considered in the IEP?

The IEP will take into consideration future projected costs of oil based on a combination of published reports from well-renowned organisations such as the International Energy Agency and the Energy Information Administration. Projections for ranges of medium and long-term oil prices that are conducted by the National Treasury will also be used as guidance for the long-term outlook of oil. The projected prices will, therefore, inform the viability of crude oil and refining technologies as an option in the IEP. However, without having compared this to other options it is not possible to tell what the outcome will look like.

1.24 Given that the last IEP was developed in 2003, why has it taken the Department so long to come up with another IEP?

The IEP 2003 identified a number of factors that needed to be resolved in order to ensure an effective plan was put in place. Some of the critical elements are as follows:

- A) The main constraints with the development of any IEP are availability of accurate and relevant energy data which should ideally also be fairly recent. The collection of data in South Africa is a general challenge and the provision and availability of energy data is no exception.

Since then the Department has promulgated the Regulations for the Provision of Energy Data that compels stakeholders in the energy sector to provide data that will be used to inform the technical process.

- B) In order to ensure that the impacts of existing government policies are taken into consideration, extensive inter-government consultations have been held.
- C) A policy analysis framework which enables for conflicting policy impacts to be addressed was also developed. This policy analysis framework also allows for different criteria such as emissions, water usage and social development to be accounted for in the IEP development. An approach which allows quantitative as well as qualitative analysis has been chosen.

Other issues which have also posed challenges are as follows:

- A) Lack of internal capacity within the Department has also played a role in delaying the development of the IEP. However, over the last few years a process of restructuring the Energy Planning component and capacitating it with skilled staff has been taking place.
- B) There were also issues of transparency associated with previous models which were used, such as applicability to the South African environment. Most models are developed for the specific markets in which the energy plans are being developed and in some instances technology information is hard-wired within the models.

A model which is data-driven, i.e. technologies and energy carriers as well as their characteristics can be specified by the user if needed to be chosen. Secondly, the model code and equations must also be visible for public scrutiny. All these elements needed to be considered and we believe that the model we have chosen addresses these shortcomings.

However, there are still several elements which the model will not address such as optimizing on both supply and demand. The model which has been selected takes demand as an exogenous input and optimizes on supply. However, the other elements which have been addressed are significant strides in addressing issues identified from the previous IEP process.

1.25 Will the IEP address the issue of logistics (transportation and storage) within the petroleum industry?

The IEP will not address the issue of logistics within the petroleum industry. This will be addressed in the 20-year liquid fuel roadmap an enforceable policy through legislation.

1.26 Will the IEP specify the location of new power plants and refineries?

The IEP will make high-level recommendations on the locations of power plants or refineries. However, feasibility studies would still need to be conducted to ensure the viability of recommended locations. The IEP will make recommendations on the technologies should be put in place.

1.27 What is the Planning horizon envisaged in the IEP?

The National Energy Act stipulates that the IEP must have a planning horizon of no less than 20 years. Therefore, the IEP should cover at least 20 years. The IEP 2012's planning horizon is 20 years but, this may be amended during the annual revision of the IEP to be more.