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Earthlife Africa Johannesburg
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www.earthlife.org.za

Non Profit Organisation (NPO) No. 004-159-NPO

RESOLUTION

Date: 25 July 2015
Earthlife Africa Jhb Branch Meeting of 25th of July 2015, Braamfontein, South Africa.

It is hereby resolved that Earthlife Africa Johannesburg will be represented by Adrian Pole Attorney's (and to whomever attorneys, counsel, senior counsel Adrian Pole Attorney's may contract) in litigation on nuclear matters. This specifically includes litigation on nuclear procurement, international agreements with nuclear vendors and or foreign governments, environmental impacts assessments on nuclear power stations, or any other such related matter.

Earthlife Africa Jhb mandates Tristen Taylor (ID 7606175084083) and/or Makoma Lekalakala (ID 6409280377083) to sign legal papers concerning the above and act in the organisation's name in the event of litigation on nuclear matters.

Signed

Tristen Taylor
Treasurer
Earthlife Africa Jhb
ID: 7606175084083

Makoma Lekalakala
Branch Coordinator
Earthlife Africa Jhb
ID: 6409280377083

Dominique Doyle
Secretary
Earthlife Africa JHB
ID: 8205110281083

Nerisha Baldevu
Membership Secretary
Earthlife Africa Jhb
ID: 6911210150084

S.I.F.N.

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SOUTHERN AFRICAN FAITH COMMUNITIES' ENVIRONMENT INSTITUTE

The Green Building, Bell Crescent, Westlake Business Park, Westlake, Cape Town, South Africa PO Box 106, Kalk Bay, 7990 info@safcei.org.za +27 21 701 8145

RESOLUTION

DULY PASSED ON THE 2ND DAY OF OCTOBER 2015

WHEREAS:

- The Government of the Republic of South Africa has indicated that by the end of 2015 it intends to complete a procurement process to select a strategic partner to build a fleet of nuclear reactors that could cost between R400 billion and R1 trillion;
- SAFCEI is concerned about the environmental, safety and socio-economic risks associated with the procurement, construction, operation and decommissioning of a fleet of nuclear reactors, and in particular impacts on poor and disadvantaged community members;
- No transparent system for the procurement of the nuclear power plants has been established; and
- SAFCEI and the public have been denied the opportunity to participate in various decision-making processes relating to the procurement of the nuclear power plants.

AND WHEREAS:

- On or about 21 September 2014 the Minister of Energy signed, and the President of the Republic of South Africa on or about 20 September 2014 authorised the Minister to sign, an Agreement with the Government of the Russian Federation on Strategic Partnership and Cooperation in the fields of Nuclear Power and Industry (the Russian IGA), and tabled or caused this agreement to be tabled on or about 10 June 2015 before Parliament under section 231(3) of the Constitution;

- The Minister of Energy tabled or caused to be tabled before Parliament under section 231(3) of the Constitution a further Agreement signed on 25 August 1995 with the Government of the United States of America concerning Peaceful Uses of Nuclear Energy (the USA IGA);

- The Minister of Energy tabled or caused to be tabled before Parliament under section 231(3) of the Constitution a further Agreement signed on 8 October 2010 with the Government of South Korea concerning Cooperation in the Peaceful Uses of Nuclear Energy (the South Korean IGA);

- South Africa's Department of Energy announced on the 14th of July 2015 (and in various other statements) that the procurement of 9.6GW of new nuclear plants (6 to 8 new plants) is going ahead and will be completed soon;

- The Minister of Energy has not, in consultation with NERSA, made any determination in accordance with sections 34(1)(a) and (b) of the Electricity Regulation Act 4 of 2006 (ERA) that new electricity generation capacity derived from nuclear technology is needed, or the amount thereof;

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- The Minister of Energy has not, in consultation with NERSA, exercised her powers in terms of s 34(1)(e) of the ERA, read with s217 of the Constitution, to require that the procurement of such nuclear new generation capacity must take place in terms of a procurement system that is fair, equitable, transparent, competitive and cost effective;

- The Minister and/or government have made various decisions to facilitate, organize, commence and/or proceed with the procurement of nuclear new generation capacity in the absence of such determinations and decisions, and in the absence of an open, transparent and otherwise constitutionally compliant system of procurement;

- The Minister has failed to respond to any correspondence addressed to her in this regard.

AND WHEREAS:

SAFCEI believes that the decisions to enter into and/or table the Russian, USA and South Korean IGAs as s231(3) agreements were unlawful and unconstitutional, and that the procurement process undertaken without the establishment of a regulatory system of procurement, due public participation or open access to data is also unlawful and unconstitutional.

WHEREFORE IT IS RESOLVED THAT:

SAFCEI's Executive Committee Members (Chairperson and Vice Chairperson), duly authorised thereto by SAFCEI's Management Committee members, resolve that:

(1) Based on the advice of Counsel, SAFCEI will institute High Court proceedings in its own interest and in the public interest seeking *inter alia* an order:

- Declaring the abovementioned decisions and actions unlawful and unconstitutional, and reviewing and setting aside these decisions;
- Declaring that prior to the commencement of any procurement process for nuclear new generation capacity and/or the exercise of any powers under section 34(2) of the ERA in relation to the procurement of nuclear new generation capacity, the Minister and NERSA are required in consultation, and in accordance with procedurally fair public participation processes, to have determined that:
  a. new generation capacity is required and that the electricity must be generated from nuclear power and the percentage thereof, in terms of sections 34(1)(a) and (b) of the ERA); and
  b. in terms of section 34(1)(e), read with section 217 of the Constitution, the procurement of such nuclear new generation capacity, must take place in terms of a procurement system that is fair, equitable, transparent, competitive and cost-effective, which must be specified;

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- Declaring that the Minister's and/or Government's decisions to facilitate, organise, commence and/or proceed with the procurement of nuclear new generation capacity (including, at least, the decision by the Minister's and/or Government on or about May 2015 to appointment a bid specification committee or persons tasked with drawing up the bid invitation, and all related decisions subsequent thereto) and/or any decisions by the Minister to exercise any powers under section 34(2) of the ERA in relation to the procurement of nuclear new generation capacity, prior to the taking of the ERA nuclear requirement decision and the ERA nuclear procurement system decision, are unlawful and unconstitutional, and are reviewed and set aside; and
- Further and/or alternative just and equitable relief.

(2) Adrian Pole Attorneys be and is hereby instructed to make application on behalf of SAFCEI to an appropriate division of the High Court for appropriate relief (including on an urgent or semi-urgent basis as advised by counsel);

(3) Elizabeth Jane McDaid (ID: 6208090038087) is authorized to attest the founding and/or confirmatory application required for the High Court application, and also to attest to any other affidavits and sign any other documents required for the prosecuting of the High Court application proceedings, and;

(4) SAFCEI's operational funds will not be expended on such actions, and that fundraising initiatives will generate funding from elsewhere, and;

(5) SAFCEI's Management Committee is to be kept regularly updated of where the process is, financially as well as legally, to ensure a close oversight.

Signed:

.....

(Tahirih Matthee, Chairperson, SAFCEI. ID: 5909220138082)

.....

(Christine Jardine, Vice-Chairperson, SAFCEI. ID: 5709270040083)

S.I.F.M.

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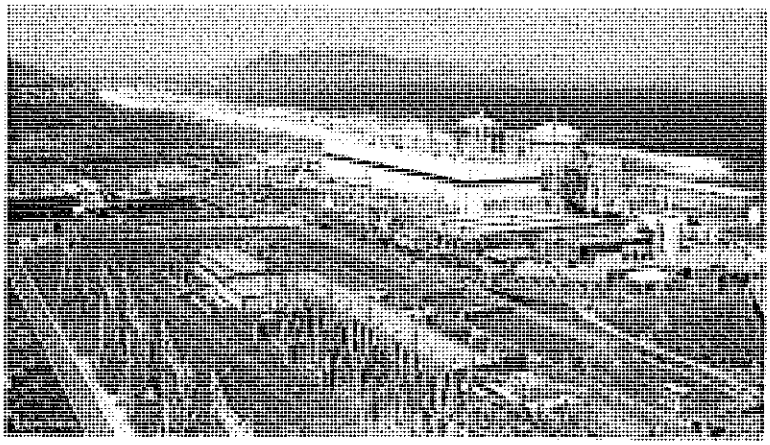
PL3

CREAMER MEDIA'S ENGINEERING NEWS

http://www.engineeringnews.co.za/article/there-is-only-one-irp-necsa-exec-asserts-2014-10-30

There is only one IRP, Necsa exec asserts

PUBLISHED 30 OCT 14 BY: TERENCE CREAMER - CREAMER MEDIA EDITOR



South African Nuclear Energy Corporation (Necsa) group corporate services executive Ambassador **Xolisa Mabhongo** stressed on Thursday that South Africa currently had only one Integrated Resource Plan (IRP) for electricity, the IRP 2010, and that the IRP Update constantly referred to by nuclear opponents was merely a draft that was in the process of being revised.

Speaking during a debate on the future of nuclear energy in South Africa, co-hosted by EE Publishers and the Daily Maverick, Mabhongo said government was not ignoring important government documents, as had been suggested by opponents, and that a new IRP was yet to be published.

Necsa and Mabhongo are integral to the "preparatory" work currently being undertaken under the leadership of the Department of Energy ahead of what government says will be a fair and transparent nuclear procurement programme.

Prior to the debate, the Democratic Alliance's **Lance Greyling** accused the African National Congress (ANC) of rewriting the conclusions of the government's own energy plans as outlined in the IRP Update, published in 2013.

The draft update suggested that new nuclear either be delayed or possibly even abandoned if it was unable to meet specific cost thresholds.

The IRP 2010, by contrast, envisaged the introduction of 9 600 MW of new nuclear capacity by 2030 – a figure reiterated in media releases following the signing of recent nuclear framework agreements with the Russians and the French.

The ANC's Parliamentary Portfolio Committee on Energy chairperson **Fikile Majola** responded to Greyling by saying that the IRP Update would "not see the light of day".

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Mabhongo indicated that a new IRP would be released in due course and that it would deviate from the draft IRP Update. He also stressed that nuclear was merely part of a mix that included renewable energy, coal, gas and hydropower.

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Towards a New Power Plan

Energy Research Centre

University of Cape Town

For the National Planning Commission

April 2013

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Executive Summary

Many of the assumptions in the 2010 Integrated Resource Plan (IRP) are now out of date and no longer valid. These include the anticipated demand growth, and data on technology and fuel availabilities and costs. If the 2010 IRP continues to be used as a basis for investment decisions, it will result in a sub-optimal mix of generation plants, and higher electricity prices. It is therefore critical that the IRP assumptions are revised and that a new plan is developed.

This report was commissioned by the National Planning Commission as part of its on-going mandate to provide independent research and advice. President Zuma stated on 11 May 2010:

> *The mandate of the commission is to take a broad, cross-cutting, independent and critical view of South Africa, to help define the South Africa we seek to achieve in 20 years time and to map out a path ta achieve those objectives. The commission is expected to put forward solid research, sound evidence and clear recommendations for government.*

This report should not be seen as an alternative power plan. Rather it is an input to the public debate around our electricity future. The Ministry of Energy has legislative responsibility to produce IRPs for the sector. This report looks at key assumptions in the IRP 2010-2030 and the impact that updating some of these assumptions will have on a new power plan. The new assumptions considered are lower demand, updated investment costs of renewable and nuclear technologies and the availability of natural gas from LNG, shale, West Coast Ibhubezi and a pipeline from Northern Mozambique.

The modelling assumes that carbon emissions will follow the 2025 peak, plateau and decline trajectory implied by our Copenhagen pledges . The limit for the power sector is set to 275Mton/annum in 2025, and starts to decline from 2035 to 225Mton in 2040 and 150Mton in 2050.

Electricity demand growth has been much lower than forecast; it is still below 2007 levels, and future growth is expected to be lower than projected in the IRP 2010 (base assumption). Contributing factors to this lower projected growth include demand responses to higher electricity prices, structural changes in the economy and, perhaps in the future, increased investment in distributed generation as alternative supply options become economic. In 2030, demand is expected to reach 341 TWh (50 GW peak) compared to the 454 TWh (67.8 GW peak) of the IRP. Nuclear costs are higher at 7000$/kW, compared to the 5000$/kW used in the IRP. Renewable costs reflect those of the REIPPP programme. The cost of natural gas starts lower than in the IRP but is escalated with an index to the oil price, and several options for gas supply are allowed.

The New Power Plan, based on updated assumptions, has an installed capacity in 2030 of around 61GW instead of 89GW anticipated in the 2010 IRP. Due to the lower demand growth and the committed investment plans (Medupi, Kusile, Ingula and the 2011 renewable energy ministerial determinations) very little further investment is needed before 2025. New capacity between 2025 and 2030 is dominated by gas with solar thermal, wind and imported electricity meeting the remaining requirements. No new nuclear comes online before 2040 and it is economical to bring imported hydro online as soon as possible. Even if much lower costs are assumed for nuclear, plus much higher demand growth, the earliest that nuclear might be required is 2029.

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However, many of the low emission alternatives to nuclear capacity (imported hydro, wind and natural gas) can be installed at lower cost, with shorter lead times, in smaller increments, thus reducing the risk of overbuild. The consideration given to flexible options allows rigorous testing of a proposed plan against various outcomes rather than just planning doggedly for one outcome. This approach has a great deal of merit especially in the context of economic and demand uncertainty.

The New Power Plan presented in this report is work in progress. It is not a definitive alternative to the IRP2010. The preferred power generation options shown are outputs of the TIMES model and are obviously highly dependent on input parameters and assumptions. We have accordingly also modelled alternative scenarios with higher demand, lower nuclear costs, more optimistic renewable costs, and competitive shale gas options. It is possible that after five years of stagnation in demand growth, that there might be a sharp rebound. South Africa's growth and development aspirations, as spelt out in the National Development Plan, would imply higher electricity demand growth. A number of scenarios are thus presented with higher growth assumptions.

One area not adequately dealt with in this modelling is the need for a steady stream of renewable energy investments in order to sustain a local RE industry. The model includes renewables over the 30-year period – but there are years where no renewable investments are required, which might make it difficult for local manufacturing and local developers to survive, unless they can grow export markets.

The modelling also does not examine in detail immediate supply security issues. Eskom's current fleet of coal plants (and the Koeberg nuclear plant) are experiencing high levels of unplanned outages (i.e. they are breaking down more and more). As a result current reserve margins are thin. Further plant breakdowns, plus delays in the commissioning of the Medupi and Kusile coal-fired power stations, as well as the Ingula pumped storage scheme, will almost certainly result in rolling black-outs. It is thus urgent to commission new generation capacity that can be built quickly. Gas is one the few options available to us that can provide substantial base and mid-merit power within a 3-year period. That might result in short-term, nominal over-capacity but will provide a window for Eskom to catch up on much needed maintenance on its existing generators.

In brief, this report is intended to stimulate debate around our future power sources. The results suggest that nuclear investments are not necessary (at least not in the next 15 to 25 years), nor are they cost-effective based on latest cost data. Gas options should be explored more intensively and hydro projects from the region should be fast-tracked.

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Print this page

Updated IRP may raise share of nuclear power

Sep 2, 2015 | Carol Paton

Integrated resource plan could make case for over 9.6GW while dirty coal stations set to close

A NEW version of the government's integrated resource plan (IRP), which projects future electricity demand and suggests options for the energy mix, will be published by March, and is likely to include an even higher share for nuclear energy than the 9.6GW already planned.

There has been some controversy over the status of the last update to the IRP, which was done in 2013 and was never adopted by the Cabinet. It is widely believed that the reason the 2013 version was shelved was that it downgraded the role of nuclear energy.

Now, a 2015 update to the IRP is in process, with nuclear energy likely to be enhanced further. The key motivation, say government officials, is to meet climate change mitigation targets agreed to in global climate change negotiations in 2009.

Deputy director-general of the Department of Energy Ompi Aphane said in an interview on Tuesday that the new IRP "will take into account the latest demand projections; complete an update on cost assumptions and also take cognisance of determinations already made by the energy minister under the Electricity Regulation Act".

Mr Aphane said what would change would be the pace at which new generation was rolled out.

It also now seemed unlikely the lives of Eskom's ageing coal power stations would be extended through retro-fitting, he said. While this matter had not been settled at the time IRP 2010 was done, more clarity existed now.

The implication is that additional new generation capacity will be required as these stations are to be retired beginning in 2018 and moving on towards 2050.

"Given that we have a climate change commitment to fulfil, it should not surprise people that the viability of a much larger nuclear contribution in the long term should be tested alongside all other options," he said.

Energy Minister Tina Joemat-Pettersson, who on Tuesday briefed Parliament's portfolio committee on energy on several intergovernmental agreements on nuclear co-operation, also underlined the significance of the IRP update.

"We need to take account of all these challenges," she said.

Ms Joemat-Pettersson said climate change mitigation commitments meant nuclear energy was a necessary part of SA's energy mix. Just how much was required, and when, depended on the outcome of the IRP process, she said.

Ms Joemat-Pettersson also committed to a full affordability study on SA's proposed 9.6GW procurement of nuclear energy.

"I've committed myself to an affordability study. That doesn't mean we won't have nuclear ... Our energy mix must contain nuclear energy or otherwise we must renounce our commitments at COP15 (2009 climate talks)."

SA's mitigation pledge includes a commitment to reduce emissions by 34% on a "business as usual" scenario by 2020 and a 42% deviation below the "business as usual" emissions growth trajectory by 2025.

Ms Joemat-Pettersson said that the affordability study and funding model would be shared with the committee but would be tabled as classified — and closed to the public and media — until procurement was complete. This

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was to protect sensitive commercial information.

Chairman of the energy committee Fikile Majola said that he was sympathetic to the idea that "information that is difficult to handle" could be tabled confidentially. But, he said, the committee wanted real involvement in decisions. "We don't want to have a discussion that is just a formality and cannot impact on the process ... As the department does things — such as the financing — we can be brought in. When there is an agreement that will bind the country, we must be brought in," he said.

Ms Joemat-Pettersson's commitment follows the publication three weeks ago of an African National Congress discussion paper which called for "a full, transparent and thorough cost-benefit analysis of nuclear power" as part of the procurement process. The document also called for the integrity of the energy planning system to be improved "through finalisation of the IRP".

Asked on Tuesday about a decision not to extend the life of its coal plants as they age, Eskom said this rested with the Energy Department and would be decided by the IRP process. It said most applications to environmental affairs to postpone emissions standards for its coal plants had in the past been approved.

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Media Release

Russia and South Africa sign agreement on strategic partnership in nuclear energy

Pretoria, 22 September 2014 - On September 22, 2014 in Vienna, on the margins of the 58th session of the International Atomic Energy Agency General Conference, the Russian Federation and the Republic of South Africa signed an Intergovernmental Agreement on Strategic Partnership and Cooperation in Nuclear Energy and Industry. On behalf of the Russian Government the document was signed by the Director General of State Corporation "Rosatom" Mr Sergey Kirienko, on behalf of the South-African Government – by the Minister of Energy Ms Tina Joemat-Pettersson.

The Agreement lays the foundation for the large-scale nuclear power plants (NPP) procurement and development programme of South Africa based on the construction in RSA of new nuclear power plants with Russian VVER reactors with total installed capacity of up to 9,6 GW (up to 8 NPP units). These will be the first NPPs based on the Russian technology to be built on the African continent. The signed Agreement, besides the actual joint construction of NPPs, provides for comprehensive collaboration in other areas of the nuclear power industry, including construction of a Russian-technology based multipurpose research reactor, assistance in the development of South-African nuclear infrastructure, education of South African nuclear specialists in Russian universities and other areas.

The joint implementation of this programme implies a broad localization of equipment for the new NPPs, which will provide for brand-new development of various areas of South-African high-tech industries, contribute to creation of a new highly skilled workforce and will allow South-African companies to further participate in Rosatom's projects in third countries.

"I am convinced in cooperation with Russia, South Africa will gain all necessary competencies for the implementation of this large-scale national nuclear energy development programme. Rosatom seeks to create in South Africa a full-scale nuclear cluster of a world leader's level – from the front-end of nuclear fuel cycle up to engineering and power equipment manufacturing. In future this will allow to implement joint nuclear power projects in Africa and third countries. But from the

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very start this cooperation will be guided at providing the conditions for creation of thousands of new jobs and placing of a considerable order to local industrial enterprises worth at least 10 billion US dollars", Rosatom's Director General Mr. Sergey Kirienko noticed.

According to Ms Tina Joemat-Pettersson, "South Africa today, as never before, is interested in the massive development of nuclear power, which is an important driver for the national economy growth. I am sure that cooperation with Russia will allow us to implement our ambitious plans for the creation by 2030 of 9,6 GW of new nuclear capacities based on modern and safe technologies. This agreement opens up the door for South Africa to access Russian technologies, funding, infrastructure, and provides a proper and solid platform for future extensive collaboration."

Enquiries: Mr Zizamele Mbambo, DDG Nuclear Energy at +27 79 529 5646,
Zizamele.mbambo@energy.gov.za
Mr Xolisa Mabhongo, Group Executive Corporate Services at +27 72 359 9025,
Xolisa.mabhongo@necsa.co.za

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180 comments

SA signs far-reaching nuclear deal with Russia

MONEY Monday 22 September 2014 - 6:16pm

0:00 / 6:58

22 September - eNCA talks to Xolisa Mabhongo from the SA Nuclear Energy Corporation.

MEDIA GALLERY

JOHANNESBURG - South Africa has signed a deal for the construction of nuclear power plants with the Russian government's atomic energy corporation.

Russia's atomic energy agency said Monday it will provide up to eight nuclear reactors to South Africa by 2023 in a $50-billion strategic partnership between the two countries. One reactor costs around $5 billion, according to the Itar-Tass news agency.

Tina Joemat-Pettersson, minister of energy and Sergey Kirienko, the Director General of the State Atomic Energy Corporation ROSATOM signed the agreement on the sidelines of the 58th session of the International Atomic Energy Agency General Conference in Vienna.

The agreement will underpin the country's nuclear power plant construction programme with new nuclear power plants featuring Russian VVER reactors with total installed capacity of up to 9,6 GW (up to 8 nuclear power plant units).

The agreement will cover joint nuclear power plant construction and also research and education collaboration.

According to a statement by ROSATOM, these will be the first nuclear power plants based on Russian technology to be built on the continent.

"I am sure that cooperation with Russia will allow us to implement our ambitious plans for the creation by 2030 of 9.6 GW of new nuclear capacities based on modern and safe technologies. This agreement opens up the door for South Africa to access Russian technologies, funding, infrastructure, and provides proper and solid platform for future extensive collaboration," Joemat-Pettersson said in the statement.

It is estimated that the agreement will generate $10bn of local procurement, according to Kirienko.

The government has targeted an increase in the electricity reserve margin from 1% currently to 19% by 2019 in its medium strategic framework, the implementation plan for the National Development Plan.

According to Joemat-Pettersson, "South Africa today, as never before, is interested in the massive development of nuclear power, which is an important driver for the national economy growth."

TRENDING

1. UPDATE: Durban taxis back on the road
2. Government to investigate Volkswagen South Africa
3. WATCH: Celebs respond to DJ Black Coffee's dance challenge
4. Soldiers and their wives killed at DRC army base
5. Volkswagen turns to Porsche boss to steer it out of crisis

FULL COVERAGE

Conflict in the DRC

Soldiers and their wives killed at DRC army base

Xenophobic violence sweeps across SA

Joburg school raises funds to teach refugee children

FIFA Offside?

FIFA to give Swiss prosecutors access to key Valcke emails 'with conditions'

Gang violence: A thorn in SA's side

Community remembers teen who was raped and killed

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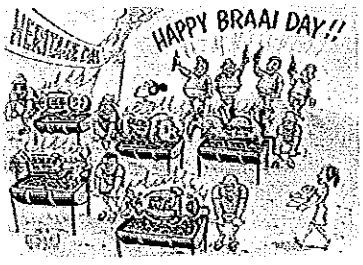

Currencies	Commodities	JSE Indices
US Dollar	13.7564	0.1198

Data delayed by at least 15 minutes.

In an interview on eNCA with Xolisa Mabhongo, permanent ambassador to the UN in Vienna and member of the executive at the South African Nuclear Energy Corporation (NECSA) he said it is an initial preparatory phase for a new nuclear build in SA and similar agreements are expected with other vendor countries.

He also said that the figure mentioned of $40-$50 billion is figure in which the local industry will participate and there are various models of financing nuclar programme.

He also mentioned that one of the things South Africa has to do is reduce dependence on coal to reduce carbon footprint to meet targets regarding climate change.

- eNCA

GB Pound	20.9483	0.2157
Euro	15.3359	0.2711

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Data delayed by at least 15 minutes.
Data provided by iNET BFA

180 comments

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mpgarza2012 @mpgarza2012 from Twitter 25 Sep
@uketukeman @Cecalli_Helper #Fukushima Lesson #1, according to #NuclearVillage > I N C R E A S E the Secrecy! pic.twitter.com/THHdO1q70t

Like Reply

uketukeman @uketukeman from Twitter 25 Sep
@mpgarza2012 @Cecalli_Helper <(_ _)> Thank you very much.

Like Reply

Jarryd Lyth from Facebook Sep 24, 2014
Nuclear energy is not the way!

Like Reply

Molahlehi Otlfant from Facebook Sep 24, 2014
The government is bringing Chernobyl for a large sum. Some connected individuals stand to gain. The arms deal commission will probably have to commence with nuke deal soon.

Like Reply

David Dee from Facebook Sep 24, 2014
Well I guess Russia has got experience in Nuclear Disasters! Well done mr minister! Let's see how the ANC can screw this "cry the beloved country" up even more!

Like Reply

R Mike Longden-Thurgood Sep 24, 2014

In my first post I had forgotten about the Kyshym disaster, where plutonium-239 was being separated for use in the USSR's atom bombs. The liquid radioactive contents of a storage tank dried out due to a crack in it which wasn't repaired, so the water was able to evaporate from it and it eventually overheated. Unfortunately the contents included a lot of ammonium nitrate, which is quite an effective explosive. The explosion spread the radioactive contents of the tank over a wide area. It did indeed cause serious problems with the environment But it happened and there were a lot of deaths in the population who were caught in the subsequent cloud of radioactivity because they weren't immediately evacuated, but only after a few days following the disaster. Much too late. An excellent article about the disaster will be found in Wikipedia.

The Communist regime was noted for its lack of care, irresponsibility and complacency where safety and the environment were concerned. Plus secrecy, of course. The RBMK reactor type was another example of this attitude - see my first post.

I don't think the present Russian govt is so carefree in its attitude towards nuclear safety.

Like Reply

R Mike Longden-Thurgood Sep 24, 2014

According to a comments made by a spokesman from the Dept of Energy in the 7.30 am SABC news, Sept.24, he said that what has been signed is a co-operative agreement with the Russians (or Rosatom?), not an actuel contract for the construction of the VVER nuclear reactors.

PL 8

Print this page

Nuclear deal with Russia to stay secret

25 Sep 2014 | Carol Paton

Nuclear co-operation agreement between SA and the Russian Federation will not be made public, says top government official involved in the negotiations

THE nuclear co-operation agreement between SA and the Russian Federation signed on Monday will not be made public, says a top government official involved in the negotiations.

The government has made it clear it intends to forge ahead with the procurement of 9,600MW of nuclear power, despite public concern over the costs and persistent rumours that a secret deal has been made with the Russians.

On Monday, the Department of Energy and Russian state-owned nuclear company Rosatom issued a startling joint statement which implied that an agreement had already been reached that SA would procure nuclear power plants from Russia. The statement quoted Energy Minister Tina Joemat-Pettersson as saying that co-operation with Russia "will allow us to implement our ambitious plans for the creation by 2030 of 9,600MW of new nuclear capacities based on modern and safe technologies".

But the triumphalist statement was later clarified by the Department of Energy and the Nuclear Energy Association of SA (Necsa): the re was no procurement deal but "a country-to-country framework agreement" which is a necessary precursor to a commercial relationship over nuclear power. Similar framework agreements are to be signed with other nuclear vendor countries.

An agreement with the French government has been concluded and will be signed next month. The government "is also in discussions towards concluding an intergovernmental agreement with the Chinese government, also aimed at finding ways of supporting S A 's nuclear new build programme," a later Department of Energy statement said.

An agreement with South Korea was signed in 2011.

But the agreements will not be made public. Asked during an interview on Tuesday to provide a copy of the agreement, group executive for corporate services at Necsa Xolile Mabhongo, who was a leading member of the SA delegation, said it "will be presented to the normal government structures such as the Cabinet's energy security committee".

The Cabinet subcommittee is the body charged with authority over SA's nuclear programme. It was constituted by President Jacob Zuma in June and is chaired by him. Like all Cabinet subcommittees, its work and proceedings are not made public. However, officials have confirmed in recent weeks that the committee's technical groundwork for nuclear procurement "is very advanced".

The framework agreements with the various other nuclear vendor countries would also not need to be ratified by Parliament, Mr Mabhongo said.

"These agreements are essentially framework agreements entered into by the minister of energy and her counterparts.

"Once the procurement process starts in earnest I'm sure there will be another (country-to-country) agreement at some stage," said Mr Mabhongo.

But opposition political parties and constitutional rights lobbyists disagree that there is no necessity to make the framework agreements public, or that they be ratifies by Parliament.

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Executive director of the Council for the Advancement of the South African Constitution Lawson Naidoo said: "International treaties and agreements have to be processed and ratified by Parliament."

The council, and Democratic Alliance MP Lance Greyling, had written to Ms Joemat-Pettersson on Tuesday requesting sight of the agreement.

Mr Naidoo said it was impossible to evaluate Mr Mabhongo's claim that the agreement with Russia was merely "a framework agreement" without binding power without seeing the agreement first. "If we can't see it then we don't know what sort of animal it is. This is why (the council) has written to ask for it."

The fear that a secret deal has already been done with Russia is being fuelled by several incidents. Frequent meetings have taken place between Mr Zuma and Russian President Vladimir Putin, of which the most recent in August has not been fully explained.

Since August 2010, Mr Zuma and Mr Putin have held six individual meetings. Additional official tours to Russia by the previous minister of energy Ben Martins and the African National Congress (ANC) and its Progressive Business Forum — essentially a fundraising body — have strengthened diplomatic and political ties. During this visit in October last year the ANC signed a memorandum of understanding with the governing United Russia party.

In August this year Mr Zuma flew to Russia on "a trade visit" interspersed with "rest periods". However, no trade officials or ministers accompanied him.

Last November, Rosatom hosted a nuclear forum in Johannesburg after which state radio service the Voice of Russia announced that SA and Russia had reached an agreement for the procurement of eight Russian nuclear reactors.

Shortly before this announcement, in October last year, a version of a draft agreement between SA and Rosatom was obtained by Business Day. While similar in many respects to other international co-operation agreements — and an earlier one signed with France — the draft included a veto clause, in which SA's government undertook to seek agreement from Russia on the inclusion of any third country in a commercial nuclear arrangement.

Asked whether this clause remained in the deal signed on Monday, Mr Mabhongo said it did not.

"One country could be chosen (as vendor) or a combination. SA has to negotiate the best deal for itself. (A veto agreement) is not what has happened," he said.

The increasing closeness between Russia and SA has been accompanied by rumours in political circles since March last year that the ANC has entered into a political agreement on the procurement with Russia. ANC secretary-general Gwede Mantashe said this week that "the ANC did not procure" on behalf of the government.

Mr Mabhongo said it was expected that the procurement process would start in earnest "in the first half of next year".

Despite the confidence of both South African and Russian officials that the procurement of nuclear power is a dead certainty, several hurdles remain in the way of procurement.

The first is the finalisation of the government's Integrated Resource Plan (IRP), a 20-year energy plan which models electricity demand, predicts costs of generation and recommends the appropriate energy mix. While an updated IRP was produced for comment in December last year, a final document has not been submitted to the Cabinet.

A big outstanding policy question in the IRP is the role of nuclear power. While the 2010 version of the plan said that SA should plan for 9,600MW of nuclear power by 2030, the updated version recommended holding off on nuclear power generation for several more years and not pursuing it at all if cost went above a threshold of $6,500/kW.

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The Department of Energy said last week, in reply to questions, that the IRP was being updated and would be submitted to the Cabinet.

A second hurdle is the prescriptions of the procurement process. Both the constitution and the Public Finance Management Act specify that all public procurement be done in accordance with "a system that is fair, equitable, transparent, competitive and cost-effective".

Nuclear vendors other than Rosatom, and political parties and civil society groups, are expected to keep a watchful eye on the procurement process. Vendor companies interviewed this week said they were unconcerned about the co-operation agreement reached with Russia, as they expected similar ones to be concluded soon with their own governments.

Prof Anton Eberhard of the University of Cape Town's Graduate School of Business said that public procurement processes would have to measure up to constitutional benchmarks.

"While the minister of energy can certainly procure nuclear power under the power she has according to the Electricity Regulation Act, it would obviously need to be consistent with the Public Finance Management Act," he said.

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SA nuclear project 10 years late - Necsa

Nov 27 2014 09:36 Thamsanqa Magubane, The Witness

Durban - The nuclear project is not an unnecessary expense that will drain the country's finances for years to come, leaders of the project said on Wednesday.

In fact, the project is about 10 years late, argued Zizamele Mbambo, the deputy director-general for nuclear energy in the Department of Energy, and Phumzile Tshelane, CEO of the South African Nuclear Energy Corporation (Necsa).

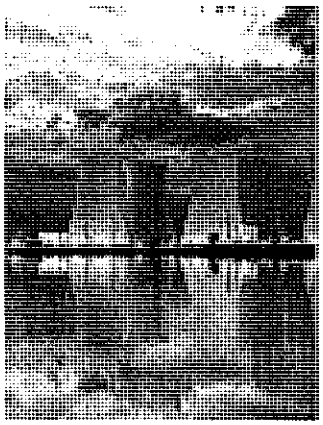
The two spoke openly to The Witness, sister publication of Fin24, at the end of a 10-day marathon session where South African nuclear experts met with representatives from countries that could be suppliers in the nuclear programme.

China, France, South Korea and the US had been hosted by the Department of Energy at the Champagne Sport Resort since 15 November.

This is the same venue where the Russian delegation was hosted a few weeks ago.

READ: Secret nuclear deal talks held in KZN

Security at the venue was strict. Members of the South African nuclear team were not allowed to carry their cellular phones into the auditorium where the presentations were being made. They left them in brown envelopes marked with their names just outside the venue.



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Mbambo said the vendor parade had been excellent. "We know what South Africa wants and this was a chance to find out what was out there ... Now we know what is available we will go back to our principals with the information," Mbambo said.

He said this was a pre-procurement process and they would use the information presented to draw up a plan that will be a road map to the procurement process.

Mbambo dismissed allegations that the project could cost R1trn, saying the government was still busy with the cost analysis.

READ: More nuclear meetings to be held

He also denied allegations that the Russian team were in the lead to partner in the project. He said this incorrect perception had been created after it emerged that the government had signed a co-operation agreement with the Russian government.

Tshelane said: "We had signed two other agreements before that and we signed two others after that, but a spotlight was shone on this one."

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are kept on. We need this project. In fact we are about 10 years late.

"There should be a clear indication of what we are doing. We want to create an industry that is self-sustaining ... We are not just building power stations." he said.

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The government had a golden opportunity with the Pebble Bed reactor research, but as always, politics got in the way!
Hamba ANC!

97 6 7 comments(hide)

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The pebble bed didn't work well enough.
The government was right to drop the project and not spend anymore money on it.

25 19

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30 January 2015

The Honourable Minister Joematt-Pettersson

Re: National Nuclear Power Development Programme – Planning and Procurement of 9.6GW of nuclear power stations

We are instructed by Earthlife Africa – Johannesburg (ELA-JHB) and the South African Faith Community Environmental Institute (SAFCEI).

Our clients have noted with deep concern recent press statements indicating that the signing of various Inter-Governmental Framework Agreements on Nuclear Co-operation *'poves the woy for establishing a nuclear procurement process.'* [1] Notwithstanding this, our clients are encouraged by other statements acknowledging that South Africa needs to engage in a national dialogue about our energy future.[2]

Our clients are concerned that signing Inter-Governmental Framework Agreements on Nuclear Co-operation in the context of evolving energy and resource planning processes, and before establishing a system for nuclear energy procurement, is premature.

While our clients note that Government has set out its vision for the development of a nuclear energy programme in its 2008 Nuclear Energy Policy and that the Integrated Resource Plan for Electricity 2010-2030 (IRP 2010)[3] states that the Department of Energy (DOE) accepted the policy option to commit to a full nuclear fleet of 9.6GW, our clients are very concerned that the planning

[1] See for example: http://www.world-nuclear.org/info/country-profiles/countries-o-s/south-africa/
[2] http://www.sanews.gov.za/south-africa/sa-needs-engage-energy-future
[3] GNR400 of 6 May 2011: Electricity Regulations on the IRP 2010-2030.

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and legislative framework for nuclear procurement is currently incomplete. In particular, our clients are concerned that:

- The Draft 2012 Integrated Energy Plan (draft IEP) was published for public comment in 2013,[4] but has not yet been finalised. In addition, the enabling provisions of the National Energy Act have not yet commenced[5];
- The IRP 2010 indicates that it is *'living plan that is expected to be continuously revised and updated as necessitated by changing circumstances. At the very least, it is expected that the IRP should be revised by the [DOE] every two years, resulting in a revision in 2012'.*[6] An IRP 2010 *Update Report 2013* (IRP 2010 Update) was subsequently published on the DOE's website for public comment.[7] Stakeholders were notified that a final draft IRP 2010 Update would be submitted to Cabinet for final approval by March 2014, whereafter the approved document would be promulgated and published in the Gazette.[8] To our clients' knowledge, the IRP 2010 Update has not yet been approved, nor has it been promulgated and published in the *Gazette;*
- While Electricity Regulations on New Generation Capacity[9] have been promulgated under the Electricity Regulation Act,[10] these regulations exclude new generation capacity derived from nuclear power technology. To date no Electricity Regulations on New Generation Capacity dealing with new generation capacity derived from nuclear power technology have been promulgated;
- While the Electricity Regulation Act[11] empowers the Honourable Minister (in consultation with the National Energy Regulator) to make a determination relating to new generation requirements and the types of sources from which electricity must be generated, no determination has been made relating to new generation capacity relating to nuclear energy; and
- While the Electricity Regulation Act[12] empowers the Honourable Minister (in consultation with the National Energy Regulator) to require that new generation capacity must be established through a tendering procedure that is fair, equitable, transparent, competitive and cost effective, and which provides for private sector participation, to our clients' knowledge no such tendering procedure has been established.

Our clients have been actively participating in the nuclear energy debate, and have made substantive submissions in the IRP 2010, draft IEP and IRP 2010 Update processes. Concerns raised by ELA-JHB regarding the IRP 2010 include: that the commitment to a nuclear fleet as indicated in the Revised Balance Scenario (RBS) was imposed on (rather than being a result of) the integrated resource planning process; that the costing for nuclear energy was severely unrealistic (in respect of both construction and capital costs); that the load factor was grossly overestimated; and that the IRP 2010 itself acknowledged that further research was required on the full costs relating to specific technologies (including nuclear) around the costs of decommissioning and managing waste (in the case of nuclear specifically spent fuel).[13] Our clients are of the view that any nuclear fleet procurement decision based on the IRP 2010 would be fatally flawed and irrational.

Both ELA-JHB[14] and SAFCEI[15] also made substantive representations regarding the IRP 2010 Update.

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[4] GN512 of 24 July 2013: Draft 2012 Integrated Energy Planning Report.
[5] Act 34 of 2008. Section 6 deals with integrated energy planning, but is not yet in force (it will come into effect on a date to be proclaimed by the President in the *Gazette*).
[6] Ibid, paragraph 1.1 (GNR400).
[7] http://www.doe-irp.co.za/content/IRP2010_updatea.pdf
[8] http://www.doe-irp.co.za/
[9] GNR.399 of 4 May 2011.
[10] 4 of 2006.
[11] Section 34(1)(a) and (b).
[12] Section 34(1)(e).
[13] Ibid, paragraph 7.11.
[14] Dated 7 February 2014.
[15] Dated 6 February 2014.

Amongst other things, concern was expressed that the IRP 2010 Update was premised on inaccurate or inadequate costing. For example, while nuclear construction cost estimates were increased in the IRP 2010 Update by 40% to $S800/KW, ELA-JHB pointed out that these cost estimates were still about 40% lower than most current cost estimates of $8000/KW. ELA-JHB's representations were supported by a 6 February 2014 report by Prof. Steve Thomas[16] entitled *'The South African government's Integrated Resource Plan for the electricity industry'*, a copy of which is attached to this letter for your information. Our clients were, however, encouraged that your Department acknowledged that there have been a number of developments in the energy sector in South Africa and Southern Africa since the IRP 2010 was promulgated, and that the electricity demand outlook has changed markedly from that expected in 2010. In addition, the IRP 2010 Update report highlighted that predicted energy demand in 2030 was lower than originally anticipated, and that various uncertainties suggested that an alternative to a fixed capacity plan (as espoused in the IRP 2010) was a more flexible approach taking into account the different outcomes based on changing assumptions (and scenarios) and looking at the determinants required in making key investment decisions. The IRP 2010 Update suggested in particular that the nuclear decision could possibly be delayed, and that the revised demand projections suggest that no new nuclear base-load capacity is required until after 2025 (and for lower demand not until at earliest 203S). The IRP 2010 update also indicated that there were alternative options (such as regional hydropower) that could meet requirements, and that it was thus unnecessary to prematurely commit to a technology that may be redundant if the electricity demand expectations do not materialise.

Our clients also note that the National Development Plan 2030 *Our future – make it work*[17] (NDP) acknowledges that while a decision on nuclear energy use has been taken in principle:

> ...South Africa needs a thorough investigation on the implications of nuclear energy, including its costs, financing options, institutional arrangements, safety, environmental costs and benefits, localisation and employment opportunities, and uranium enrichment and fuel-fabrication possibilities. While some of these issues were investigated in the IRP, a potential nuclear fleet will involve a level of investment unprecedented in South Africa. An in depth investigation into the financial viability of nuclear energy is thus vital.[18]

Our clients are very concerned that Government appears to have commenced with the preparatory phase for the procurement of 9.6GW of nuclear energy notwithstanding the deficiencies in the IRP 2010, and in a context where both the draft IEP and IRP 2010 Update have not yet been finalised.

Our clients are of the view that any decision to procure 9.6GW of nuclear power stations (with estimated costs ranging from R400 billion to R1 trillion[19]) will have a direct and potentially significant detrimental impact on all South African citizens, including future generations (electricity users will ultimately bear the costs of such unprecedented expenditure). Any decision to commit to the procurement of 9.6GW of nuclear power stations could prove calamitous should nuclear technology in the future become redundant or economically unviable due to (amongst other things) electricity demand expectations not materialising or should the cost of electricity generated by nuclear power plants prove unaffordable for electricity users. Our clients request an opportunity for them (and other stakeholders) to make representations to you before any decision on procurement of a nuclear reactor fleet is made.

In the absence of a nuclear energy procurement system that is fair, equitable, transparent,

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[16] Prof. Thomas is a Director of Research and Professor of Energy Studies at Greenwich University, United Kingdom. Prof. Thomas is an expert in nuclear energy costing and economics, with more than 30 years' experience as a researcher in energy policy. He has consulted to the International Atomic Energy Agency and to the South African government.

[17] https://www.dac.gov.za/sites/default/files/NDP%202030%20-%20Our%20future%20-%20make%20it%20work_0.pdf

[18] NDP, p172.

[19] http://mg.co.za/article/2014-11-10-state-powered-up-over-nuclear-but-not-everyone-buys-it

competitive and cost-effective,[20] and in the context of an energy and resource planning process that is incomplete and/or outdated, any decision on procurement of 9.6GW of nuclear power stations would be premature, irrational and unconstitutional. Given the imperative of cost-effective procurement in section 217 of the Constitution, up-to-date appraisals of financial viability, affordability and economic risk are relevant considerations that must be considered for lawful administrative action on the issue of nuclear procurement in terms of section 6 of the Promotion of Administrative Justice Act.[21]

National dialogue is indeed required on the need for, financial viability of and economic risks associated with the procurement of 9.6GW of nuclear power stations before a final decision is made. Our clients respectfully submit that the energy, planning and regulatory processes should be completed/updated and a nuclear energy procurement system established before Government commences even with the preparatory phase for procurement of a fleet of nuclear reactors.

In the circumstances, our clients respectfully request that you:

(a) Confirm that no decision on procuring a fleet of nuclear reactors will be taken without affording our client (and other stakeholders) an opportunity to make representations on (amongst other things) the need for, financial viability of and economic risks associated with procuring a fleet of nuclear reactors;
(b) Provide clarity on when the IEP and IRP 2010 Update will be finalised;
(c) Confirm that no nuclear procurement process will commence until such time as the IEP and IRP 2010 Update processes have been completed;
(d) Confirm that a nuclear energy procurement system that complies with section 217 of the Constitution will be established before any further steps are taken to procure a fleet of nuclear reactors; and
(e) Confirm that our client (and other stakeholders) will be afforded an opportunity to make representations on any proposed nuclear energy procurement system before it is finalised and implemented.

Yours sincerely

Adrian Leonard Pole

[20] As required by section 217 of the Constitution of the Republic of South Africa, 1996.
[21] Act 3 of 2000.

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The South African government's Integrated Resource Plan for the electricity industry

Professor Steve Thomas, Business School, University of Greenwich

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1. General principles of electricity system planning

From a consumer point of view, the objective of any new investment in generating capacity should be to minimise the long-term overall cost of supply of electricity to consumers ***subject*** to meeting all requirements on security of supply and meeting all environmental objectives. Power plants are operated in a so-called 'merit order'. This requires that, as demand fluctuates on a daily basis, the plant with the lowest operating costs (excluding the fixed costs, for example of construction) not already in operation is brought on-line when demand increases, and when demand falls, the plant with the highest operating costs then in operation is the first to be taken off-line. This means that on a day-to-day basis, the cost of meeting demand from a given set of power plants is minimised. The fixed costs must be paid whether or not the plant is operated so play no part in deciding the daily operating regime. The plants at the top of the merit order are not necessarily the cheapest overall, as the merit order only takes account of operating costs.

As a result of merit order operation, a new power plant will have implications for the operating regime of the existing power plants. This means that when deciding on new capacity, the impact on the cost of operating the whole system should be considered. For example, if a new base-load plant is built, adding it to the system will mean that all plants below it in the merit order will be used somewhat less than if the new plant was not built. It also means that building new capacity should not only be considered when old plant is retired and needs to be replaced or when demand has grown sufficiently to require new capacity. It may be cheaper to retire and replace a relatively new plant even though it has plenty of operating life left.

This means that, in theory, when deciding whether to build new capacity, a computer simulation of the cost of operating the whole electricity system over the whole life of the plant should be carried out for each of the options to see which of the options produces the lowest overall cost of meeting demand over the next few decades.

Traditionally, electric utilities examined only the option of building new generating capacity. Integrated Resource Planning (IRP), sometimes known as Least Cost Planning (LCP), built on this by bringing in the option of examining demand-side measures. These methodologies date back about 30 years and were used widely in the USA in the 1980s. The rationale for including demand side measures was that consumers were largely indifferent to how their energy needs were met, provided they met the legal standards for example, for environmental impacts. Their concern was to get a reliable service for the lowest cost. In practice, the two major differences this made to utility planning was that, for the first time, demand side measures were given equal weight to supply side measures on the grounds that consumers cared about the size of their bill not the cost of a kWh. If a consumer used fewer kWh, even if the cost per kWh was more (to finance demand side measures), they would be happy if the overall bill was lower. The other major change was that utilities could not pursue high cost options ahead of lower costs options because of some internal bias in favour of the high cost option. In the USA, use of IRP revealed that utilities were pursuing nuclear power ahead of cheaper options at considerable cost to consumers.

The use of IRP, which was generally seen as successful, declined after the 1980s as electricity systems were increasingly reformed to run on competitive criteria. In a competitive system, it is assumed that market forces will achieve the same as IRP because in a perfectly competitive market, companies that choose expensive options incur high costs, lose market share and, ultimately, go out of business. Whilst this logic was appealing, results with the competitive model were problematic, with spectacular failures in California and Brazil. Even in the UK, the main pioneer of markets and often taken as the model for reforms, the government and the regulator both agreed in 2010 that

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the competitive market would not give reliability and would not allow the UK to meet its long-term goals for reductions in greenhouse gas emissions. As a result, a process of Electricity Market Reform was started, which, logically, will lead over time to a return to a fully planned electricity system.[1]

South Africa abandoned its attempt some years ago to create competitive electricity markets in favour of retaining a planned system with a strong element of public ownership. In a planned electricity system, IRP methodology remains an appropriate way to plan an electricity system.

2. The nuclear policy background

The South African government chose to impose a programme of new reactors with a total capacity of 9,600 MW to be on-line by 2030 on the IRP. It was assumed that there would be six reactors each of 1,600 MW and the French design, the European Pressurised Water Reactor (EPR), which has this capacity, is used for illustration. It appears no decision on technology has been taken yet and following the revision to the IRP in November 2013 halving the forecast nuclear capacity for 2030, it not clear when a call for tenders would be opened.[2] The first reactor was previously expected on line in 2022 with the next five following at 18 month intervals. This programme was then described as follows[3]:

> 'A commitment to the construction of the nuclear fleet is made based on government policy and reduced risk exposure to future fuel and renewable costs.'

The update of November 2013 suggests that nuclear capacity will not be needed before 2025. The need for a decision on nuclear will not be before 2015 and if other options are pursued such as the Inga hydro-electric project, or a more rapid development of solar options, the need for a decision could be after 2017.

On costs, there is ambiguity. The version of the IRP that predated the November 2013 update assumed nuclear construction costs would be 40 per cent higher than assumed in the original IRP2010, although, the new higher estimate still appears far too low. This new higher estimate is not revised in the November 2013 update. Note that if we assume a general inflation rate of 3 per cent for Europe, the region of origin of the EPR, this would increase nominal prices by about 10 per cent in three years so the original cost estimate of $4,200 from 2010 would be about $4,600 in 2013 money

Yet in the report summary (p 6), it is stated: 'to account for the uncertainties associated with the costs of renewables and fuels, a nuclear fleet of 9,000 MW is included in the IRP' and on p 18, it is stated: If the nuclear costs should turn out to be higher than assumed, this could increase the expected price of electricity. This can be mitigated with a firm commitment to 3,000 MW of nuclear.'

It is hard to see the logic in this. If estimated nuclear power costs are so uncertain that they can be increased by 40 per cent in a short period of time, this suggests nuclear power is highly risky and not a sensible choice to reduce risk. There is no evidence that the costs can be fixed by committing to order just two reactors. Most international tenders are for at least two reactors and real costs are continuing to rise not least as lessons from Fukushima are fed into reactor designs, no vendor is going to fix the price for a decade forward at a price that might well not cover its costs. It is not clear what impact the reduction in forecast nuclear needs and the delay in the start of the programme

[1] For more details on Electricity Market Reform, see http://www.decc.gov.uk/en/content/cms/meeting_energy/markets/electricity/electricity.aspx

[2] Q2 2012 Areva CI Earnings Conference Call – Final.

[3] http://www.energy.gov.za/IRP/irp per cent20files/IRP2010_2030_Final_Report_20110325.pdf p 22

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would have on the assumption that a large commitment would mitigate any price increases for nuclear power.

However, most relevant is the earlier call for tenders of 2008. Thomas wrote[4]:

> 'By mid-2007, Eskom was targeting construction of 20,000 MW on new nuclear capacity by 2025, although completion of the first unit had slipped to 2014. It expected a construction cost of $2,500/kW. In January 2008, Eskom received two bids in reply to its call for tenders from November of the previous year for 3,200 to 3,400 MW of new nuclear capacity in the near term and up to 20,000 MW by 2025. One bid was from Areva for two EPRs (plus 10 more for the long-term) and the other from Westinghouse for the three AP1000s (plus 17 more in the long term).[5]Both claimed their bids were "turnkey," but whether they were really turnkey in the fixed price sense or whether they were simply for the whole plant is not clear. It was later reported that the bids were for around $6,000/kW – more than double the expected price.[6] It was therefore no surprise when Eskom abandoned the tender in December 2008 on the grounds that the magnitude of the investment was too much for it to handle.[7] This was despite the willingness of Coface, the French government's loan guarantee body, to offer export credit guarantees and despite Areva's claims that it could have arranged 85 per cent of the financing.[8] While Eskom is still claiming it expects to order nuclear plants, it seems unlikely that it will be able to finance these. *Engineering News* reported that the issue was the credit rating of Eskom[9]: 'In fact, ratings agency Standard & Poor's said on Thursday that South Africa's National Treasury needed to extend "unconditional, timely guarantees" across all Eskom's debt stock if it hoped to sustain the utility's current BBB+ investment-grade credit rating. The National Treasury was still to announce the details of the package. The Eskom board had, as a result, decided to terminate the commercial procurement process to select the preferred bidder for the construction of the Nuclear-1 project.'

A number of points emerge from this experience:

- The South African government has a history of unrealistic expectations on nuclear power that predate this experience with a decade wasted trying to commercialise the Pebble Bed Modular Reactor;
- The bids in the previous tender of 2008 (updated for inflation to 2012 prices to $6750/kW) were about 16 per cent higher than the cost assumed in the updated IRP and about 50 per cent higher than the level originally assumed in the IRP2010. It is incomprehensible why the South African government went to international consultants to get an estimate of the cost of a nuclear power plant when it had recent experience likely to be a much more reliable estimate of costs, the results of its earlier tender, than a consultant's cost estimate;
- The price agreed for Hinkley Point in November 2013 of about $8000/kW suggest that nuclear prices have gone up significantly faster than inflation since 2008;

[4]http://www.boell.de/downloads/ecology/Thomas_economics.pdf p 44
[5]Nucleonics Week 'Eskom Gets Bids for Two EPRS, Three AP1000s, Bigger 'Fleet,'' February 7, 2008.
[6]Nucleonics Week 'Big Cost Hikes Make Vendors Wary of Releasing Reactor Cost Estimates' Sep 11, 2008.
[7]Nucleonics Week 'Eskom Cancels Tender for Initial Reactors' December 11, 2008.
[8]The Star 'Nuclear Bid Had Funding – AREVA' January 30, 2009.
[9]Engineering News 'Eskom Terminates Nuclear 1 Procurement Process, but SA Still Committed to Nuclear' December 5, 2008.

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- The issue of finance is not considered as an uncertainty in the IRP. Only four years ago in 2008, a programme of two reactors proved to be unfinanceable yet it is not even questioned that a programme of six reactors might not be financeable.

The South African government is not alone in being misled by uncritically accepting over-optimistic cost forecasts made by nuclear proponents. In its White Paper on nuclear power published in 2008, the British government assumed an EPR could be built in the UK for £2bn. In 2013, it agreed to a deal with EDF to build two EPRs in the UK at a cost of £8bn. Over that five year period, general inflation was about 3 per cent per annum and would only have increased the original estimate of £2bn to about £2.3bn.

3. Issues with IRP methodology

There are a number of issues that can make application of IRP methodology difficult.

3.1 Strategic decisions

Prior to use of IRP methodology, many expensive decisions were justified on strategic grounds, often bogus. IRP methodology does increase transparency for strategic decisions but given that the value of strategic objectives are often difficult to quantify, for example, what is the value of reducing dependence on an unreliable fuel supplier, strategic decisions cannot generally be integrated into the IRP methodology but must be imposed on the options. This is of particular relevance to South Africa's IRP 2010 in which the government chose to override cost considerations and force its preferred nuclear programme of adding 9,600 MW of nuclear capacity by 2030.

The IRP stated[10]:

> 'Three policy choice options were identified:
>
> a) Commit to the nuclear fleet as indicated in the RBS;
>
> b) Delay the decision on the nuclear fleet indefinitely (and allow alternatives to be considered in the interim);
>
> c) Commit to the construction of one or two nuclear units in 2022-4, but delay a decision on the full nuclear fleet until higher certainty is reached on future cost evolution and risk exposure both for nuclear and renewables.
>
> The Department accepted option 4.3a, committing to a full nuclear fleet of 9 600 MW. This should provide acceptable assurance of security of supply in the event of a peak oil-type increase in fuel prices and ensure that sufficient dispatchable base-load capacity is constructed to meet demand in peak hours each year.'

In short, the option to choose to build 9,600 MW of new nuclear capacity did not emerge from the IRP process, it was imposed upon it. Imposing options is not wrong *per se*, but if a strategic objective is being pursued, it would be logical that checks be made to confirm that the option chosen is indeed the cheapest way to meet that objective. This does not appear to have been done in the case of the decision to impose 9,600 MW of nuclear capacity on the plan.

In December 2013, the South African government revised the IRP2010 again and cut back the nuclear forecast for 2030 by half to 4.86GW of nuclear power, equivalent to three reactors of the

[10] http://www.energy.gov.za/IRP/irp per cent20files/IRP2010_2030_Final_Report_20110325.pdf p 11.

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most likely choice, the French European Pressurised water Reactor (EPR) supplied by Areva. The report stated[11]:

> 'The revised demand projections suggest that no new nuclear base-load capacity is required until after 2025 (and for lower demand not until at earliest 2035) and that there are alternative options, such as regional hydro, that can fulfil the requirement and allow further exploration of the shale gas potential before prematurely committing to a technology that may be redundant if the electricity demand expectations do not materialise.'

3.2 Demand projections

IRP methodology is heavily dependent on demand projections. If the forecast is too high, there will be over-investment leading to higher than necessary energy prices and if it is too low, security of supply will be jeopardised. The IRP is based on an assumption that peak demand will grow by about 75 per cent between 2010 and 2030, an annual rate of about 3 per cent.

While it is intuitively sensible to assume that with many South Africans consuming very little electricity, that demand will grow as living standards increase. However, South Africa already consumes a comparable amount of power per capita as Western European countries because of the existence of large amounts of electric intensive industry such as metal manufacture. Whether it is appropriate for South Africa to support electric intensive industry, which may contribute relatively little to GDP, employment and government income is a political decision. However, if some of this industry, which receives very cheap power, was relocated to other countries, the welfare of South Africans, as measured by their electricity consumption could increase in a scenario of low demand growth. More aggressive demand side measures could also achieve the same. The government acknowledges that its demand forecasts are high[12]:

> 'The forecast demand is at the higher end of the anticipated spectrum. The risk is thus that the actual demand turns out to be lower than forecast. In this case, the effect would be limited to over-investment in capacity. Security of supply is not jeopardised because of the conservative assumptions regarding energy efficiency and thus demand reducing measures.'

The IRP update of November 2013 belatedly acknowledges the unreliability of the demand forecasts that its earlier nuclear plans were based on and identifies that aluminium smelters are now relocating outside South Africa because of high power costs. Given that aluminium consumes a large proportion of South Africa's electricity but contributes little to GDP and to employment, it is not clear that this relocation will have much impact on the South African economy.

3.3 Data requirements

The basis for IRP is that all options should be considered and this places a huge burden to collect accurate demand forecasts and cost data, such as fuel cost and construction cost for all the options so they can be evaluated fairly. Inevitably, in some cases and particularly decades into the future, costs are going to be speculative and subject to a wide margin of error, perhaps sufficient to invalidate the results of the exercise. The electricity industry and government ministries have shown little capability to forecast these variables with any degree of accuracy even only a few years forward. So while in theory, this is the ideal way to plan investment in power plants, in practice, the data requirements mean the results are not always reliable.

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[11] Nuclear Intelligence Weekly 'South Africa: Paring back nuclear plans' December 6, 2013, p 3

[12] http://www.energy.gov.za/IRP/irp per cent20files/IRP2010_2030_Final_Report_20110325.pdf p 18

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Again, this does not invalidate the exercise but it does mean results dependent on highly uncertain variables must be treated with care. In this paper, we examine in detail the cost assumptions made for nuclear power, including the value chosen and the level of uncertainty associated with these variables.

3.4 Other approaches

A number of other measures of the attractiveness of various options are sometimes introduced and these are discussed in more detail in Annex 1. The Levelised Cost of Energy (LCOE) attempts to calculate the average cost of power over the life of the plant but takes no account of system consideration. The South African government has introduced a Cap on the expected construction cost of nuclear power plants as a filtering device rather than as a decision-making tool.

4. The nuclear cost estimates in the IRP

Under conventional cost accounting procedures, the majority of the cost of a kWh of nuclear electricity is accounted for by the fixed costs associated with the construction of the plant. These costs are fixed in the sense that they are incurred regardless of whether the plant is operated. This fixed cost has three main components:

- The 'overnight' cost of construction. This excludes the cost of finance (i.e., as if the plant was built 'overnight' but includes the first fuel charge (a relatively small cost);
- The cost of finance. Typically, any large investment is financed by a mixture of borrowing (debt) and use of own resources or sale of shares to a third party (equity). The interest rates should be expressed net of inflation (i.e., 'real' rates). Debt is typically lower cost than equity but financiers are often unwilling to provide finance unless the borrower is prepared to put up some of their own money. If the real cost of borrowing is 8 per cent and borrowing accounts for 60 per cent of the finance and the rest is made up of equity at a real cost of 12 per cent, the Weighted Average Cost of Capital is 9.6 per cent (8*0.6 + 12*0.4);
- The load factor. The load factor (capacity factor in US parlance) is the output of the plant in kWh, typically over a period of a year or over the life of the plant, expressed as a percentage of the output the plant would have produced had it operated uninterrupted at full power for the entire period. The more output the plant produces, the more thinly the fixed charges can be spread.[13]

Other factors are either much smaller (not insignificant) for example, the operating costs, including fuel or the way in which conventional accounting deals with them makes their contribution small, for example, waste disposal and decommissioning costs. The operating costs are not dealt with here in much detail but the waste disposal and decommissioning costs are covered.

4.1 Impact of general inflation

One of the problems of comparing nuclear costs is that they frequently refer to different cost year bases and if distortions due to the impact of general price inflation are to be avoided, some correction is needed, although over 2-3 years, the impact is generally small and within the margin of uncertainty between forecasts. Nuclear construction costs are determined in a global market and the relevant rate of general inflation is that applying in Europe and USA. This fluctuates from year-to-year, but a reasonable assumption is that general price inflation is 3 per cent per year. Table 1

[13] For a more detailed account of the economics of nuclear power, see http://www.boell.de/downloads/ecology/Thomas_economics.pdf

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shows the impact of inflation at this level over up to 10 years. This shows that to convert a price of 8 years ago to current levels would require that it be multiplied by 1.23.

Table 1 Impact of general inflation on nominal prices

Year	Correction factor for inflation
1	1.0
2	1.03
3	1.061
4	1.093
5	1.126
6	1.159
7	1.194
8	1.23
9	1.267
10	1.305

4.2 Construction cost

The construction cost is central to the cost of power from a reactor. Conventionally, construction cost is quoted as the 'overnight' cost (excluding finance) in dollars per kW of capacity. So, a reactor costing $5,000/kW with a capacity of 1,500 MW would have a total overnight cost of $7.5bn. Clearly there are still a number of problems of comparison: cost estimates from different years may be difficult to compare because of general price inflation; currency exchange rates can fluctuate by up to 20 per cent over quite a short period of time; and site specific costs might differ, for example, the transmission connection cost might differ and the cost of construction will depend on the coolant method and the local geology. Differences in cost of up to 20 per cent might be accounted for by such factors. Nevertheless, the cost per kW does allow the cost of reactors of different sizes installed in different countries to be compared on a reasonably fair basis.

It is sometimes claimed that costs in developing countries will be significantly lower than in developed countries because of lower labour costs. This is not valid. The labour needed is often highly skilled and specialised and has to be brought in from outside the country and has to be paid internationally competitive rates. For example, for the Olkiluoto plant, the workforce is drawn from about 20 countries and this has led to problems of communication. Finland is a much richer country with a skilled workforce and has substantially more nuclear experience than South Africa.

When the Nuclear Renaissance was being first discussed a decade or more ago, the nuclear industry confidently predicted Gen III+ reactors could be built for $1,000/kW. In retrospect, this claim was never feasible but it did convince governments like those of the USA and UK to start efforts to recommence nuclear ordering. By the time the Olkiluoto bid was placed, the price was about $2,300/kW. Estimate costs continued to rise and as US utilities began to plan their new reactors, their cost estimates were around $5,000/kW. From 2008 onwards, a number of calls for tender were held, for example, in Canada, South Africa and the UAE and the lowest bids, apart from the Korean bid for UAE were at least $6,000/kW.

The updated Integrated Resource Plan[14] assumes a base case of an overnight construction cost of $5,800/kW. The cost is described as 'overnight' as it includes no finance charges during the construction period (i.e., the plant was built overnight) to avoid distortions cause by different companies having different finance costs; is per kW to allow fair comparisons between reactors of different sizes; and is quoted in US dollars to avoid distortions from fluctuations in local exchange

[14] http://www.doe-irp.co.za/content/IRP2010_updatea.pdf

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rates. The plan implies that if the expected cost is more than $6,500/kW, the nuclear programme would not proceed. Recent information on costs of nuclear power plants suggests that the estimate of $5,800/kW is hopelessly unrealistic and if South Africa proceeds to a tender, the bids received will far exceed the upper limit of $6,500/kW and the tender will have to be abandoned as was the case in 2009 when the lowest bid received, reported to be about $6000/kW, proved so high as to be unfinanceable. If we assume general inflation of 3 per cent per year, a bid of $6000/kW in 2008 money would be equivalent to about $6750/kW in 2012 money. The lack of expertise on nuclear power is apparent in the material produced by the South African Department of Energy and in Annex 3, we examine a recent call for tenders which illustrates this lack of expertise.

The simplest policy course now would be to immediately abandon the nuclear aspirations as unachievable and concentrate on options that are able to meet South Africa's energy policy priorities. However, if the government wants to obtain a realistic view of the construction cost of nuclear power plants, it should commission an independent study of the construction cost. This should be based on well-documented and verifiable costs or cost estimates. Historic evidence suggests that the reliability of indicators of construction cost, in descending order of reliability is:

- The most recent outturn cost for completed plants. These should be costs that are independently verified;
- Bids to calls for tenders for capacity. These bids are based on what vendors believe costs really will be and vendors' reputations will be damaged if these prove inaccurate. In practice, these bids are often too low, as was the case with the Finnish Olkiluoto plant (see below) but the vendor does bear some responsibility for them; and
- Indicative costs put forward by vendors or interest groups. These have historically been hopelessly inaccurate and are basically worthless. For example, around 2000, the world nuclear industry was confidently claiming the new generation designs, the type South Africa is looking to build would cost only $1,000/kW.

4.3 Recent information on construction costs of nuclear power plants

4.3.1 Construction costs of EPRs

The most recent firm information in the cost of new nuclear power plants comes from three projects, the Olkiluoto 3 plant in Finland; Flamanville 3 plant in France and the Hinkley Point C project for the UK.[15] All involve European Pressurised Water Reactors (EPRs) supplied by the French government controlled company, Areva.

4.3.2 Olkiluoto

Construction work on the Olkiluoto plant (1600MW) started in May 2005 with expected first power in 2009 and a fixed price contract to build the plant for €3bn. At current exchange rates of €1=$1.33, this equates to $2500/kW. From the start the project went badly wrong and the most recent estimate forecasts completion in 2016 at a cost of €8.5bn.[16] This equates to $7000/kW. Areva is refusing to honour the fixed priced contract and the issue of who bears the cost of the cost overruns is being decided in the Stockholm Court of Arbitration.

4.3.3 Flamanville

The problems at Olkiluoto were often attributed to specific conditions in Finland, such as lack of recent experience with nuclear power construction and shortage of local skills and, it was claimed,

[15] For more details on the historic record of the EPR, see: S Thomas (2010) 'The EPR in Crisis' http://www.nirs.org/reactorwatch/newreactors/eprcrisis31110.pdf

[16] Nucleonics Week 'Olkiluoto-3 EPR likely not to operate before 2016: TVO' February 14, 2013

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the problems would not recur in a French project. The Flamanville plant started construction in December 2007 and was expected to be complete by 2012 at a cost of €3.2bn, about $2700/kW. However, problems occurred from the start and, as with Olkiluoto, the first structural concrete was not properly poured. Arguably, the project is further off course than Olkiluoto was at the equivalent stage. Like Olkiluoto, completion is expected in 2016 at a cost of $7000/kW.

4.3.4 Hinkley Point

In October 2013, the British government announced it had reached agreement with Electricité de France (EDF) to build two EPRs.[17] The agreed price for the plants is £8bn per unit. This equates to $8000/kW. This figure is surprisingly high as it implies that the expected cost of a new EPR is now higher than the current forecasts for two projects that have gone catastrophically wrong. The possible explanations for this include: there has been extraordinary escalation in costs since the Olkiluoto and Flamanville orders; the Hinkley Point price includes very large contingencies to cover the cost of construction problems; and the contract is remarkably favourable to EDF. Reports in the South African press that Areva accepts the figures in the updated IPRP. The South African MD for Areva is reported to have said:[18] 'the group is pleased with the "realistic projections" contained in the update regarding the building of nuclear base-load capacity by 2035.' Given that the sum agreed for an EPR reactor supplied to the UK in October 2013 was 38 per cent higher than this, it is hard to see how a figure of $5800/kW can be seen as 'realistic'.

4.3.5 Requirements to finance nuclear power plants

The other features of the contract are also worth noting as they give clear indications of what the requirements to obtain finance for a nuclear power plant are. The initial price for power will be £92.5/MWh. At an exchange rate of £1=R$17, this equates to about R$1600/MWh (R$1.6/kWh). This has been widely reported to be double the prevailing electricity wholesale market price for power. This price will go up in line with general inflation and may be indexed to other cost factors. The contract will not be released in full as the government has stated elements are commercially confidential so it is impossible to identify the escalators. The power will be bought on a 35 year contract to be signed by a new agency of government yet to be set up. The government is giving loan guarantees worth £10bn. This is expected to cover the debt (borrowing) part of the finance with the rest of the cost coming from 'equity' (self-finance. The contract is specifically with a new company, NNB Genco, which will be a consortium expected to include EDF, Areva and two Chinese companies, China General Nuclear (CGN) and China National Nuclear Corporation (CNNC). The shares of the consortium are yet to be determined but the expectation is that it will comprise 50 per cent EDF, 10 per cent Areva and 40 per cent CGN/CNNC. It seems apparent that without the Chinese contribution, EDF would not have been able to finance the project. The loan guarantees essentially mean the banks financing the project are lending to the British government and mean that if the project goes badly (as at Olkiluoto and Flamanville) and the loans cannot be repaid by NNB Genco, British taxpayers will have to repay the banks. The Chinese contribution appears to be purely financial for this project as China has no technologies or supply to offer and it seems unlikely it has human resources that could be usefully used.

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[17] https://www.gov.uk/government/news/initial-agreement-reached-on-new-nuclear-power-station-at-hinkley

[18] http://www.engineeringnews.co.za/article/areva-welcomes-irp-updates-nuclear-cost-ceiling-proposal-2013-12-11/rep_id:3182?utm_source=Creamer+Media+FDE+service&utm_medium=email&utm_campaign=Areva+welcomes+IRP+update+ per cent7C+Africa+behind+in+financial+inclusion+ per cent7C+Kentz+upscaling+Moz+presence&utm_term=http per cent3A per cent2F per cent2Fwww.engineeringnews.co.za per cent2Farticle per cent2Fareva-welcomes-irp-updates-nuclear-cost-ceiling-proposal-2013-12-11 per cent2Frep_id per cent3A3182

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The deal was generally not well received. Liberum Capital, an independent British investment bank, in a report entitled 'Flabbergasted: The Hinkley Point Contract'[19] stated:

- Based on the disclosure so far this looks likely to be an outstanding deal for Edf and its partners. On a leveraged basis we expect Edf to earn a Return on Equity (ROE) well in excess of 20 per cent and possibly as high as 35 per cent.
- Once again, the UK government is taking a massive bet that fossil fuel prices will be extremely high in the future. If that bet proves to be wrong then this contract will look economically insane when HPC commissions. We are frankly staggered that the UK government thinks it is appropriate to take such a bet and under-write the economics of any power station that costs £5m per MW and takes 9 years to build.

The reality may be that the British government has negotiated the best terms it can but these are the terms that are needed to persuade financiers to lend money for nuclear power projects. After spending 7 years' time, effort and resources to get this far, the government was unwilling to face the humiliation of abandoning the nuclear programme despite the massive cost and risks being passed through to electricity consumers and taxpayers. This points to the risks of governments backing themselves into a corner by becoming too heavily committed to a particular technology choice.

4.4 Load factor

The nuclear industry consistently assumed that nuclear power plants would be very reliable and would achieve lifetime load factors of 90 per cent or more. Reliability worldwide has improved since around 1980 when the average load factor worldwide was about 60 per cent and now the average is about 80 per cent. However, over the life of the plant, no more than a handful of reactors with more than a couple of years of operation has achieved a lifetime load factor of more than 90 per cent (most of these are in Germany). The two Koeberg reactors both have life time load factors over their 20 year life of 69 per cent.[20] The IRP assumption of 92 per cent appears hopelessly unrealistic.

The impact of poorer reliability goes much beyond the impact on the fixed costs. Poor reliability is likely to result in higher maintenance and repair costs and, perhaps most important, the power that the plant was expected to produce but did not, has to be produced from other sources. Power systems are usually run on 'merit order' basis under which plants are brought into operation or taken off line as demand rises and falls on a daily basis according to their operating costs. So, if a nuclear power plant breaks down, it must be replaced by a plant that would otherwise have been too expensive to operate. These so-called replacement power costs can be huge.

4.5 Cost of capital

The cost of capital is covered by use of a 'discount' rate. The discount rate is not the same as the cost of capital, but it is clearly related. The main factor determining the cost of capital is the financiers' perception of how risky the project is. The credit rating of the country involved has some impact but, in most cases, mainly it is the riskiness of the project and who that risk falls upon. The record of nuclear power plants seldom if ever being built to time and costs, of operating significantly less reliably than expected and of real cost escalation in all aspects of the product life cycle from construction costs, through operating costs to decommissioning and waste disposal makes nuclear power by far the riskiest commercial generation option. In the past, this riskiness has been of

[19] Liberum Capital (2013) 'Flabbergasted: The Hinkley Point Contract' http://www.liberumcapital.com/pdf/ULkWtp00.pdf

[20] http://www.iaea.org/PRIS/CountryStatistics/ReactorDetails.aspx?current=836

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limited relevance because the implicit assumption has been that consumers would pay whatever costs were incurred and if things went wrong, the company owning the plant was not at risk.

In the past two decades this assumption has in many cases been broken with the adoption of competitive markets in some cases and the introduction of independent price regulators in others. In a competitive market, a company whose costs are too high goes bankrupt as was the case with the UK nuclear generation company, British Energy, in 2002. Independent regulators may be unwilling to pass on to consumers costs they consider to be 'imprudently incurred'. These imprudently incurred costs had to come from profits and if the amount was high, the utility could be bankrupted. The increased scrutiny of US regulators in the late 1970s led to the end of nuclear ordering there (the last order not subsequently cancelled was placed in 1974) as banks made it clear that it would not lend money for nuclear projects and pressured utilities to cancel existing orders.

The only orders for nuclear power plants in the past two decades have been placed in centrally planned, generally publicly owned systems, such as China, Russia and Korea or in countries where the utility has a dominant market share (for example, EDF in France, or is offering a 'cost-plus' contract to purchase the power (for example, TVO in Finland).

In South Africa, there is now an independent regulatory body and of that body has any rationale, it will be unwilling to pass on large cost overruns for a nuclear project to South African consumers. A nuclear power plant in South Africa must therefore be regarded as a risky investment as was made clear by the views of Standard & Poor's, the credit rating agency, which was asking for unconditional state-backed guarantees on *all* Eskom's debt if it was not to reduce Eskom's credit rating. Reducing Eskom's credit rating would have increased their cost of borrowing for all its debts and would have increased its overall costs (and the price of electricity) substantially.

There are two options other than guaranteed cost pass-through that would reduce the risk on banks. A 'turn-key' (fixed price) contract would place the risk of cost escalation on the vendor. Such contracts have been extremely rare for nuclear power plants because the vendors do not have the financial resources to take that risk. A turn-key contract was signed for the Olkiluoto plant but when costs began to escalate, Areva, the vendor refused to honour the contract blaming the utility and the case about who pays the extra costs (now more than €3bn) will be settled in the Stockholm Court of Arbitration. For these purposes, it is irrelevant who is to blame, the consequence is that a fully fixed price contract to supply a nuclear power plant is highly unlikely to be offered and even if it is, financiers are likely to assume it is not worth the paper it is written on.

The other option is for state guarantees to cover the loans, for example, offered by the government of the country of the vendor. Under this, if the utility went bankrupt and could not repay the bank, the taxpayers of the country offering the guarantee would repay the banks. This would mean the bank was, essentially, lending to a national government and the interest rate would be commensurately low. This has attractions, but there are serious problems: First, if the costs do overrun, the utility will have to go to the market to borrow money to finance a project going badly wrong; second, this will be extremely expensive. If the utility does fail, the banks will be repaid but consumers and or taxpayers will be faced with large costs to bail out the utility or make alternative provisions; third, in today's economic climate government Treasury's are going to be reluctant to take on large potential liabilities and will be unwilling to offer loan guarantees; and finally, under OECD guidelines, loan guarantees should attract an fee that reflects the riskiness of the project. This fee should be an economic one and if it truly reflects the risk, this fee might well counterbalance the advantages of the lower interest rate.

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For the IRP, a standard real discount rate of 8 per cent for all options is used. In practice, and unless an explicit risk analysis is done, this implicitly assumes all options are equally risky. The problems with this assumption are alluded to on page 22 of the IRP where it states: 'The possibility of different discount rates for technology to factor in different risk profiles for the technologies should also be investigated.' This has not been done. It is difficult to know what an appropriate cost of capital for a nuclear power plant exposed to risk would be. It could well be double the assumed rate.

4.6 Impact of changes to the fixed costs on the cost of power

To measure the impact of alternative assumptions on construction cost, load factor and cost of capital would require a full re-running of the IRP but some idea of the impact can be gained by making some very simple assumptions. Let us assume, purely for illustration, that with IRP assumptions, the cost of power from a nuclear power plant was ZAR100/MWh and that was made up of two thirds fixed costs associated with construction and one third running costs. Let us assume that the construction cost is 50 per cent higher than assumed, bringing it into line with most current estimates. This would increase the cost of power to ZAR133/MWh. If the cost of capital was 12 per cent rather than 8 per cent, this would also increase the cost of power to ZAR133/MWh. If we assume the load factor was 70 per cent instead of the 92 per cent assumed, this would increase the cost of power to ZAR121/MWh. A lower load factor would lead to other increases in cost, such as replacement power costs and higher maintenance and repair costs. These extra costs are not estimated here. If all three alternative assumptions were applied, the cost of power would increase to ZAR230/MWh.

These assumptions are far from worst cases. For construction cost, the alternative assumption only brings it into line with international estimates and the cost of capital could also be double the assumed level. This would mean the cost of power from a nuclear reactor would be about three times the expected level. If more realistic assumptions were applied to running costs and the cost of decommissioning and waste disposal were properly factored in, the costs would be even higher.

4.7 Decommissioning and waste disposal

In absolute terms, the cost of waste disposal and decommissioning are of the same order as the cost of construction. For example, in the 2007/08 annual report and accounts of British Energy, the British nuclear power generator, it was estimated the cost of decommissioning its eight plants was £9.4bn and the cost of disposal of the spent fuel was £5.5bn.[21]

However, these liabilities fall due far into the future. For example, in the UK, the most difficult stage of decommissioning, cutting up and disposing of the contaminated equipment and cleaning the site so it can be released for unrestricted use is not expected to take place until about 60-80 years after plant closure. So, if it is assumed that a nuclear plant operates for 40-60 years, on the day of its commissioning, it will 100-140 years before most decommissioning funds are needed. Current UK government plans foresee that a disposal site for spent fuel will not be available until 2125. If we assume a fund is created and it earns a real interest rate of 2.5 per cent, such a fund will grow in real terms by a factor of about 12, so even though estimated costs for decommissioning are very high, this process of 'discounting' means that a liability of, say, £5bn that falls due in 100 years, can be shown in the company accounts and fed into the cost estimates as a discounted liability of only £420m. This means that these large costs can effectively be made to 'disappear' from cost estimates of a kWh of nuclear electricity.

[21] http://www.british-energy.com/documents/Annual_report_2007_2008.pdf. Note, more up to date data is not available because the company was taken over by Electricité de France and no longer publishes this data.

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Best practice for decommissioning funds is that they be 'segregated' from other company funds so that they cannot be affected by changes to the company, at worst, for example bankruptcy.

The Integrated Resource Plan is not very explicit on how decommissioning costs are accounted for and how funds are collected and dealt with (see Annex 2 for details of world experience of nuclear power plant decommissioning). In its first revision, it states:[22]

> 'The capital costs for nuclear were increased by 40 per cent to accommodate inputs from numerous sources that the EPRI costs under-estimated the capital costs for newer nuclear technologies. The costs for decommissioning and waste management were also not fully incorporated in the original EPRI cost estimates and this adjustment allowed some accounting for these important elements.'

Some more information on how provisioning for decommissioning is planned were released in a document released in January 2014.[23] In 5.1.1 of this document and elsewhere, there is a conspicuous absence of any requirement for segregated funds. This is worrying as it leaves a risk that there will be no money available for decommissioning when it is required. For example, in the UK, consumers contributed money for decommissioning from 1979-90 but this money was not segregated and when the company was privatised, this money was lost, effectively taken by the UK Treasury. While, for example, there are no plans for privatisation of Eskom currently, in 100 years' time when decommissioning might take place, the picture is likely to have changed many times over.

Decommissioning for Koeberg is assumed to take place in only 16 years which, by international standards is exceptionally fast - the average expected time in UK is 90 years. Given that no large nuclear power plant has been decommissioned anywhere in the world apart from six reactors in the USA, it is not clear whether the plans for South Africa are realistic and whether this difference is significant.

5.2 of this document states the estimate for Koeberg is R8.69 billion, which equates to about $817m or $450/kW. That estimated cost is a discounted cost. If it is discounted at, say, only 2.5 per cent real for 16 years, the undiscounted price would be about 50 per cent higher ($675/kW). If we look at the plans for Hinkley Point C, the assumed decommissioning cost appears to be not less than $900/kW with a cap at $1,350/kW. This makes the South African estimate look very low.

5. The technology options

When the programme of 9,600 MW of new nuclear capacity was announced, there was a great deal of speculation about potential suppliers in addition to the two companies Areva with the EPR and Toshiba/Westinghouse with the AP1000 that participated in the 2008 call for tenders. These included suppliers from China, Russia and Korea. It seemed that the conclusion of the government and Eskom was that the reason the bids were so high was that the tender had been done wrongly so that the bids were higher than they should have been and that other suppliers, not included in that process would offer much cheaper prices. This attitude was quickly shown to be naïve.

It seems that South Africa is interested only in Pressurised Water Reactors (PWRs) not their close relative, the Boiling Water Reactor (BWR). The two reactors at Koeberg are PWRs so this has some logic. If BWRs were included, one or two more options would emerge but there is no evidence the costs would be lower. There was also speculation that earlier generation designs, so-called Generation II, that would not meet current Western safety requirements, assumed to be cheaper,

[22] http://www.energy.gov.za/files/irp_frame.html, p 39

[23] Eskom 'Status of decommissioning strategy and plans for Koeberg nuclear power station' Eskom

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would also be considered. This option now appears to have been discounted and South Africa is only interested in Generation III or III+ designs.

The designation of design generation is not precise but, broadly, Gen I includes demonstration and early commercial plants. Gen II includes most of the approximately 450 commercial reactors in operation in the world, including Koeberg. Theses reactors were designed in the late 1960s and the 1970s but pre-date the Three Mile Island accident of 1978. Gen III designs take account of Three Mile Island but do not take full account of the Chernobyl disaster, while Gen III+ are the latest designs. Few reactors of Generation III design are in service yet and no reactors of Gen III+ are in service yet. Only two Gen III+ designs have received orders. The EPR has four orders, two for China, one for Finland and one for France. The AP1000 has eight orders, four for China and four for the USA, although main construction work on the four US units has yet to start. So if South Africa wants proven technology, that is, a design with significant operating experience, it will need to go back to designs made 30 or more years ago.

Amongst the PWR suppliers there five obvious options: the Areva EPR, the Toshiba-Westinghouse AP1000, the Korean AP1400, Chinese designs and the Russian AES-2006.

5.1 Areva EPR[24]

This option was the lowest bidder for the 2008 tender albeit far too high to be financeable. It was the first Gen III+ design to receive an order, with construction starting on a reactor in Finland (Olkiluoto) in May 2005 followed by an order for France (Flamanville) on which construction was started in December 2007. Two EPRs are under construction in China (Taishan), starting in 2009. The Olkiluoto project has gone disastrously wrong and the plant which was expected to take four years to build and cost €3bn is now going to take at least 10 years and cost more than double the estimate. Things have gone no better at Flamanville, which is also now four years late and 100 per cent over-budget. There is no clear cause for these delays, a large number of design issues, construction errors etc. seem the main culprits. Reports from China claim the Taishan plants are on schedule but it is hard to get independent verification of this.

One of the issues with the Olkiluoto and Flamanville plants was that the design had not been fully reviewed by the safety authorities before construction started, as was normal practice up to then. In the USA and the UK, full 'generic' design reviews are now required before construction can start to avoid the sort of problems encountered at Olkiluoto and Flamanville. This process is not expected to be complete in the UK till 2013 or later and in the USA by 2014 or later. There is still a major issue to be resolved in the Instrumentation and Control system (the 'brain' of the reactor). This was flagged up by regulators in 2009, but the solution to the issue is still some way from being established.

This means the EPR design is not yet finalised – the designs for Olkiluoto, Flamanville and Taishan will all differ from this final design. Areva and EDF are now reviewing the design again to reduce the cost and this means the design that is approved in the UK and the USA may be changed again before orders for South Africa could be placed. China seems unlikely to pursue the EPR option, although it is possible that China could partner an EPR bid for South Africa.

5.2 AP1000

The AP1000 has orders for China and the USA but independent information on the progress of the Chinese sites is hard to establish. It appears construction is running up to a year late.[25] Construction

[24] For more details on this design, see S Thomas (2010) 'The EPR in crisis', PSIRU, University of Greenwich http://gala.gre.ac.uk/4699/3/ per cent28ITEM 4699 per cent29 THOMAS 2010-11-E-EPR.pdf

[25] Nuclear Intelligence Weekly 'CHINA: AP1000s Delayed by 6-12 Months, SNPTC Says' January 17, 2012, p 4.

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work is expected to start in 2013 for the four US reactors. The generic review of the AP1000 has been completed in the USA but the process has been suspended, incomplete, in the UK until Toshiba-Westinghouse has a UK customer.

The AP1000 was expected to take over as the main choice for China but concerns over its high price have put this in doubt. It is not clear whether the AP1000 would be bid again in South Africa. It is possible that China could partner Toshiba for a bid for South Africa.

5.3 Korea

Korea has been building reactors for decades with increasing local content, although the designs it has built have all been under license to US vendors. Its latest design, the AP1400, was licensed from the US company, Combustion Engineering, now part of Toshiba-Westinghouse. Toshiba Westinghouse does allow it to offer the design for export. It received generic design approval in the USA in 1997, but that approval expired in 2012. Construction work in Korea on the first two units of this design (Shin-Kori 3 & 4) started in 2009 with a third (Shin-Ulchin) starting construction in 2012. Korea emerged as a potentially significant exporter of nuclear technology with its winning of a competitive tender in UAE in 2009.

In December 2009, the UAE ordered four nuclear reactors from Korea using AP1400 technology beating opposition from consortia led by EDF with the EPR and GE-Hitachi (ABWR).[26] The contract is with Korean Electric to build and operate the plants, the first coming on line in 2017 and the last by 2020. KEPCO will provide design, construction and maintenance for the nuclear reactor and will subcontract some of the work to equipment suppliers such as Hyundai, Doosan and Samsung. The terms of the deal and what is included are not clear although the contract is reported to be worth $20.4bn. The Korean bid was reported to be $16bn lower than the French bid and the GE-Hitachi bid was reported to be significantly higher.[27] It appears not to be a whole project 'turnkey' (fixed price) deal. Korean companies will hold an equity stake in a joint venture with UAE public companies, which will operate the plants after their completion. Construction work on the first of these at the Barakh site started in July 2012.

The design being built in Korea and UAE, without a 'core-catcher' and a 'double containment', probably would not be licensable in Europe. Areva was particularly bitter about losing the tender to a design it claimed had much lower safety standards than their EPR. Their then CEO, Anne Lauvergeon likened the APR1400 to "a car without seat belts and airbags".[28] It is unclear whether the AP1400 would meet South Africa's requirement that it order only Gen III designs. In 2010, Korea claimed it would submit the AP1400 to the US NRC for generic design review in 2012.[29] By November 2012, the target date for submission was March 2013. Even if that date was met, the process typically takes at least six years so would not be complete by the time the first South African orders were placed

5.4 China

In the period 2008-10, China saw a remarkable spurt of construction with construction work starting on 25 reactors in that period. This compares to only 17 ordered in the 25 years up till then. Since December 2010, no new construction starts have taken place. In part this is due to reviews following

[26] Korea Herald 'Korea wins landmark nuclear deal' December 28, 2009.
[27] Right Vision News 'UAE: Middle East leads rally in nuclear plant orders' January 12, 2010.
[28] Nucleonics Week 'No core catcher, double containment for UAE reactors, South Koreans say' Apr 22, 2010, p 1.
[29] Inside NRC 'Kepco to submit APR1400 design for NRC review in 2012' April 26, 2010.

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the Fukushima disaster with a desire, increased by Fukushima to move away from the old designs that made up most of these orders.

None of the reactors ordered from 2008-10 is yet in service. Of these, four were AP1000s and two EPRs. Of the other 19, two were smaller reactors and the other 17 were supplied by Chinese vendors under license to Areva. This design, M310, was built in France in the 1970s and France itself licensed it from Westinghouse around 1970. So while this design has been updated, it is fundamentally a very old design. France is unwilling for China to export it so, even if such an old design was acceptable in South Africa, it is not a feasible option.[30]Nucleonics Week reported: 'The French nuclear safety authority has said it will not condone French nuclear companies participating in construction of reactors abroad that would not be licensable in France.'[31]

There are a number of Generation III/III+ under development in China: ACPR1000, ACP1000 and CAP1400, the latter in collaboration with Toshiba. However, the designs on all of these are some way from being ready to order. Until China restarts its nuclear programme after the halt called following the Fukushima disaster, it will not be clear which design China will pursue. Even then, the design will not have been reviewed by Western safety authorities so unless South Africa was prepared to rely on the Chinese authorities' assessment, these would not be an option for South Africa.

5.5 Russia

Like China, Russia started ordering nuclear power plants again about 5 years ago. Apart from two export orders for plants to China and India, the Russian nuclear industry had not received an order since the mid-80s prior to the Chernobyl disaster. The Chernobyl technology has been abandoned and Russia now only offers its own version the PWR, the VVER. Its latest design is the AES-2006, a 1 200 MW design which Russia claims should be seen as Gen III+. Five reactors of this design are under construction in Russia, but not yet in service. Russia has won orders for this design for Turkey and Vietnam but construction has not started yet. There appear to be a couple of variants on this design (V-392M and V-491), although it is not clear how far these differ. Russia has shown some interest in getting into Western reactor markets but it has not bid yet in the West and its new designs have only been reviewed by the Russian authorities. Whether this review is comparable to a US/UK full generic review is not known so it is impossible to say whether the AES-2006 would be licensable in the West.

6. Conclusions

In a centrally planned electricity system, integrated resource planning is an excellent tool to ensure that consumers' pay the lowest price possible, consistent with a reliable and 'clean' electricity supply. However, the outcome that South Africa should install 9 600 MW of new nuclear plants by 2030 has nothing to do with the use of IRP. It is an assumption imposed by government. The IRP is based on what is acknowledged to be a demand forecast at the high end of the likely outcomes.

The key assumptions determining the cost of a nuclear kWh are the construction cost, the cost of capital and the load factor. An earlier iteration of the IRP was based on a hopelessly unrealistic forecast of construction costs, about half the level actually bid in 2008 when South Africa carried out an ill-fated call for tenders for nuclear capacity. For the final iteration, this estimate was increased by 40 per cent to $5800 but this still leaves the estimate about 40 per cent lower than most current estimates of about $8000/kW.

[30]Nucleonics Week 'EDF executive seeks joint ventures in China' October 14, 2010.
[31]Nucleonics Week 'Chinese companies look to become nuclear export force with own designs' Dec 2, 2010.

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The cost of capital used, 8 per cent, is the same for all options, implying that all are equally economically risky. This is blatantly not the case and, based purely on its past record worldwide, nuclear power is by far the most risky option. If this was reflected in the cost of capital, the cost might double and is unlikely to be less than 50 per cent higher than assumed. The load factor assumed, 92 per cent, is almost unprecedented worldwide for the lifetime of a reactor and is far higher than the two Koeberg reactors have achieved, less than 70 per cent. Poorer load factors than assumed would also lead to other significant extra cost in terms of repair and maintenance and replacement power costs not here estimated.

If more realistic assumptions on construction cost (50 per cent higher), cost of capital (50 per cent higher) and load factor (reliability similar to reactors at Koeberg) were applied, this would double the expected cost of power and if things did not go smoothly, for example, construction cost and cost of capital double the expected level, the cost of power from a new reactor could be two and a half times that expected.

The IRP acknowledges that decommissioning and waste disposal costs are not properly estimated. If provisions were made that properly embodied our moral obligation not to impose financial costs to clean up our environmental damage on a future generation, this would add significantly to the cost, although no estimate of these extra costs is made here. Other assumptions, for example on reactor life-time are also optimistic. Using more realistic assumptions throughout and accounting properly for decommissioning and waste disposal could easily lead to a cost per kWh about three times the level expected.

The government imposed the nuclear programme on the IRP on grounds of its assumed positive impact on security of supply. It is hard to understand how such a blatantly risky option can be seen as a positive contributor to security of supply. Equally, it is hard to believe that with more realistic cost estimates, building nuclear power plants would be the cheapest way to achieve that desired improvement in security of supply.

There has been a lot of ill-informed discussion of the technology options available to South Africa since the failed tenders of 2008. It seemed that the conclusion of the government and Eskom was that the reason the bids were so high was that the tender had been done wrongly so that the bids were higher than they should have been and that other suppliers, not included in that process would offer much cheaper prices. Five options have been mooted: Areva's EPR; Toshiba-Westinghouse's AP1000; a Korean design AP1400; Chinese-supplied reactors; and Russian-supplied reactors. None of these options is proven in the sense of having operating reactors in service yet.

The EPR is the design with the most experience but most of this is appallingly bad. Reactors in Finland and France are running 4-6 years late and at least double the expected cost. There are still major unresolved regulatory issues with the design that were identified at least three years ago.

The AP1000, which has never underbid the EPR in a tender has less experience of construction with no experience outside China, but does have regulatory approval in the USA. Like the EPR, in the previous tender, it proved unfinanceable and it is highly unlikely the price bid in a new tender will be anything other than higher than in 2008.

China is seen as an attractive assumption on the basis of the large number of reactors ordered there in recent years and on the tacit assumption, with no evidence to support it, that because it is Chinese, a reactor would be cheap and of good quality. In practice, the reactors that made up most of the recent burst of orders could not be exported because of license restrictions and would probably be of too early a design generation to meet current safety standards. It has advanced

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reactor designs under development but these are still some way from being orderable and they have not undergone a comprehensive safety review so are not a realistic option.

Russia has also emerged on the reactor market in the past five years with orders for its home market using a new design that it claims meets current Western standards. These claims have not been tested and no Western regulatory body has undertaken a thorough review of the design.

Overall, there is a risk that South Africa will commit itself to order a large number of reactors that will impose huge additional costs on consumers. However, the more likely risk is that, as in 2008, the nuclear programme will prove impossible. Since 1998, when the Pebble Bed Modular Reactor programme was launched, the South African government has operated on the assumption that nuclear power plants would make up a significant proportion of generation. The result has been that other options, that could have met South Africa's electricity demand needs reliably and cost effectively have been neglected – South Africa, like any other country, has limited resources and cannot pursue all options. If the nuclear programme is not abandoned now, the risk is that efforts to make it happen will continue for several more years, wasting government time and money and leading to more neglect of alternatives, before the government again, as it did with the PBMR and the failed tender of 2008, has to admit defeat.

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Annex 1 Other approaches to electricity system investment planning

LCOE approach

A simpler way to decide on new capacity is to calculate the Levelised Cost of Energy (LCOE) from each of the options. This requires that all the costs over the entire life-time of the plant are calculated to provide an average kWh cost over the whole life of the plant. The plant with the lowest LCOE would then be chosen. Such a decision does need to take account of the state of the system. The system should have a balance of 'base-load' plants and 'peaking' plants. Base-load plants, such as nuclear power plants, tend to have high fixed costs and low operating costs and are operated all the time. Peaking plants tend to have low fixed costs and high operating costs and are vital to ensure security of supply but may be operated for only a few hours per year.

Some of the renewables, such as wind and solar, are not available at all times but they have much lower running costs than, say, nuclear power plants, and, in theory should be operated in preference to nuclear power plants. In practice, nuclear power plants are too inflexible to allow this but in some European systems, such as Germany and Spain, there is now a conflict between whether to operate nuclear plants or renewables. In short, this means that systems with inflexible sources, such as nuclear and some renewables require flexible plant to complement them.

There is a common perception that systems need to cover base-load, i.e., the lowest level of demand in the year with base-load plants. This is not true, all that is required is that there be plants to meet demand at all times and base-load could be meet by a mixture of renewables and flexible plant to cover the periods when the renewables are not available.

The data requirements of LCOE are less than for whole system simulations but are still extensive and, for nuclear power, governments and electric utilities have shown little capability to forecast this data accurately. For example, before the call for tenders in South Africa for nuclear capacity in 2008, Eskom had forecast that the construction cost of nuclear would be about $2500/kW. In the event, the lowest bid received was reported to be $6000/kW.[32] Similarly, in 2008, the British government forecast that a new nuclear power plant could be built for £2bn. In 2013, the deal to build a new plant was based on a construction cost of £8bn ($8000/kW).

The nuclear construction cost cap

The South African government has been reported to have placed a cap of $6500/kW on expected nuclear construction costs, which if exceeded, would mean nuclear was not considered. Whilst this is not a precise way to determine the cheapest way to meet demand, it is a useful way of avoiding unnecessary work with an option that cannot be economic above a certain level of construction costs. Given that the agreement between the British government and EDF was based on construction costs of $8000/kW and there is no reason to assume nuclear construction costs in South Africa will be any lower than in UK, it seems highly likely that the cap will disqualify nuclear from consideration.[33]

One proviso is that the record of the nuclear industry in forecasting costs is abysmal. 15 years ago, the nuclear industry confidently forecast that a new generation of nuclear designs (so-called Generation III+), the type chosen for UK and which South Africa is considering could be built for only

[32] S Thomas (2010) 'The EPR in Crisis' University of Greenwich.
http://www.nirs.org/reactorwatch/newreactors/eprcrisis31110.pdf

[33] Note, it is far from certain that the UK will build new nuclear capacity. The agreement has been referred to the European Commission to see if it violates European Union laws on state-aid. If it does, the project will not be allowed to proceed.

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$1000/kW. General inflation would have only increased costs by about 50 per cent, so it appears the nuclear industry underestimated costs by a factor of about five. How far this under-forecasting, which has been a feature throughout the 50-year life of the nuclear industry, is deliberate to mislead investors into choosing the nuclear option and how far it is simply inability to forecast accurately is hard to know. However, throughout the world, these low forecasts had the desired effect of making governments and utilities adopt pro-nuclear policies. This has happened, for example, in the UK, the USA and South Africa. The actual costs, or at least the costs expected at start of construction which are generally an underestimate of final costs, are only acknowledged when bids are actually placed. By this time, it may be very difficult or, at least, politically embarrassing to abandon the pro-nuclear policy, even though it might no longer make economic sense.

This means while the cap might be a useful way to filter out options that are prohibitively expensive, care must be taken to take independent estimates of the costs, not rely on the word of the proponents of nuclear power.

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Annex 2 Experience of nuclear decommissioning worldwide

Worldwide, there is no experience of siting a high-level waste disposal site, much less actually building and operating one, so the costs must be seen as extremely speculative and, unless experience here is completely different to experience so far with nuclear power, the actual cost is likely to be substantially higher than current forecasts. Similarly, there is very little experience of the most challenging part of decommissioning, cutting up and disposing of the reactor vessel. In the UK, the first reactor (retired more than 20 years ago) is not expected to start this process before 2070. Worldwide, no more than a handful of commercial nuclear reactors have been fully decommissioned and this experience is of limited value. Some of these plants are very small, some use different technologies to those considered here and most have had a short operating life so are much less contaminated than a reactor that had operated for, say 40 years or more. So, as with high-level waste disposal, there is huge uncertainty about what the costs will be and a strong likelihood that the actual costs will turn out to be much higher than currently estimated.

Under conventional accounting procedure, liabilities that must be met in the future should be 'discounted'. Effectively this means that a sum of money (or assets of that value) is set aside now and it is assumed that money will earn interest and grow to meet the liability. So if a liability of $105 falls due in a year and an interest rate of 5 per cent can be earned, the 'discounted' value of the liability is $100 because in one year, it will grow sufficiently to meet the liability.

In the short term this sounds a sensible procedure, but over longer periods, the operation of compound interest rates mean that sums of money can grow remarkably. For example, a sum invested for 100 years earning an interest rate (net of inflation) of only 3 per cent, will grow 19 fold. So even if the cost of decommissioning a nuclear plant is, say a quarter the cost of building it, in the accounts, the liability will show as, perhaps, 1.3 per cent of the construction cost, in short, a trivial amount. However, if things go wrong, a future generation of taxpayers will have to meet the full cost of decommissioning a facility that they have derived no direct benefit from.

This is not just a theoretical possibility. In the UK, consumers paid money for decommissioning from 1979 onwards only to find that, by 2002, none of that money was available. It had been lost for example, by the Treasury using it for general government expenditure and investment in assets that proved worthless (a nuclear power plant). As a result, future UK taxpayers will have to meet a liability over the next century or more of more than £100bn.

UK experience is worse than most but as a result of issues such as these, best practice has evolved and now, typically, a decommissioning fund has the following characteristics:

- Consumers pay into the fund through their electricity charges;
- The company owning the plant has no access to the fund so if it goes bankrupt, the fund is not lost;
- It is invested in low risk investments (earning a commensurately low rate of return);
- The cost estimates are frequently updated so contributions can be increased to meet this cost escalation.

This represents a substantial improvement on past practice but it is still far from sufficient to provide a high degree of certainty that no financial burden (there is no way to avoid them having to carry out the hazardous task) will fall on future generations to clean up our mess.

To reduce the risk further, all major risks must be taken into account. These include the risk that:

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- The fund will be lost or invested in assets that earn a lesser rate of interest than expected. After the current financial crisis, it is clear that few if any investments can be regarded as 'safe' in the long-term and that the assumption of a positive real rate of interest is hard to justify. Real interest rates are negative and decommissioning funds are losing value currently;
- The plant operates for less time than expected. This would mean that less money could be collected from consumers and the time for the fund to grow would be less;
- The cost estimate proves too low. Especially if this discovery comes late in the life of the plant or after it has closed, it will be too late to make up the shortfall through larger contributions. In the UK, the estimated cost of decommissioning has increased about 6 fold in only 20 years;
- The company owning the plant goes bankrupt. In the UK, British Energy, the UK nuclear company, went bankrupt in 2002 and as part of the rescue package, future taxpayers took over the financial burden of paying for decommissioning.

These risks can probably be dealt with by means of financial instruments, effectively insurance policies to cover these contingencies, but the cost will not be low if the current generation is to meet its ethical obligation to provide a very high degree of certainty that the 'polluter will pay'.

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Annex 3 Terms of reference for appointment of a service provide for advisory services on financing options, models, and solutions for new build nuclear fleet

The Terms of Reference for the above tender published in October 2013, which calls for information on international models for financing nuclear investment, reveal the lack of expertise in the South African Department of Energy.

The following, text from the call in bold, author's commentary following illustrate the lack of knowledge on the nuclear sector in the Department of Energy.

'At least the following country programmes must be studied: Turkey, Russian Federation, South Korea, Japan, China, United States of America, Vietnam, France, Brazil, India, Taiwan, Germany, Finland, Sweden, Poland, Lithuania, Canada, Switzerland and Spain.'

Some of these countries are problematic. There is no publicly available information on financing of nuclear power plants in Russian Federation, China and India and minimal information from South Korea.

Brazil, Germany, Canada, Sweden, Switzerland and Spain have not ordered reactors for 30 years or more so there is no useful information that can be gathered from these countries. The most recent order for Taiwan was placed 16 years ago and has limited relevance

Poland and Lithuania have yet to place orders and it is far from certain they will, so the details of finance have not been determined.

Few details for Turkey and Vietnam are known and finance details for reactors supplied by Russia are not publicised. Some useful information can be gleaned.

Some information about finance is available from France, USA and Finland

Some details of finance for UK, Czech Republic and UAE, not mentioned in the list, are available and could be usefully reported, but any experience more than 10 years old is not relevant to South Africa's current programme.

A comparative assessment of each of the various financing structures derived from the benchmarking and options phase, as it relates to their impact on the South African environment with regards to:

a) Localisation

b) Cost effectiveness

c) Tenor

d) Drawdown and repayment flexibility

e) Risks (including refinancing risk, foreign exchange risk)

f) Time to deploy

g) Implementability

It is totally unrealistic to expect these details to be made public. The parties to the contracts would regard them as totally commercially confidential.

An assessment of the differences in financing of a fleet strategy versus procurement of individual units should also be given. A detailed risk analysis is to be submitted for each scenario as well as the pros and cons for each.

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No country has ordered a 'fleet' of nuclear power plants since France in 1975 so this question cannot be answered

The Service Provider must provide a description of the international experience to address the regulatory tariff risk that may occur during construction, operation and decommissioning. By extension, this should be based on previous scenarios and incorporate the lessons learned, successes and failures and the reasons thereto, and recommend solution/s.

It is not clear what is meant by regulatory tariff risk. Does it mean the price setting process by the Energy Regulatory body? The only worthwhile experience is in the USA 35 years ago

Based on this, an assessment must be done of the impact of the nuclear programme (single plant and fleet) on the South African country financials such as balance of payments, trade deficit, currency, contingent liabilities, fiscal deficit and other relevant financial ratios. The impact on the ownership company financials and credit rating should also be assessed.

It is totally infeasible to model these impacts with any useful degree of accuracy.

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Adrian Pole

From: Adrian Pole <adrian@adrianpole.co.za>
Sent: 01 February 2015 02:41 PM
To: 'Rhoda.Mackier@energy.gov.za'; 'Duncan.Hidle@energy.gov.za'
Subject: Letter to the Minister - National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations
Attachments: ELA-JHB SAFCEI Letter to the Minister Energy (30 January 2015).pdf

Dear Ms Mackier and Mr Hindle

Please find attached letter addressed to the Honourable Minister Joematt-Pettersson, written on behalf of Earthlife Africa – Johannesburg (ELA-JHB) and the South African Faith Community Environmental Institute (SAFCEI) documenting our clients' concerns relating to the planning and procurement processes for the proposed procurement of 9.6GW of nuclear power stations.

We would be most grateful if the letter could be brought to the attention of the Honourable Minister, and look forward to receiving a response to our queries at the Honourable Minister's earliest convenience.

Yours sincerely

Adrian Leonard Pole
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PL11 / 173 1

Your Reference: The Honourable Minister of Energy

My Reference: AP/LP/ELA-JHB SAFCEI

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23 February 2015

The Honourable Minister Joematt-Pettersson

Re: National Nuclear Power Development Programme – Planning and Procurement of 9.6GW of nuclear power stations

We refer to the above matter wherein we act for Earthlife Africa – Johannesburg (ELA-JHB) and the South African Faith Community Environmental Institute (SAFCEI), and to our letter to the Honourable Minister dated 30 January 2015.

Our clients look forward to receiving a reply at the Honourable Minister's earliest convenience.

Yours sincerely

Adrian Leonard Pole

Attorney: Adrian Leonard Pole
BA.LLB.MEnvDev.LLM(environmental law)
VAT Registration Number: 4030234308

S.I.F.N.

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*** TX REPORT ***
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TX/RX NO	0464
RECIPIENT ADDRESS	0123235849
DESTINATION ID	
ST. TIME	24/02 12:47
TIME USE	00'14
PAGES SENT	1
RESULT	OK

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Addressed to/Geadresseer aan
The Honourable Minister -
Jeremiah - Petterson Dept of E
Private Bag X96
Pretoria
0001 Postcode / Postkode

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RC 046 486 371 ZA
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Paraaf van aanneembeampte

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Total
Cash
* Refl

S.I.F.M.

Adrian Pole

From: Adrian Pole <adrian@adrianpole.co.za>
Sent: 23 February 2015 12:39 PM
To: 'Rhoda.Mackier@energy.gov.za'; Duncan.Hindle@energy.gov.za
Subject: RE: Letter to the Minister - National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations
Attachments: ELA-JHB SAFCEI Letter to the Minister Energy (23 February 2015).pdf

Dear Ms Mackier and Mr Hindle

Please find attached our follow-up letter addressed to the Honourable Minister Joematt-Pettersson.

We would be most grateful if the letter could be brought to the attention of the Honourable Minister, and look forward to receiving a response to our queries at the Honourable Minister's earliest convenience.

Yours sincerely

Adrian Leonard Pole
BA.LLB.MEnvDev.LLM(environmental law)

Adrian Pole Attorneys
Environmental, Health & Safety Law
Suite 7, Village Office Park, 2 Inkonka road, Kloof
KwaZulu-Natal, South Africa
Mobile: 082 3408 534
Tel: 031 764 2593
Fax: 031 764 7934
E-mail: adrian@adrianpole.co.za
Web: www.adrianpole.co.za

From: Adrian Pole [mailto:adrian@adrianpole.co.za]
Sent: 01 February 2015 02:41 PM
To: 'Rhoda.Mackier@energy.gov.za'; 'Duncan.Hidle@energy.gov.za'
Subject: Letter to the Minister - National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations

Dear Ms Mackier and Mr Hindle

Please find attached letter addressed to the Honourable Minister Joematt-Pettersson, written on behalf of Earthlife Africa – Johannesburg (ELA-JHB) and the South African Faith Community Environmental Institute (SAFCEI) documenting our clients' concerns relating to the planning and procurement processes for the proposed procurement of 9.6GW of nuclear power stations.

We would be most grateful if the letter could be brought to the attention of the Honourable Minister, and look forward to receiving a response to our queries at the Honourable Minister's earliest convenience.

Yours sincerely

Adrian Leonard Pole
BA.LLB.MEnvDev.LLM(environmental law)

S.I.F.N.

PL12

ADRIAN POLE
ENVIRONMENTAL LAW
Suite 7 • Village Office Park • 2 Inkonka Road • Kloof • 3610 • KwaZulu Natal • SA
P O Box 671 • Hillcrest • 3650
Cell: 082 340 8534 • Tel: 031 764 2593 • Fax: 031 764 7934
Email: adrian@adrianpole.co.za Web: www.adrianpole.co.za

Your Reference: The Honourable Minister of Energy

My Reference: AP/LP/ELA-JHB SAFCEI

The Honourable Minister
Department of Energy
Private Bag X 96
Pretoria
0001

Facsimiles: 021 465 5980 (Cape Town)
012 323 5849 and 012 323 5651 (Pretoria)

Email: c/o Rhoda.Mackier@energy.gov.za and Duncan.Hindle@energy.gov.za

16 March 2015

The Honourable Minister Joematt-Pettersson

Re: National Nuclear Power Development Programme – Planning and Procurement of 9.6GW of nuclear power stations

We refer to the above matter wherein we act for Earthlife Africa – Johannesburg (ELA-JHB) and the South African Faith Community Environmental Institute (SAFCEI), and to our letters to the Honourable Minister dated 30 January 2015 and 23 February 2015.

Our clients look forward to receiving a reply at the Honourable Minister's earliest convenience.

Yours sincerely

Adrian Leonard Pole

S.I.F.N.

Adrian Pole

From: Adrian Pole <adrian@adrianpole.co.za>
Sent: 16 March 2015 12:14 PM
To: 'Rhoda.Mackier@energy.gov.za'; Duncan.Hindle@energy.gov.za
Subject: RE: Letter to the Minister - National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations
Attachments: ELA-JHB SAFCEI Letter to the Minister Energy (16 March 2015).pdf

Dear Ms Mackier and Mr Hindle

Please find attached our second follow-up letter addressed to the Honourable Minister Joematt-Pettersson.

We would be most grateful if the letter could be brought to the attention of the Honourable Minister, and look forward to receiving a response to our queries at the Honourable Minister's earliest convenience.

We would also be most grateful if you could acknowledge receipt of our correspondence.

Yours sincerely

Adrian Leonard Pole
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Adrian Pole Attorneys
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Suite 7, Village Office Park, 2 Inkonka road, Kloof
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Web: www.adrianpole.co.za

From: Adrian Pole [mailto:adrian@adrianpole.co.za]
Sent: 01 February 2015 02:41 PM
To: 'Rhoda.Mackier@energy.gov.za'; 'Duncan.Hidle@energy.gov.za'
Subject: Letter to the Minister - National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations

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We would be most grateful if the letter could be brought to the attention of the Honourable Minister, and look forward to receiving a response to our queries at the Honourable Minister's earliest convenience.

Yours sincerely

S.I.F.N.

Adrian Pole

From: Adrian Pole <adrian@adrianpole.co.za>
Sent: 16 March 2015 01:16 PM
To: 'Olga.Maczali@energy.gov.za'; 'olga.obkhuis-maczali@energy.gov.za'; 'Malusi.Ndlovu@energy.gov.za'; 'Duncan.Hindle@energy.gov.za'
Subject: National Nuclear Power Development Programme – Planning and Procurement of 9.6GW of nuclear power stations
Attachments: ELA-JHB SAFCEI Letter to the Minister Energy (16 March 2015 Rev 1).pdf; ELA-JHB SAFCEI Letter to the Minister Energy (23 February 2015).pdf; ELA-JHB SAFCEI Letter to the Minister Energy (30 January 2015).pdf

For the Attention of the Honourable Minister Joemat-Pettersson

Please find attached our clients' second follow-up letter addressed to the Honourable Minister Joemat-Pettersson.

Please note that our clients' previous correspondence was emailed to the Honourable Minister c/o the email addresses of Ms Maickier and Mr Hindle. While on 9 February 2015 Mr Hindle telephonically confirmed receipt on behalf of the Honourable Minister of our clients' original letter dated 30 January 2015, and while the letters were also faxed and sent to the Honourable Minister by Registered Post, to date we have had no written confirmation of receipt or a response from Minister Joemat-Pettersson.

Subsequent emails sent to Ms Mackier and Mr Hindle have failed to transmit, and we have recently noted changed contact details on the Minister of Energy's website. We have confirmed that correspondence should now be sent to the Minister c/o Ms Maczali's email address.

To avoid any confusion, we also attach our clients' original letter (with attachments) and the first follow-up letter for the Minister's ease of reference.

We would be most grateful if the letter could be brought to the attention of the Honourable Minister, and look forward to receiving a response to our clients' queries at the Honourable Minister's earliest convenience.

We would also be most grateful if you could acknowledge receipt of our correspondence.

Yours sincerely

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Fax: 031 764 7934
E-mail: adrian@adrianpole.co.za
Web: www.adrianpole.co.za

S.I.F.N.

Adrian Pole

From: Olga Maczali <Olga.Maczali@energy.gov.za>
Sent: 16 March 2015 02:38 PM
To: Adrian Pole
Subject: RE: National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations

Good day

I hereby confirm receipt of documentation. It will be shared with the relevant people.

Regards

Olga Ockhuis-MacZali
Ministry of Energy

From: Adrian Pole [adrian@adrianpole.co.za]
Sent: Monday, March 16, 2015 1:15 PM
To: Olga Maczali; olga.obkhuis-maczali@energy.gov.za; Malusi Ndlovu; Duncan Hindle
Subject: National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations

For the Attention of the Honourable Minister Joemat-Pettersson

Please find attached our clients' second follow-up letter addressed to the Honourable Minister Joemat-Pettersson.

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We would also be most grateful if you could acknowledge receipt of our correspondence.

Yours sincerely

Adrian Leonard Pole
BA.LL8.MEnvDev.LLM(environmental law)

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KwaZulu-Natal, South Africa
Mobile: 082 3408 534

S.I.F.N.

16/03 2015 13:18 FAX 180

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*** TX REPORT ***
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TRANSMISSION OK

TX/RX NO	0470
RECIPIENT ADDRESS	0214655980
DESTINATION ID	
ST. TIME	16/03 13:18
TIME USE	00'14
PAGES SENT	1
RESULT	OK

16/03 2015 13:23 FAX 001

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*** TX REPORT ***
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TRANSMISSION OK

TX/RX NO	0472
RECIPIENT ADDRESS	0123235651
DESTINATION ID	
ST. TIME	16/03 13:23
TIME USE	00'14
PAGES SENT	1
RESULT	OK

REGISTERED LETTER
GEREGISTREERDE BRIEF
(with an insurance option/met 'n versekeringsopsie)
Post Office

Full tracking and tracing/Volledige volg en spoor

Addressed to/Geadresseer aan
The Hounorable Minister
Joemat-Pettersson Dept of
Energy
Pbag X96, PTA 0001 Postcode/Postkode

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Total/Totaal R 20-80 c

Insured value of contents
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Enquiries/Navrae
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Tolvry nommer
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Plate Volg-en-Spoor-kliëntafskrif

Initial of accepting officer

Paraaf van aanneem-beampte

HILLCREST
Date Stamp
5
2015-03-23
Datumstempel

7012281

S.I.F.N.

ADRIAN POLE
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Email: adrian@adrianpole.co.za Web: www.adrianpole.co.za

PL13

181.

Your Reference: The Honourable Minister

My Reference: AP/LP/ELA-JHB SAFCEI

The Honorable Minister
Infotech Building
Public Enterprise
1090 Arcadia Street
Hatfield
Pretoria
0001

Email: kim.davids@dpe.gov.za

10 February 2015

The Honourable Minister Lynn Brown

Re: Energy Crisis and National Nuclear Power Development Programme – Planning and Procurement of 9.6GW of nuclear power stations

We are instructed by Earthlife Africa – Johannesburg (ELA-JHB) and the South African Faith Community Environmental Institute (SAFCEI).

Our clients have noted your recent appeal to South Africans to stand together to overcome the current energy crisis,[1] and we write to you in the spirit of openness and transparency with a view to exploring sustainable short and long-term solutions to the current energy crisis.

Our clients believe that the solution to the current crisis (and long term energy needs) lies in the development of renewable new generation capacity, and are deeply concerned that Government seems poised to commence with the procurement of 9.6GW of nuclear power stations (with estimated costs ranging from R400 billion to R1 trillion[2]). Our clients seek an opportunity to engage with the Honourable Minister regarding the merits of additional renewable new generation capacity options (which can help to alleviate the current energy crisis in the short term), as well as an opportunity to table their concerns relating to the proposed procurement of 9.6GW of nuclear power stations.

By way of background, our clients have been engaging Government on nuclear energy policy and planning over a period of years, and (amongst other things) have engaged constructively in the

[1] 'Help us get through Eskom crisis' article dated 4 February 2015, available online at: http://www.iol.co.za/pretoria-news/opinion/help-us-get-through-eskom-crisis-1.1813261#.VNSJumdO7ml
[2] http://mg.co.za/article/2014-11-10-state-powered-up-over-nuclear-but-not-everyone-buys-it

Attorney: Adrian Leonard Pole
BA.LLB.MEnvDev.LLM(environmental law)
VAT Registration Number: 4030234308

S.I.F.N.

Integrated Resource Plan 2010-2030 (IRP 2010) Update and the Integrated Energy Plan (IEP) processes. Unfortunately, these processes appear to have ground to a halt. Government seems to be forging ahead behind closed doors with its plans to procure a fleet of nuclear reactors as recommended in the IRP2010, despite the IRP2010 being based on outdated and incomplete information[3] and without having taken changed circumstances into account. The procurement of a nuclear reactor fleet would require unprecedented public expense and could have significant negative socio-economic consequences for current and future generations in South Africa. Within this context the completion in an open and transparent manner of the IRP2010 Update and IEP processes is fundamental to sound and lawful long term energy planning and procurement. A flexible approach to new generation capacity is required that does not bind South Africa to an unaffordable and unsustainable nuclear energy path, but which instead embraces further Independent Power Producer (IPP) renewable energy new generation capacity to resolve the electricity crisis.

We have written to the Minister of Energy expressing our clients' concerns regarding the outdated[4] and incomplete energy and resource planning process, and have highlighted the constitutional requirement that any nuclear energy procurement will need to take place in accordance with a system that is fair, equitable, transparent, competitive and cost-effective[5] (a copy of this letter is attached hereto marked 'Annexure A' for your information). We are of the respectful view that any decision on the procurement of a nuclear fleet in the current context would be premature, irrational and unconstitutional.

Given the current lack of public information regarding the proposed procurement of 9.6GW of nuclear power stations, our clients are hopeful that the Honourable Minister can shed some light on Government's proposed nuclear fleet procurement. It is currently unclear to our clients whether the intention is that Eskom will procure the nuclear reactors (as indicated in the 2008 Nuclear Energy Policy), or whether an alternative arrangement (such as a public-private partnership (PPP)) will be entered into (and if so whether and how Eskom will be involved).

Our clients note that in terms of the Public Finance Management Act[6] (PFMA), Eskom is a Schedule 2 Public Entity. As a result, the Board of Eskom is the Accounting Authority, with responsibility to (amongst other things) ensure that Eskom has and maintains:

- Effective, efficient and transparent systems of financial and risk management and internal control;
- An appropriate procurement and provisioning system which is fair, equitable, transparent and cost effective; and

---

[3] In *Sea Front for All (and Another) v. the MEC: Environmental and Development Planning, Western Cape Provincial Government (and Others)* Case No. 15974 (unreported), the Western Cape High Court held within the context of an environmental authorisation process that material changes in circumstances must be taken into account in decision-making processes, and that a decision made on outdated information meant that irrelevant considerations were taken into account and constituted a failure to have regard to relevant considerations. The Court held further that, in relying on outdated and erroneous information, the decision-maker had failed to balance socio-economic consequences against environmental consequences as required by the constitution.

[4] The Department of Energy has acknowledged that there have been a number of developments in the energy sector in South Africa and Southern Africa since the IRP2010 was promulgated, and that the electricity demand outlook has changed markedly from that expected in 2010. In addition, the IRP 2010 Update report highlighted that predicted energy demand in 2030 was lower than originally anticipated, and that various uncertainties suggested that an alternative to a fixed capacity plan (as espoused in the IRP 2010) was a more flexible approach taking into account the different outcomes based on changing assumptions (and scenarios) and looking at the determinants required in making key investment decisions. The IRP 2010 Update suggested in particular that the nuclear decision could possibly be delayed, and that the revised demand projections suggest that no new nuclear base-load capacity is required until after 2025 (and for lower demand not until at earliest 2035). The IRP 2010 update also indicated that there were alternative options (such as regional hydropower) that could meet requirements, and that it was thus unnecessary to prematurely commit to a technology that may be redundant if the electricity demand expectations do not materialise. See http://www.doe-irp.co.za/content/IRP2010_updatea.pdf

[5] As required by section 217 of the Constitution of the Republic of South Africa, 1996.

[6] Act 1 of 1999.

S.I.F.N.

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- A system for properly evaluating all major capital projects prior to a final decision on the project.

We also note that the Board of Eskom is obliged to promptly and in writing inform the National Treasury (and to submit relevant particulars to its Executive Authority) of specified transactions, including (but not limited to) the acquisition of a significant asset and the commencement of a significant business activity. The procurement of 9.6GW of nuclear power stations (by whatever arrangement) would clearly constitute the acquisition of a significant asset/s and the commencement of a significant business activity.

In the circumstances, our clients respectfully request that the Honourable Minister:

- Affords our clients (and other stakeholders) an opportunity to meaningfully engage with the Honourable Minister regarding the merits of new generation capacity options that could alleviate the current energy crisis (including IPP renewable new generation options);
- Clarifies whether Eskom will be procuring the proposed 9.6GW of nuclear power stations, and if so on what basis (i.e. whether Eskom will be procuring the nuclear fleet or will be entering into a public-private partnership, such as a build, own and operate arrangement or a derivative thereof);
- Clarifies what procurement system is being or will be implemented by the Department of Public Enterprises and/or Eskom to ensure that the procurement process is conducted in accordance with a system that is fair, equitable, transparent, competitive and cost effective;
- Clarifies what system is or will be implemented by the Department of Public Enterprises and/or Eskom to evaluate the proposed nuclear fleet procurement as a major capital project prior to a final decision being made on the project;
- Advises whether the Department of Public Enterprises and/or the Board of Eskom has informed the National Treasury of any proposed procurement of 9.6GW of nuclear power stations (by whatever arrangement); and
- Undertakes to afford our clients (and other stakeholders) an opportunity to make representations to the Honourable Minister on feasibility, affordability and value for money before any decision is made by the Department of Public Enterprises and/or Eskom to procure a nuclear reactor fleet.

Yours sincerely

Adrian Leonard Pole

S.I.F.N.

184

REGISTERED LETTER
GEREGISTREERDE BRIEF
(with an insurance option/met 'n versekeringsopsie)

Post Office

Full tracking and tracing/Volledige volg en spoor

Addressed to/Geadresseer aan

The Honorable Minister Lynn Brown MP
Ecotech Building, Public Enterprises
1090 Arcadia St, Hatfield
Pretoria

0001 Postcode / Postkode

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Total/Totaal R _____ c

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Kliëntekopie

Initial of accepting officer

Paraaf van aaneem-beampte

Date stamp

2011-12-10

Datumstempel

701281

S.I.F.M.

Adrian Pole

From: Adrian Pole <adrian@adrianpole.co.za>
Sent: 10 February 2015 11:47 AM
To: 'kim.davids@dpe.gov.za'
Subject: Letter to the Minister of Public Enterprises - National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations
Attachments: ELA-JHB SAFCEI Letter to the Minister Public Enterprises (10 February 2015).pdf

Dear Ms Davids

Please find attached letter addressed to the Honourable Minister Lynn Brown, written on behalf of Earthlife Africa – Johannesburg (ELA-JHB) and the South African Faith Community Environmental Institute (SAFCEI) documenting our clients' concerns relating to the planning and procurement processes for the proposed procurement of 9.6GW of nuclear power stations.

We would be most grateful if the letter could be brought to the attention of the Honourable Minister, and look forward to receiving a response to our queries at the Honourable Minister's earliest convenience.

Adrian Leonard Pole
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Email: adrian@adrianpole.co.za Web: www.adrianpole.co.za

Your Reference: The Honourable Minister

My Reference: AP/LP/ELA-JHB SAFCEI

The Honorable Minister
Department of Public Enterprises
Infotech Building
Public Enterprise
1090 Arcadia Street
Hatfield
Pretoria
0001

Email: kim.davids@dpe.gov.za

27 February 2015

The Honourable Minister Lynn Brown

Re: Energy Crisis and National Nuclear Power Development Programme – Planning and Procurement of 9.6GW of nuclear power stations

We refer to the above matter wherein we act for Earthlife Africa – Johannesburg (ELA-JHB) and the South African Faith Community Environmental Institute (SAFCEI), and to our letter to the Honourable Minister dated 10 February 2015.

Our clients look forward to receiving a reply at the Honourable Minister's earliest convenience.

Yours sincerely

Adrian Leonard Pole

Attorney: Adrian Leonard Pole
BA.LLB.MEnvDev.LLM(environmental law)
VAT Registration Number: 4030234308

S.I.F.N.

Adrian Pole

From: Adrian Pole <adrian@adrianpole.co.za>
Sent: 27 February 2015 04:18 PM
To: 'kim.davids@dpe.gov.za'
Subject: RE: Letter to the Minister of Public Enterprises - National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations
Attachments: ELA-JHB SAFCEI Letter to the Minister Public Enterprises (27 February 2015).pdf

Dear Mz Davids

Please find attached our follow-up letter addressed to the Honourable Minister Lynn Brown.

We would be most grateful if the letter could be brought to the attention of the Honourable Minister, and look forward to receiving a response to our queries at the Honourable Minister's earliest convenience.

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Yours sincerely

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E-mail: adrian@adrianpole.co.za
Web: www.adrianpole.co.za

From: Adrian Pole [mailto:adrian@adrianpole.co.za]
Sent: 10 February 2015 11:47 AM
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Web: www.adrianpole.co.za

)

)

S.I.F.N.

Adrian Pole

From:	Nonhlanhla Mokoena <Nonhlanhla.Mokoena@dpe.gov.za>
Sent:	27 February 2015 06:58 PM
To:	adrian@adrianpole.co.za
Cc:	Kim Davids; Masenya Selatswa; Zukie Khalala
Subject:	Re: Letter to the Minister of Public Enterprises - National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	Red Category

Dear Adrian

On behalf of Minister Lynne Brown, Minister of Public Enterprises receipt of your letter is acknowledged with thanks. The content will be forwarded to Minister for her attention.

Kind Regards

Nonhlanhla Mokoena
Assistant PA to Minister
Tel: 012 431 1230
Fax: 012 431 1039
Cell: 071 356 3029
Email: nonhlanhla.mokoena@dpe.gov.za

S.I.F.N.

Adrian Pole

From: Adrian Pole <adrian@adrianpole.co.za>
Sent: 02 March 2015 04:32 PM
To: 'Masenya Selatswa'
Cc: 'Loren Pole'
Subject: RE: ELA-SAFCEI Letters to the Minister DPE - Energy Crisis and National Nuclear Power Development Programme

Dear Mr Masenya

Thank you for the confirmatory email, and for advising us that the letter will be forwarded to the Minister for her attention.

Kind regards

Adrian Leonard Pole
BA.LLB.MEnvDev.LLM(environmental law)

Adrian Pole Attorneys
Environmental, Health & Safety Law
Suite 7, Village Office Park, 2 Inkonka road, Kloof
KwaZulu-Natal, South Africa
Mobile: 082 3408 534
Tel: 031 764 2593
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E-mail: adrian@adrianpole.co.za
Web: www.adrianpole.co.za

From: Masenya Selatswa [mailto:Masenya.Selatswa@dpe.gov.za]
Sent: 02 March 2015 04:05 PM
To: Adrian Pole
Cc: 'Loren Pole'
Subject: RE: ELA-SAFCEI Letters to the Minister DPE - Energy Crisis and National Nuclear Power Development Programme

Dear Andrian

On behalf of Minister Lynne Brown, Minister of Public Enterprises receipt of your letter is hereby acknowledged with thanks.

The letter will be forwarded to the Minister for her attention.

Regards

Mr Selatswa Masenya

Office of the Minister
(0)12 431 1158 | masenya.selatswa@dpe.gov.za
1090 Arcadia Street | InfoTech Building | Hatfield | Pretoria | Switchboard: +27 12 431 1000

S.I.F.N.

public enterprises
Department:
Public Enterprises
REPUBLIC OF SOUTH AFRICA

From: Adrian Pole [mailto:adrian@adrianpole.co.za]
Sent: Monday, March 02, 2015 4:02 PM
To: Masenya Selatswa
Cc: 'Loren Pole'
Subject: ELA-SAFCEI Letters to the Minister DPE - Energy Crisis and National Nuclear Power Development Programme

Dear Mr Selatswa

We refer to your telephone call this afternoon.

As requested, please find attached copies of the letters sent for the kind attention of the Honourable Minister Lynn Brown (original letter dated 10 February 2015 and follow up letter dated 27 February 2015).

We would be most grateful if you could acknowledge receipt of this email.

Yours sincerely

Adrian Leonard Pole
BA.LL.B.MEnvDev.LLM(environmental law)

Adrian Pole Attorneys
Environmental, Health & Safety Law
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Your Reference: The Honourable Minister

My Reference: AP/LP/ELA-JHB SAFCEI

The Honourable Minister
Department of Public Enterprises
Infotech Building
Public Enterprise
1090 Arcadia Street
Hatfield
Pretoria
0001

Email: kim.davids@dpe.gov.za; Masenya.Selatswa@dpe.gov.za; Nonhlanhla.Mokoena@dpe.gov.za

16 March 2015

The Honourable Minister Lynn Brown

Re: Energy Crisis and National Nuclear Power Development Programme – Planning and Procurement of 9.6GW of nuclear power stations

We refer to the above matter wherein we act for Earthlife Africa – Johannesburg (ELA-JHB) and the South African Faith Community Environmental Institute (SAFCEI), and to our letters to the Honourable Minister dated 10 February 2015 and 27 February 2015.

Our clients look forward to receiving a reply at the Honourable Minister's earliest convenience.

Yours sincerely

Adrian Leonard Pole

S.I.F.N.

Adrian Pole

From: Adrian Pole <adrian@adrianpole.co.za>
Sent: 16 March 2015 12:16 PM
To: 'kim.davids@dpe.gov.za'; masenya.selatswa@dpe.gov.za; 'Nonhlanhla.Mokoena@dpe.gov.za'
Subject: RE: Letter to the Minister of Public Enterprises - National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations
Attachments: ELA-JHB SAFCEI Letter to the Minister Public Enterprises (16 March 2015).pdf

Dear Mz Davids

Please find attached our second follow-up letter addressed to the Honourable Minister Lynn Brown.

We would be most grateful if the letter could be brought to the attention of the Honourable Minister, and look forward to receiving a response to our queries at the Honourable Minister's earliest convenience.

We would also be most grateful if you could acknowledge receipt of our correspondence.

Yours sincerely

Adrian Leonard Pole
BA.LLB.MEnvDev.LLM(environmental law)

Adrian Pole Attorneys
Environmental, Health & Safety Law
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KwaZulu-Natal, South Africa
Mobile: 082 3408 534
Tel: 031 764 2593
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E-mail: adrian@adrianpole.co.za
Web: www.adrianpole.co.za

From: Adrian Pole [mailto:adrian@adrianpole.co.za]
Sent: 10 February 2015 11:47 AM
To: 'kim.davids@dpe.gov.za'
Subject: Letter to the Minister of Public Enterprises - National Nuclear Power Development Programme - Planning and Procurement of 9.6GW of nuclear power stations

Dear Ms Davids

Please find attached letter addressed to the Honourable Minister Lynn Brown, written on behalf of Earthlife Africa – Johannesburg (ELA-JHB) and the South African Faith Community Environmental Institute (SAFCEI) documenting our clients' concerns relating to the planning and procurement processes for the proposed procurement of 9.6GW of nuclear power stations.

We would be most grateful if the letter could be brought to the attention of the Honourable Minister, and look forward to receiving a response to our queries at the Honourable Minister's earliest convenience.

S.I.F.N.

PL14

MINISTER
PUBLIC ENTERPRISES
REPUBLIC OF SOUTH AFRICA

Private Bag X15, Hatfield, 0028 Tel: 012 431 1118 Fax: 012 431 1039
Private Bag X9079, Cape Town, 8000 Tel: 021 461 6376/7 Fax: 021 465 2381/461 1741

Mr. A L Pole
Environmental Law
PO Box 671
Hillcrest
3650

Tel: +27 (0) 31 764 2593
Fax: +27 (0) 31 764 7934

E-Mail: Adrian@adrianpole.co.za

Dear Mr. Pole

Request for Engagements with the Minister on the Energy Crisis and National Nuclear Power Development Programme - Planning and Procurement of 9.6 GW of nuclear power station

Your letters dated 10 and 27 February 2015 and the above matter have reference.

I have read and considered the concerns and issues you have raised.

Let me state, at the outset that the energy concerns and issues your clients have raised must be addressed to the Department of Energy ("DoE") and its Ministry. DoE's mandate includes the facilitation of renewable and nuclear energy issues in our country, and in the main, your clients are concerned with policy issues.

These concerns include and enquire into, Nuclear Energy Act, 1999 and its Regulations, and National Energy Policy – 2008 (9.6 GW National Nuclear Power Development Programme, including planning and procurement issues), Integrated Energy Policy, Integrated Resource Plan (2010-2030) (IRP2010), amongst others.

The mandate of the Department of Public Enterprises ("DPE") is to exercise oversight function over *inter alia* Eskom which generate, transmit and distribute electricity in the country. However, the issues that you would like to discuss are beyond both Eskom's and my mandate.

S.I.F.N.

Consequently, I decline your request for a meeting, and recommend that you continue to secure a meeting with the DoE. I appreciate your support, and for heeding the call in dealing with energy challenges of our country.

I trust that the above is in order.

Yours sincerely

MS. LYNNE BROWN, MP
MINISTER OF PUBLIC ENTERPRISES
DATE: 14/04/2015

S.I.F.N.

196

PL15

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Mail&Guardian
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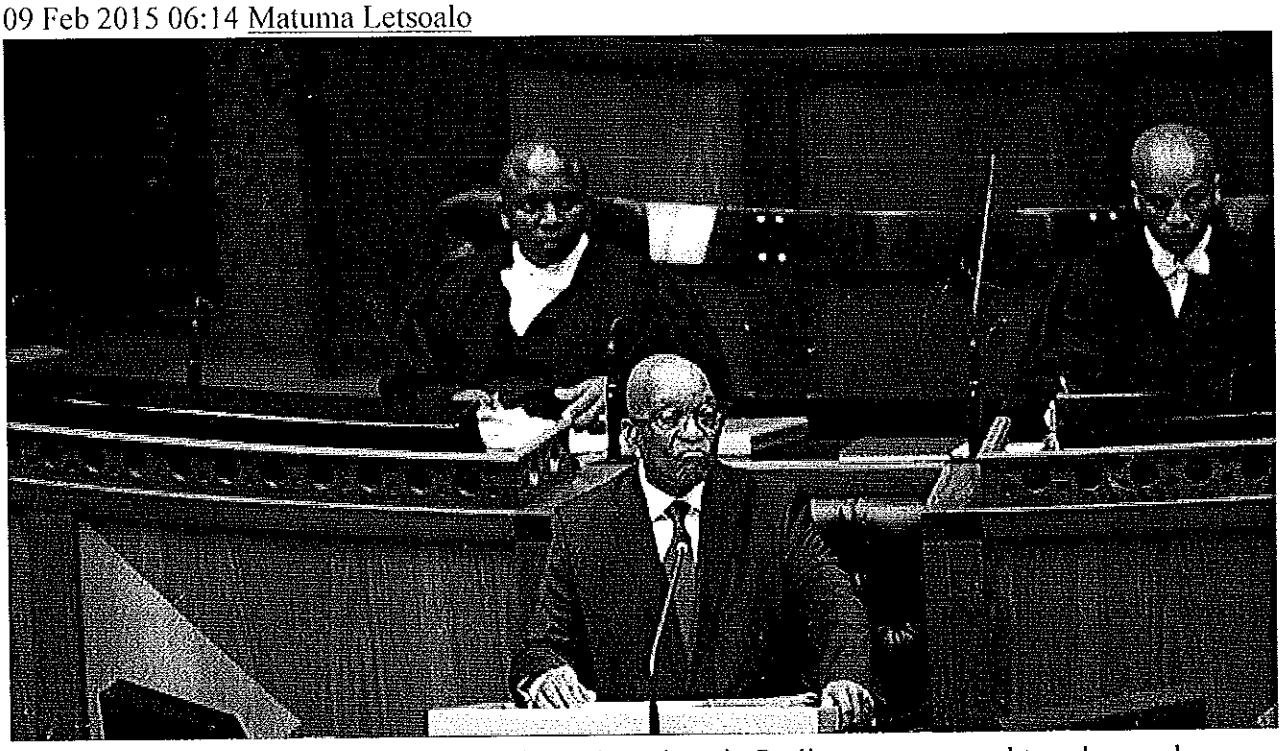
Zuma not losing sleep over EFF's Sona threats

President Jacob Zuma has accused the EFF of using the Nkandla issue to score political points by disrupting Parliament.

09 Feb 2015 06:14 Matuma Letsoalo



While the EFF is being chastised for their crude actions in Parliament, we need to ask ourselves what prompts these actions, says Nikiwe Bikitsha.

President Jacob Zuma has lambasted Julius Malema and his Economic Freedom Fighters after the party threatened to disrupt his State of the Nation Address on Thursday.

Addressing editors at the Sefako Makgatho presidential guest house in Pretoria on Sunday, Zuma again pleaded innocence, claiming he was not responsible for the R250-million security upgrade at his Nkandla homestead.

Zuma accused the EFF of using the Nkandla issue to score political points, saying he would not have allowed the question about when he will pay back the money if he was the speaker of Parliament. "If you remember when they [the EFF] raised the issue, the matter was under discussion in Parliament. We were participating in a process. In fact even that question ... I would

S.I.F.N.

have not allowed the question as there was a committee established. Why do you ask the question? You wait for the committee to conclude and then bring a report, then you have time to ask questions," said Zuma.

'Not guilty'

He said none of the three government agencies that investigated the matter found him guilty of squandering taxpayers' money. "When the matter of Nkandla emerged it was said that Zuma squandered 200 and something million. Three institutions have investigated, the government, the SIU and the Public Protector. Not a single one has said Zuma squandered money. That serious allegation has never been made. Then the Public Protector says it unduly benefitted the family. It changes the allegation that I squandered and I ate government money. It's not a small matter, its not a small matter that you can make that kind of claim.

"So Zuma never decided that firstly the security upgrade should be built. Never. Zuma built his own house. Government said so because the constitution said so. This matter is investigated by the security cluster. Is it because for the first time we have a president from Nkandla that there is a big debate? I don't think it's fair. Why did that recommendation come? I never decided that. To me it's a kind of report that it was important that it was subjected to Parliament and Parliament has looked at the report and pronounced so why should I worry about the EFF and not the very conclusions of the Parliament in which they participate. I don't see any logic," said Zuma.

He said he was not having sleepless nights about the EFF's threat to disrupt the State of the Nation Address. "I am not nervous at all. I have never been nervous all my life," said a relaxed looking Zuma. He implied that the people who voted for the EFF wasted their energy as the party had nothing to offer but to disrupt Parliament.

"I think EFF said to all of us ... they are going to Parliament to misbehave and the people voted for them to go to Parliament to misbehave. They said we are going to change Parliament, it is not going to be the same. That's what they are doing. The voters voted for them. It's not our problem. What we are going to do is to use the rules of Parliament to make them behave. That's what the country should be saying. That's what I would be expecting the media to say. They can't continue the same way. This is just not on. That kind of behaviour is not right. If I was a voter, I would be saying, 'sorry I voted, I did not know'. And I would be taking a serious decision not to vote for them (EFF) again," said Zuma.

'Uniforms degrade people'

He accused the EFF of taking advantage of the plight of mine workers and domestic workers by wearing workers attire in Parliament. "If you were a person who once worked in the mine, it's terrible. If you worked in the domestic areas, it's terrible. People who worked there don't like those uniforms because they degrade people. It's not something to be proud of. When they work in those places, on Sundays they take their best to feel they are human beings. And you think you are fighting for them? I think if I was a journalist I would be having continuous columns analysing the mentality of the party," said Zuma.

ANC MPs unsuccessfully tried to change Parliament rules in order to prevent EFF MPs from wearing their red overalls and gumboots in Parliament.

The *Sunday Times* reported that Parliament has taken the unprecedented step of sending its security staff on self defence classes in preparation for Zuma's State of the Nation Address.

Malema told the *Mail & Guardian* on Sunday his party did not take Zuma's remarks about the EFF seriously. "We are meeting him (Zuma) on Thursday. He thinks we are playing. We are going to show him who we are," said Malema.

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The EFF leader said since Zuma took over as ANC president, many people have turned their backs on the ANC. He said contrary to what Zuma claimed, the EFF's campaign to get the president to pay back the money enjoyed support from ordinary people. "When we went to Mohlakeng today (Sunday), people started chanting 'pay back the money'," said Malema.

'Energy is not a new problem'

Meanwhile, Zuma said he still had confidence in his economic cluster ministers, despite the energy crisis in the country. "You are not dealing with the country that has been developing normally all this year. We started developing from 1994. You can't say the past has not affected us. I think as government we are doing our best to address the economy. Energy is not a new problem. We have a comprehensive plan to deal with the matter.

"There are still millions who still have electricity while we covered about 11 million. It's not a fabrication, it's a reality. You can't blame it on individuals or ministers. The fact of the matter is that we never had enough energy. Other people were excluded. We are dealing with it. We're building huge power stations. We are also going to build nuclear."

S.I.F.M.

PL16

process for 2 400 megawatts of new gas-fired generation will commence in the first quarter of the new financial year.

A total of 2 600 megawatts of hydro-electric capacity will be sourced from the SADC region. With regards to the long-term energy master plan, we will pursue gas, petroleum, nuclear, hydropower and other sources as part of the energy mix.

South Africa is surrounded by gas-rich countries, while we have discovered shale gas deposits in our own Karoo region.

The Operation Phakisa Ocean Economy initiative, launched last year, also promises to unveil more oil and gas resources, which will be a game changer for our country and region.

Government is also exploring the procurement of the 9 600 megawatts nuclear build programme as approved in the Integrated Resource Plan 2010-2030.

To date government has signed inter-governmental agreements and carried out vendor parade workshops in which five countries came to present their proposals on nuclear.

These include the United States of America, South Korea, Russia, France and China.

All these countries will be engaged in a fair, transparent, and competitive procurement process to select a strategic partner or partners to undertake the nuclear build programme.

Our target is to connect the first unit to the grid by 2023, just in time for Eskom to retire part of its aging power plants.

With regards to hydro power, the Grand Inga Hydro-electrical Project partnership with the Democratic Republic of Congo will generate over 48 000 megawatts of clean hydro-electricity. South Africa will have access to over 15 000 megawatts.

For sustainability, government will establish strategic partnerships for skills development with the countries that will partner us in the Energy Build Programme, while also generating skills locally.

Compatriots,

There are still 3,4 million households in the country without electricity. In the June 2014 SoNA, I announced that infrastructure support will be given to specific municipalities in the country.

Funding has been provided for electrification to the following municipalities in the 2015/16 financial year: Amathole District Municipality, Umzinyathi District Municipality, Alfred Nzo District Municipality, Lukhanji Municipality and OR Tambo District Municipality.

Fellow South Africans,

200

PL17

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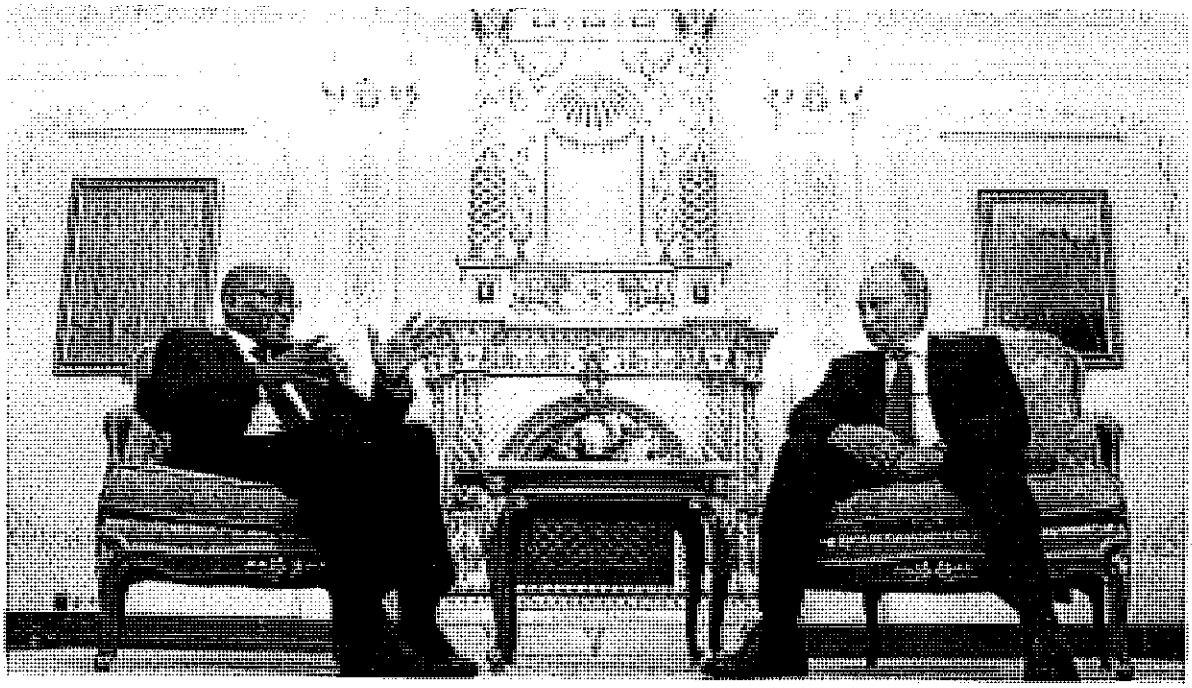
National

Exposed: Scary details of SA's secret Russian nuke deal

13 Feb 2015 00:00 Lionel Faull

The secret nuclear deal our leaders have signed with Russia carries many risks for South Africa.



Shocking details of the secret nuclear deal that Energy Minister Tina Joemat-Pettersson signed with Russia last year can, for the first time, be revealed. The text, which has been jealously guarded by her department and Russian nuclear company Rosatom, holds many dangers for South Africa.

It creates an expectation that Russian technology will be used for South Africa's trillion-rand fleet of new nuclear power stations. And by laying the groundwork for government-to-government contracting, it appears designed to sidestep the constitutional requirement for open and competitive tendering.

- **Read: Editorial: 'Atomic Tina' blows SA away**

Once the agreement comes into force, the Russians will have a veto over South Africa doing business with any other nuclear vendor. And it will be binding for a minimum of 20 years, during which Russia can hold a gun to South Africa's head, in effect saying: "Do business with us, or forget nuclear."

The agreement confirms the government's intention to make "Atomic Tina's" energy department the procuring agent for the nuclear programme rather than Eskom – where the country's nuclear expertise lies, despite the utility's travails. Joemat-Pettersson signed the agreement in Vienna on September 21 last year, three weeks after President Jacob Zuma held talks with his Russian counterpart, Vladimir Putin, at the latter's country estate.

- **Download the original signed agreement (Russian version)**
- **Download an English translation of the agreement**

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It led to an immediate outcry as it appeared that Russia was being favoured over other vendor countries. But the energy department said the agreement merely "initiates the preparatory phase for the procurement for the new nuclear build programme" and it undertook to sign agreements with other nuclear vendors – France and China – next.

It asserted again this week that it is still "engaged in the preprocurement phase" and the "type and nature of [the] procurement process has not been approved by Cabinet".

The department has refused amaBhungane and others' requests under the Promotion of Access to Information Act for copies of the Russian, French and Chinese agreements, citing "the delicate process of negotiations ... with other countries".

The terms of the agreement lean heavily in Russia's favour. They:

- Indemnify the Russians from any liability arising from nuclear accidents during the reactors' life. The agreement says South Africa is "solely responsible for any damage both within and outside the territory of the Republic of South Africa";
- Hand the Russians a host of regulatory concessions and "special favourable treatment" in tax and other financial matters, but offer South Africa no such incentives; and
- Require Russia's permission if South Africa wants to export nuclear technology it develops locally as a result of learning from the Russians, thereby hindering government's aim that the nuclear new-build programme will develop a globally competitive local nuclear industry.

David Unterhalter, a University of Cape Town law professor and constitutional expert, this week said the agreement appeared to go far beyond the type of general framework document that government officials have declared it to be.

"While it could perhaps be argued that the [introductory] provisions could be understood as forming a general co-operation agreement, when one gets down among the weeds it seems pretty clear that this is not just an agreement to agree.

"There is a number of specific matters dealt with in a way that suggests this agreement is intended to give rise to executable obligations ... in other words obligations that appear to be enforceable even if via diplomatic rather than legal channels."

The agreement is to be tabled in the National Assembly and the National Council of Provinces before it becomes binding, but there is uncertainty about the process to be followed.

- **Read: When does the Russian deal become law**

AmaBhungane has obtained copies of the equivalent co-operation agreements concluded with Korea in 2011 and the United States in 2009. In contrast to the Russian agreement, these specify more general collaboration on nuclear matters, do not refer to specific technologies and do not use decisive language.

The department has concluded agreements with Franee and China since the Russian deal, but these remain under wraps.

Numerous officials in the department of energy, international relations, trade and industry, as well as in the treasury and the chief state law adviser, raised concerns about clauses in the draft Russian agreement, which the Russians first put on the table in mid-2013, after Zuma paid Putin a "working visit" to the Black Sea resort of Sochi.

But these officials were ignored and, in some cases, sidelined.

A comparison with an earlier draft shows some clauses to which they objected have been retained almost unchanged in the signed version, and others with only minor revision.

AmaBhungane understands chief state law adviser Enver Daniels provided detailed input on the draft agreement but was given no insight into the version Joemat-Pettersson signed. He was not privy to whether his advice had been followed.

S.I.F.N.

Instead, the process of finalising the agreement was managed by a powerful group of officials in the energy department, two of whom accompanied Zuma to Russia on his "medical" holiday last August, a month before the deal was signed.

One official, Senti Thobejane, is nominally special adviser to Joemat-Pettersson, but is also believed to advise Zuma and the ANC on nuclear matters. The other official, Zizamele Mbambo, is deputy director general for nuclear in the energy department. Both officials were present at the signing ceremony in Vienna.

Mbambo denied ignoring other departments' input: "[They] commented on the agreement and their comments were addressed."

Rosatom said it needed to send answers it had prepared to the energy department for feedback first: "It would not be ethical in our minds to divulge information unilaterally on a bilateral agreement."

Presidency spokesperson Mac Maharaj also said he was "awaiting feedback".

Last night, Zuma told Parliament in his state of the nation address that "all ... countries will be engaged in a fair, transparent, and competitive procurement process to select a strategic partner or partners to undertake the nuclear build programme".

He set an ambitious target of connecting the first unit to the grid within seven years. – Additional reporting by Sam Sole & Stefaans Brümmer

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How we got the secret document

The supposedly confidential agreement is published among the list of bilateral treaties on the website of the legal department of the Russian foreign ministry.

It was first obtained by South African environmental organisation Earthlife Africa Johannesburg by Russian anti-nuclear activist and head of Ecodefense Vladimir Slivyak, who got it from a source in the Russian foreign ministry. It is in Russian, and includes the signatures of Rosatom's director general Sergey Kirienko and South African energy minister Tina Joemat-Pettersson.

A Russian translator commissioned by Earthlife to translate the agreement into English subsequently also found it publicly available on the ministry's website.

amaBhungane has compared Joemat-Pettersson's signature on the document with her signature on a current document; they are identical. amaBhungane has also commissioned its own translation of the agreement, which is available to download by clicking on the link at the top of this story. – Lionel Faull

* *Got a tip-off for us about this story? Click here.*

The *M&G* Centre for Investigative Journalism (amaBhungane) produced this story. All views are ours. See www.amabhungane.co.za for our stories, activities and funding sources.

Lionel is a reporter at the Mail & Guardian Centre for Investigative Journalism, Amabhungane.

- Read more from **Lionel Faull**

S.I.F.N.

PL18 203

Print this page

Department plans to tap new power sources

18 Feb 2015 | Charlotte Mathews

It will take 20-30 months to fix Eskom's maintenance backlog and restore full availability of capacity

THE Department of Energy is working to secure 16,000MW of new power supply for SA in the medium term.

Plans included accelerating private sector bids for co-generation, gas and coal-fired power, obtaining hydroelectric power from the Grand Inga Dam in the Democratic Republic of Congo, and signing up renewable energy projects, acting director-general of energy Wolsey Barnard said on Tuesday.

He said 32 of the 66 renewable energy contracts awarded were delivering more than 1,500MW of power to the grid.

He was delivering the keynote address on Tuesday at the Africa Energy Indaba in Sandton, in the absence of Energy Minister Tina Joemat-Pettersson.

The conference is being held in the midst of SA's acute power shortages and load shedding.

Of about 43,000MW of installed capacity, SA has only 28,000MW-35,000MW available at any time because of planned and unplanned outages.

Dr Barnard said it would take 20-30 months to address Eskom's maintenance backlog and restore full availability of installed capacity.

Answering questions on the sidelines of the conference, he said the department was finalising key policy documents including the integrated resource plan (IRP), integrated energy plan, gas utilisation master plan and liquid fuels strategy. But in the meantime, it was focusing on developing energy infrastructure — putting in place the infrastructure for gas supply was one of its priorities.

He said discussions were still under way on whether or not oil and gas legislation would be separated from the Minerals and Petroleum Resources Development Act, after the amendment bill was recently sent back to Parliament for review.

The department said it expected clarity on this within weeks and that it would have a contribution to make on gas legislation.

Asked about rumours that SA had signed a special deal on procuring nuclear power from Russia, Dr Barnard said no binding agreements had been signed with any country. SA had invited countries to offer nuclear technology solutions and show what economic development would accompany it.

So far, five countries had showed interest, Dr Barnard said, and two or three more were expected to come forward. He said no tender had been issued.

This year, the next steps would be taken towards finalising a procurement process, then a decision would be made by the Cabinet.

At a panel discussion on nuclear energy, Nuclear Industry Association of SA MD Knox Msebenzi said the date of 2023 for nuclear energy commissioning mentioned last week by President Jacob Zuma in his state of the nation address was derived from the IRP2010.

S.I.F.M.

This deadline had to be revised as there had been a delay in making the decision, and the timeline for delivery of nuclear power also depended on the technology and the vendor selected.

Asked if the hefty cost of nuclear energy was affordable for SA, especially with the weakening of the rand-dollar rate, North West University nuclear engineering lecturer Dawid Serfontein said it would not be affordable to buy technology from a dollar-based economy.

But the rouble had depreciated more than the rand, which was in Russia's favour. Viktor Polikarpov, regional vice-president of Russian nuclear company Rosatom, said it offered various financial options: for example, in Finland, the nuclear power station combined public and private ownership.

Another option was for Russia to extend a state loan. The depreciation of the rouble did not mean Russia was bankrupt. It held one of the world's biggest gold reserves, he said.

Areva MD Yves Guenon said the French nuclear company financed SA's first nuclear power station, Koeberg. "When you finance it, you have to balance the ownership levels. It also depends on the scale on which you are building."

~oOo~

S.I.F.N.

PL19

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National

'Top secret' nuclear plan ducks scrutiny

20 Feb 2015 00:00 Lionel Faull, Sam Sole & Stefaans Brümmer

Bureaucrats driving the new build programme seem comfortable skirting transparency and fair value.

Comrades: President Jacob Zuma and Russian President Vladimir Putin. Photo: Maxim Shipenkov/Reuters

In a "top secret" presentation, the energy department has proposed a closed government-to-government procurement of new nuclear power stations instead of a transparent and competitive tender.

If adopted, this would pave the way for the nuclear co-operation agreement it concluded with Russia in September – or "similar" agreements it concluded with France and China after an outcry that it was favouring the Russians – to be implemented without pitting potential suppliers openly against each other.

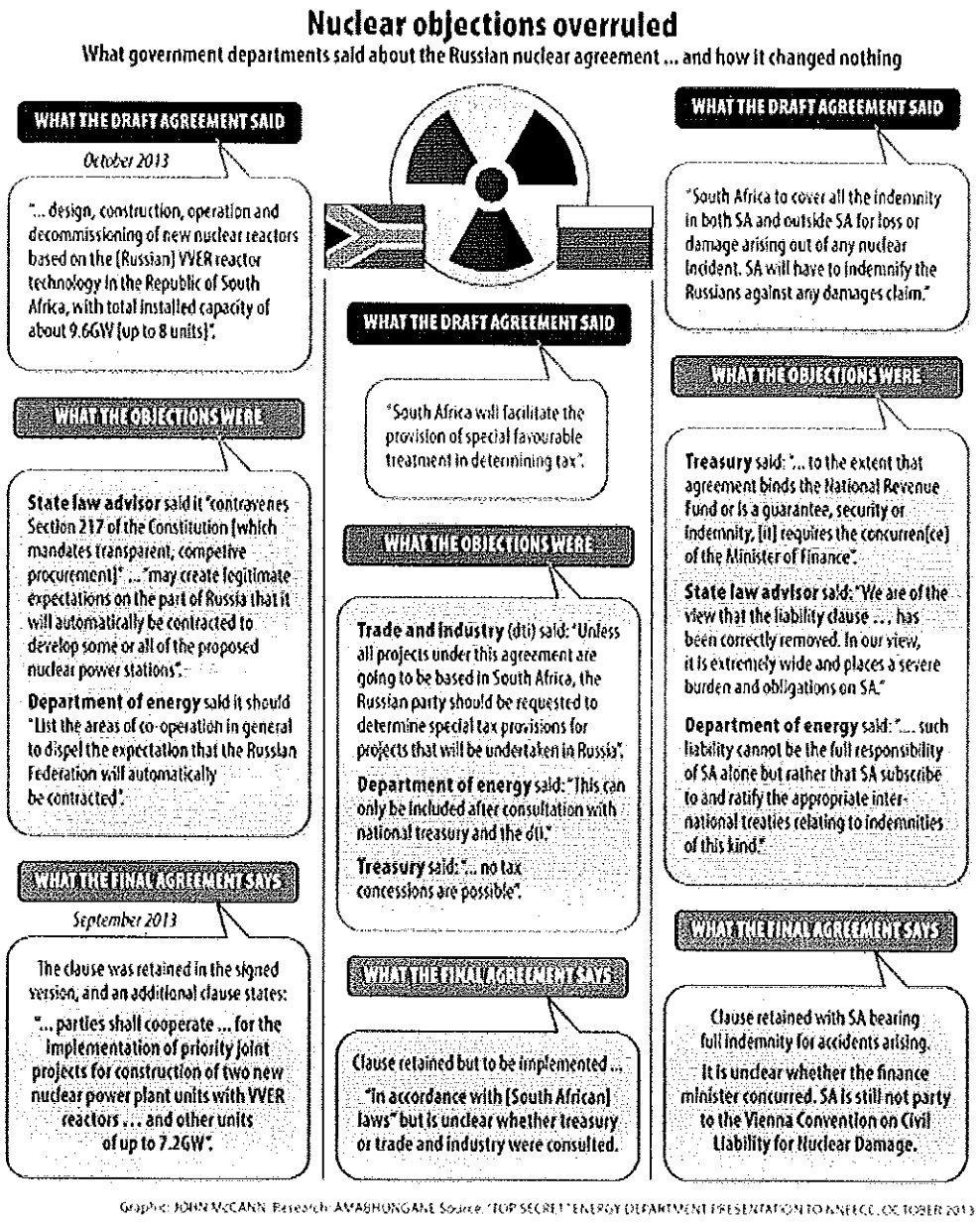
This flies in the face of public assurances from the government that it would follow a competitive process.

- **Also read: SA's nuclear deal with Russia is far from done**

During his State of the Nation address last week, President Jacob Zuma said all countries that bid "will be engaged in a fair, transparent and competitive procurement process to select a strategic partner, or partners, to undertake the nuclear build programme".

If the mooted six to eight nuclear power stations are built, it will be South Africa's most expensive procurement yet, at roughly R1-trillion.

S.I.F.N.



The agreement with Russia, revealed by amaBhungane last week, states that the South African government is prepared to give Russia the exclusive rights to its nuclear build programme for a minimum of 20 years. During that time, Russia could block South Africa from procuring nuclear technology from any other country.

The agreement is not yet binding, as it requires the National Assembly and the National Council of Provinces to ratify it.

The French and Chinese agreements remain undisclosed.

The energy department's recommendations on the procurement method are contained in a separate document obtained by amaBhungane. It is marked "top secret" and was prepared for presentation to the national nuclear energy executive co-ordination committee in October 2013.

This was a Cabinet committee comprising the ministers and government officials directly responsible for implementing the new nuclear programme and was chaired by President Jacob Zuma.

It was renamed the Cabinet energy security subcommittee last year, and its scope was broadened to tackle the country's energy supply crisis and its composition of ministers was re-adjusted slightly.

The document also recommended that the energy department be appointed as the procuring agency, in effect sidelining Eskom, in which the bulk of the government's nuclear energy expertise lies.

No comment
The department did not respond this week to a question about whether the Cabinet had adopted its recommendations.

But responding to questions about the Russian agreement last week, the deputy director general for nuclear energy in the department of energy, Zizamele Mbambo, said: "At this stage, the department is engaged in the pre-procurement phase. The type and nature of procurement process has not been approved by Cabinet. It is, therefore, premature to comment about the perceptions of the process that has not been started."

The document – a Powerpoint presentation – sets out the procurement options available: a competitive tender, a sole-source procurement or a government-to-government deal. It notes that only 11 out of 127 (or slightly less than 10%) of nuclear procurement decisions taken worldwide since 1996 were done by a competitive tender.

The purported advantages of the government-to-government approach, which the department ultimately recommends in the presentation, include:

• Bilateral support for financing;

• Quicker procurement;

• Access to technology and opportunities to develop local industry (for the buyer); and

• Access to large, developing markets (for the seller.

The drawbacks it notes are:

• A lack of transparency; and

• Determining value for money.

Despite the apparent global tendency to conclude nuclear tenders one on one, and behind closed doors, the lack of transparency is likely to jar with what South Africa's Constitution says about procurement.

According to section 217, "when an organ of state ... contracts for goods or services, it must do so in accordance with a system which is fair, equitable, transparent, competitive and cost-effective".

The presentation on procurement models is followed by several slides summarising other government departments' responses to a proposed draft version of the nuclear agreement with Russia. These include a comment by the state law adviser that a clause in the agreement that specifically refers to "the design, construction, operation and decommissioning of new nuclear reactors based on the [Russians'] VVER reactor technology" would contravene section 217.

But the adviser draws the department's attention to the Preferential Procurement Policy Framework Act, which, he says, gives the finance minister the discretion to override the constitutional injunction if "it is in the interests of national security" or "the likely tenderers are international suppliers".

Read more closely
Arguably, both these conditions might apply to the nuclear tender.

But a closer reading of the procurement Act suggests that the ministerial discretion to override the injunction applies only to the Act itself, and not to the constitutional demand for open procurement. It would appear that the minister can only override the way in which specified preferences, such as for black empowerment, are applied.

In any case, the clause in the Russian agreement that gave rise to the objection is retained verbatim in the final signed agreement, as are others about which different South African officials also raised concerns.

The other listed drawback, determining value for money, is problematic because the estimated R1-trillion cost of the full planned procurement of six to eight new reactors would be 10 times more than any previous, known procurement by the state.

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The department issued a tender for a study on the cost of nuclear power in May 2013, but Mbambo refused a request by amaBhungane, under the Promotion of Access to Information Act, to see it.

History doomed to repeat itself
The last time the government bypassed the Constitution on a major public procurement, the deal went badly wrong.

In 2005, it signed a reported R4.6-billion deal with Airbus for eight A400M military transport planes.

The government bypassed the tender process by becoming part of a nine-nation consortium that would manufacture the aircraft.

"We are not an ordinary buyer … the contract makes us a part of the procurement and production process," the then public enterprises minister, Alec Irwin, told *Business Day* at the time.

But in 2009, then defence minister Lindiwe Sisulu cancelled the deal after the projected final cost had ballooned to more than R40-billion.

"The termination of the contract is due to extensive cost escalation and the supplier's failure to deliver the aircraft within the stipulated timeframes," a government spokesperson said at the time.

The lessons of the Airbus debacle are there to be learned, so it remains to be seen whether section 217 will be bypassed again.

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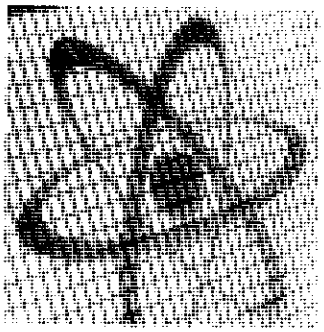
PL20

Nuclear tender process will be open - ministers

Feb 25 2015 07:53 Donwald Pressly

Cape Town - An economic cluster deputy minister and a cabinet minister gave the assurance on Tuesday that South Africa's proposed mini-nuclear power station programme would go out to open "and competitive" tenders.



Deputy Energy Minister **Thembisile Majola** told a media briefing of the economic cluster ministers and deputy ministers at parliament that "in terms of request for propoosals... it will be open in terms of those who have come and presented what there offerings are to us".

South Africa has agreed already to build up to six "mini-nuclear" power plants to help supplement Eskom's power supply.

Majola said the open tender issue was not restricted to the nuclear power matter, it also applied to other forms of power extraction such as hydro-electric power at the Grand Inga project in the Democratic Republic of the Congo.

Vendor parades held with potential providers

Referring to expanding South Africa's nuclear power - beyond an ageing nuclear power station at Koeberg in the Western Cape - she said the government has held "a number of vendor parades" with various potential providers including Canada, the United States, South Korea, Japan "and so on".

She left out mentioning Russia, where Rosatom, the state nuclear company, has apparently locked up South Africa in a severely restricted deal which would give Russia the right to veto South Africa from procuring technologies from other countries or suppliers.

Referring to the Inga project, she said three large consortiums are potentially involved in providing hydro-electric power.

She said it is obvious that because of its grand size - "it is double the size of the Three Gorges (facility) of China" on the Yangtze River - not many companies have the capacity to carry out such a project. Nevertheless, there would be a competitive bidding process there.

President **Jacob Zuma** said in his State of the Nation speech that this project is set to provide South Africa with 15 000 megawatts of electricity - way bigger than Eskom's current operating margin.

When completed, the Grand Inga project on the DRC's Congo River would become the largest hydro-electric power generating facility on earth.

Referring to the nuclear power projects, Trade and Industry Minister **Rob Davies** also emphasised that there would be an "open and competitive" tender process.

He emphasised that remarks made by Zuma on the matter of the procurement of nuclear power stations should be seen in context. "On the work that has been done up to now ... is pre-tender. Any (nuclear power) tender would be an open and competitive process."

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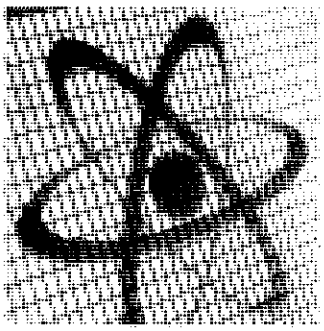
Ramaphosa: Trust Zuma on Russia nuclear deal

Mar 26 2015 11:47 Donwald Pressly



Cape Town - Members of parliament should trust President **Jacob Zuma**'s promise in the State of the Nation speech that the nuclear agreement with Russia will be open and transparent, said Deputy President **Cyril Ramaphosa** on Wednesday.

Taking questions in the national council of provinces, Ramaphosa said: "It should suffice to say... when the president addressed the State of the Nation... he did say that all these things that are being done with regards to nuclear energy are going to be in an open and transparent manner. That is what our president said... I think we should rely on that."

He was asked by M Khawula, IFP MP KwaZulu-Natal, whether South Africa has signed a bilateral agreement with Russia and whether such agreements would have a negative impact on the workings of the Nuclear Energy Corporation of South Africa (Necsa).

Denying that Necsa's work would be compromised in any way, Ramaphosa noted that South Africa had signed agreements on nuclear matters with Russia, China, South Korea and France. Agreements with the United States, Canada and Japan are also under consideration.

"The process of signing agreements with the USA, Canada and Japan is at an advanced stage," said Ramaphosa.

"The governance of the Nuclear Energy Corporation of South Africa is guided, among others, by the Nuclear Energy Act, the Companies Act and the Public Finance Management Act. It would, therefore, be unaffected by such bilateral agreements."

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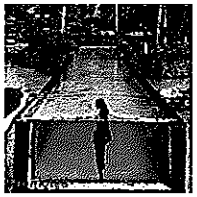

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However, South Africa's lack of timely coordination of our planning, alignment and implementation of our country's energy programmes has created serious challenges for us. I want to reassure South Africans that the load shedding which prevails is receiving our highest priority for urgent resolution. Partnerships have been established between government, labour, business and civil society to find solutions to our problems, in keeping with the great spirit of our country. The 5 Point Plan was adopted by Cabinet as a blueprint for addressing our challenges.

Our government's urgent response to load shedding has accelerated the finalisation of the much awaited Integrated Energy Plan. Once approved by Cabinet, the Integrated Energy Plan will be published as a policy document. This Plan will inform our future energy mix and prioritize policy interventions for future programmes within the energy sector.

Whilst energy policy development continues, we announced a package of energy supply and demand options last month. This will increase the independent power producer energy supply to the grid by means of renewable energy, coal, gas and co-generation by 17,000 Megawatts towards the end of 2022. An annual increase of 2,400 Megawatts of additional energy capacity will be added to the grid. Our current circumstances compel us to add a significant amount of electricity generation to the grid in a very short time.

The REIPPP programme has added to the energy supply capacity and electricity diversity in South Africa over a period of only three and a half years. Competitive energy prices have been achieved, with a distinct and meaningful possibility to make a real socio-economic difference in the communities where they are located.

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Similarly, we will improve third party access to the network and the wheeling of power. NERSA has commenced with the process of developing the necessary rules pertaining to this. We implore NERSA to fast track its process of public consultation for for tariff adjustments to assist ESKOM to stabilise its balance sheet.

Honourable members,

Energy Security is a pre-requisite for achieving the 5.5% economic growth target as envisaged by the National Development Plan. The development of our electricity infrastructure, through amongst others, IPP's, the nuclear build programme, gas to power by exploiting the indigenous shale gas resources and other interventions will contribute towards ensuring our countries economic growth and development

Our government approved the Nuclear Energy Policy in 2008, which provides for the expansion of the nuclear build programme in a coordinated manner to address our socio-economic needs and to bolster the economy.

The Cabinet approved IRP 2010 provides for 9,600 Megawatts of electricity to be generated through nuclear power, with the first unit commissioned by 2023.

In this regard South Africa has signed various Inter-Governmental Agreements or IGAs, laying the foundation for cooperation, trade and exchange for nuclear technology as well as procurement. These agreements describe broad areas of nuclear cooperation and they differ on emphasis, based on the unique needs of each country.

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Completed IGA's will be submitted to Cabinet for discussion and endorsement in the coming weeks. The requisite parliamentary processes for ratification of these agreements will follow.

Vendor Parades have been completed with all nuclear vendor countries that have shown interest to participate in the nuclear new build programme. South African professionals from government departments, State Owned Entities and Universities were part of this process.

Honourable Members,

We will commence with the actual nuclear procurement process in the second quarter of this financial year to select a Strategic Partner or Partners in a competitive, fair, transparent and cost effective manner. We expect to present the outcome of this procurement process to Cabinet by year end.

We will finalize the business model for the re-establishment of the Nuclear Fuel Cycle Facilities to take advantage of our mineral resources and the beneficiation strategy of our government.

In preparation for the rollout the nuclear build programme, we have commenced with a Nuclear Skills Development and Training programme. We will be sending students to attend focussed training in various countries. In this regard, 50 trainees from Government nuclear industry entities were sent to China in April 2015 for Phase 1 nuclear training, and plans are underway to send an additional 250 trainees to China. The Russian Federation has offered 5 new Nuclear Scholarships at Master's Degree level in Nuclear Physics this year, while South Korea has a standing programme to train South African students in Masters Programmes in Nuclear Engineering.

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Print this page

'Too soon' to assess SA on funding nuclear

03 Jun 2015 | Charlotte Mathews

Rosatom head outlines big financing and capacity concerns ahead of SA nuclear procurement decision by year end

MOSCOW — Assumptions could not yet be made about SA's capacity to finance its planned 9,600MW of new nuclear power because a number of other issues needed to be decided first, said Kirill Komarov, Rosatom State Corporation's first deputy general director for development and international business.

He was speaking on the sidelines of the Atomexpo 2015 conference on nuclear technology in Moscow this week, which has attracted 1,600 delegates from 48 countries. Although Rosatom has the major role, there are speakers and exhibitors from nuclear vendor countries including France, Russia and China.

SA is facing regular load shedding as its power fleet is ageing and its two new, coal-fired power stations are well behind schedule and over budget. This has prompted the government to move ahead fast with an ambitious nuclear build programme, the first since Koeberg 30 years ago. Since September, SA has signed preliminary agreements with five nuclear vendor countries (Russia, France, South Korea, China and the US), ahead of a formal bid process.

The South African government seeks a large nuclear procurement despite doubts about its affordability. The target is to have the first reactor in commission by 2023.

Nuclear Energy Corporation of SA (Necsa) CEO Phumzile Tshelane, who represented SA at the conference roundtable on the Brics countries, confirmed that the government was planning to name its strategic partner for the nuclear build by the end of this year. "Several funding models are being analysed," Mr Tshelane said.

Given SA's other spending priorities and weak economic growth, it seemed unlikely it could fund this programme in full — which Mr Tshelane said would cost about R400bn but others have estimated could cost more than R1-trillion.

Mr Komarov said an issue affecting the structure and timing of financing was that if SA built eight units they would come on stream one at a time, possibly at one- to two-year intervals. The electricity grid had to be able to handle the extra power.

Rosatom had arranged financing for nuclear stations it built in Belarus, Hungary and India, he said. It could act as a coinvestor, as it had in Finland where it was a 34% shareholder in Fennovoima, which was developing the Hanhikivi 1 nuclear power plant. Alternatively, Rosatom could offer a combination of those arrangements, Mr Komarov said.

The 3-billion people in the Brics countries accounted for 44% of the world population, and their economic growth was far more energy-intensive than in European countries, Djurica Tankosich, president of global nuclear power at consultants WorleyParsons told the roundtable.

All five Brics countries had nuclear reactors in operation, representing 16% of the world's nuclear capacity. Forty of the 67 nuclear reactors under construction across the world were in Brics' countries, which were planning to establish their own energy association, including a fuel reserve bank and an energy policy institute, Mr Tankosich said.

Alexey Khokhlov of consultants Strategy& said all the Brics countries were planning to increase the contribution of nuclear to their total energy mix by 2040 to ensure energy security and predictability in pricing. Russia was targeting 10%, India 4%, SA 6%, China 7% and Brazil 2%.

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Nuclear technology is seen as a potential creator of jobs and high-value exports for Brics countries. China's nuclear industry employs 100,000 people and is exporting technology. This will enable China to bid against Russia and other vendors for new nuclear projects.

Asked if Rosatom felt threatened by competition from China, Nikolay Drozdov, Rosatom's director of international business development, said it was too early to comment. "We can only say once the first unit of Huaneng is completed and successfully connected to the grid."

• *Rosatom sponsored Charlotte Mathews's visit to Russia*

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MINISTER
ENERGY
REPUBLIC OF SOUTH AFRICA

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Mr Llewellyn Claasen
Clerk of the Papers
Parliament of the Republic of South Africa
CAPE TOWN
8000

Dear Mr Llewellyn Claasen

TABLING OF THE INTERNATIONAL AGREEMENTS FOR THE DEPARTMENT OF ENERGY

I, Ms. Tina Joemat-Pettersson, the Minister of Energy hereby give Mr Malusi Ndlovu, Parliamentary Liaison Officer permission to submit the Department of Energy International Agreements in accordance with Section 231 (3) of the Constitution of the Republic of South Africa Act, 1996 (Act No 108 of 1996), for tabling in Parliament.

The remainder of the documents will be delivered to the Papers Stores in Parliament for further distribution.

The following International Agreements will be tabled:

1. Agreement between the Government of the Korea and the Government of the Republic of South Africa regarding Cooperation in the Peaceful Uses of Nuclear Energy;
2. Agreement for Cooperation between the Government of the Republic of South Africa and the United States of America concerning Peaceful Uses of Nuclear Energy;

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3. Agreement between the Government of the Republic of South Africa and the Government of the Russian Federation on Strategic Partnership and Cooperation in the fields of Nuclear Power and Industry;
4. Agreement between the Government of the Republic of South Africa and the Government of the French Republic on Cooperation in the Development of Peaceful Uses of Nuclear Energy;
5. Agreement between the Government of the Republic of South Africa and the Government of the People's Republic of China on Cooperation in the field of Civil Nuclear Energy Projects;

Yours respectfully

(MS) TINA JOEMAT-PETTERSSON, MP
MINISTER OF ENERGY
DATE: 10/6/2015.

TABLING OF THE INTERNATIONAL AGREEMENTS FOR THE DEPARTMENT OF ENERGY

S.I.F.N.

AGREEMENT

BETWEEN

THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

AND

THE GOVERNMENT OF THE FRENCH REPUBLIC

ON COOPERATION

IN THE DEVELOPMENT OF PEACEFUL USES OF NUCLEAR ENERGY

S.I.F.N.

The Government of the Republic of South Africa and the Government of the French Republic (hereinafter referred to as the "Parties" or a "Party");

AFFIRMING their determination to develop the traditional ties of friendship existing between the two countries;

NOTING with satisfaction the fruitful outcome of economic, technical and scientific cooperation between the two countries;

RECALLING the Agreement on Co-operation regarding the Koeberg Nuclear Power Units I and II, between France and South Africa and which entered into force on 29 October 1976, and the Agreement between the International Atomic Energy Agency, the Government of the French Republic and the Government of the Republic of South Africa for the Application of Safeguards to the Koeberg Nuclear Power Station and to the Nuclear Material to be used therein, and which entered into force on 16 December 1976;

CONSIDERING the Agreement on Cooperation in the Field of Energy, between France and South Africa and which entered into force on 28 February 2008;

NOTING that both Parties are IAEA Member States;

CONSIDERING the participation of the two states in the Nuclear Suppliers Group (hereinafter referred to as "the NSG");

RECOGNIZING the respective nuclear disarmament and non-proliferation commitments of the French Republic and the Republic of South Africa, particularly the Treaty on the Non-Proliferation of Nuclear Weapons of 1 July 1968 (hereinafter referred to as "the NPT") signed by the French Republic as a nuclear weapons State Party and by the Republic of South Africa as a non-nuclear weapons State Party, as well as the African Nuclear-Weapon-Free zone treaty (Pelindaba Treaty), done on 11 April 1996 and entered into force on 15 July 2009;

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NOTING the Agreement for the Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons, which entered into force on 16 September 1991, and the Protocol Additional to the Agreement between the Government of the Republic of South Africa and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, which entered into force on 13 September 2002;

NOTING the Agreement of 27 July 1978 between France, the European Atomic Energy Community and the International Atomic Energy Agency for the Application of Safeguards in France, which entered into force on 12 September 1981, and the Protocol Additional to the Agreement between France, the European Atomic Energy Community and the International Atomic Energy Agency for the Application of Safeguards in France, which entered into force on 30 April 2004;

NOTING the Agreement between the Government of the Republic of South Africa and the European Atomic Energy Community (EURATOM) for Cooperation in the Peaceful Uses of Nuclear Energy, signed on 18 July 2013;

CONSIDERING further the determination of the Parties to adopt the provisions within their jurisdictions required for the safe and responsible development of nuclear energy in compliance with the principles and provisions under the Convention on Nuclear Safety, the Convention on the Physical Protection of Nuclear Material, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the Convention on Early Notification of a Nuclear Accident, and the Convention on Assistance in the case of Nuclear Accident or Radiological Emergency;

SEEKING to broaden and deepen the mutually beneficial economic scientific and technical cooperation between the two Parties on the basis of mutual respect for each other's internal affairs;

HEREBY AGREE as follows:

S.I.F.N.

ARTICLE 1
DEFINITIONS

For the purposes of this Agreement:

(a) "equipment" shall mean any facility, equipment, or component listed in sections 1 and 3 to 7 of Annex B of the NSG Guidelines;

(b) "facilities" shall mean plants referred to in Annex B, sections 1, 3, 4, 5, 6 and 7 of the most recently published NSG Guidelines;

(c) "Guidelines" shall mean the NSG Guidelines for Nuclear Transfers published by the IAEA under INFCIRC/254/Rev.10/Part1 and their subsequent amendments as agreed to by the Parties;

(d) "information" shall mean any piece of information, documentation or data of whatever nature, which relates to material, equipment, facilities or technology subject to this Agreement, but excluding information, documentation and data accessible to the public;

(e) "intellectual property" shall have the meaning given in Article 2 of the Convention Establishing the World Intellectual Property Organization, signed at Stockholm on 14 July 1967, and which entered into force for South Africa on 23 March 1975 and for France on 18 October 1974;

The definition may be broadened as agreed by the Parties;

(f) "material" shall mean non-nuclear material for reactors listed in Annex B of the NSG Guidelines;

(g) "nuclear material" shall mean any special fissionable material or source material in accordance with the definitions in Article XX of the Statute of the IAEA;

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(h) "person" shall mean any individual or legal entity subject to the territorial jurisdiction of one of the Parties, but shall not include the Parties to this Agreement;

(i) "technology" shall mean the specific information necessary for the "development", "production" or "use" of any item listed in Annex B of the NSG Guidelines as updated from time to time, except data made available to the public, for instance data published in reviews or books, or which have become available internationally without any restrictions on dissemination.

This information can either be in the form of "technical data" or of "technical assistance";

(j) "development" shall mean all phases preceding "production", including studies, research pertaining to the design, assembly and tests of prototypes and as-built drawings;

(k) "production" shall mean all production phases;

(l) "use" shall mean operation, installation (including on-site installation), maintenance, repairs, refurbishing and overhauling;

(m) "technical assistance" may take different forms including instruction, skills, training, working knowledge, and consulting services;

(n) "technical data" may consist of tracings, diagrams, blue-prints, manuals and instructions written or recorded on other media such as disks, magnetic tapes or storage units;

(o) "use for peaceful purposes" shall mean peaceful and non-explosive applications.

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ARTICLE 2
OBJECTIVES

In accordance with this Agreement, the Parties shall, in compliance with the laws and regulations in force in each country and on the basis of mutual benefit, equality and reciprocity, develop and strengthen scientific, technical, industrial and economic cooperation in the field of peaceful uses of nuclear energy in accordance with the principal needs and priorities of their national nuclear programs and with the international agreements and commitments in the field of nuclear non-proliferation to which they are respectively parties.

ARTICLE 3
SCOPE OF COOPERATION

Cooperation mentioned in Article 2 may cover the following areas:

(a) fundamental and applied research and development in the field of energy, not including the supply to research reactors of uranium enriched to twenty (20) per cent or more in the U 235 isotope;

(b) use of nuclear energy for electricity generation, including the design, construction, operation and decommissioning of nuclear power plants in the Republic of South Africa, with total installed capacity of about 9.6 GW, and the fabrication of nuclear fuel;

(c) nuclear spent fuel and radioactive waste management;

(d) nuclear safety, radiation protection and radiological environmental protection;

(e) accounting, control and physical protection of nuclear material;

(f) manufacturing and application of radioisotopes;

(g) radiation technology and its applications;

(h) controlled nuclear fusion, plasma physics and plasma technologies;

(i) exchange of information on legislation and regulation in the nuclear field;

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(j) decommissioning and decontamination of and supply of equipment to sites and nuclear facilities;

or any other areas of cooperation agreed upon by the Parties.

ARTICLE 4
FORMS OF COOPERATION

The cooperation stipulated in this Agreement may be undertaken in the following forms:

(a) exchange of experts, scientific and technological information, organization of scientific seminars and conferences and training of administrative, scientific and technological personnel;

(b) manufacturing and supply of material, nuclear material, equipment, facilities and related technologies (hereinafter referred to as "nuclear items and technologies") and services;

(c) consultations on research and technological issues and performing joint research under programmes agreed by the Parties;

or any other form of cooperation agreed to by the Parties.

ARTICLE 5
IMPLEMENTATION OF THE AGREEMENT

1. The Parties may agree on the participation of public or private organizations of the two States (hereinafter referred to as "organizations") in the implementation of cooperation under this Agreement.

2. The conditions of implementation of cooperation as defined in Articles 3 and 4 shall be specified on a case-by-case basis and in compliance with the provisions of this Agreement:

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(a) by specific agreements between the Parties or by arrangements between organizations designated by each of the Parties, for instance to specify the programmes and conditions of scientific and technical exchanges;

(b) by contracts signed between organizations designated by each of the Parties on industrial developments and the supply of material, nuclear material, equipment, facilities or technology.

ARTICLE 6

COMPETENT AUTHORITIES

1. The Competent Authorities responsible for the implementation of this Agreement shall be:
   (a) for the Government of the Republic of South Africa, the Department of Energy; and
   (b) for the Government of the French Republic, the Ministry in charge of Energy;

2. The Competent Authorities may agree to involve organizations of both countries to participate in the implementation of this Agreement.

3. The Parties shall take the necessary measures to ensure the proper implementation of the Agreement as well as of specific agreements and contracts referred to in Article 5(2), in accordance with their respective laws, regulations and international obligations

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ARTICLE 7
ESTABLISHMENT OF A JOINT COORDINATING COMMITTEE AND WORKING GROUPS

1. The Parties shall establish a Joint Coordinating Committee composed of the representatives appointed by the competent authorities to-
   (a) review the implementation of this Agreement;
   (b) to consider issues arising from its implementation and
   (c) to hold consultations on issues of mutual interest related to the peaceful uses of nuclear energy.

2. The competencies and procedures of this Committee shall be defined jointly by the Competent Authorities.

3. The Joint Coordinating Committee meetings shall be held as necessary alternately in the French Republic and in the Republic of South Africa or as mutually agreed upon.

4. Each Party shall be responsible for its own travel and accommodation costs when attending meetings of the Joint Coordinating Committee.

5. The Competent Authorities may, if necessary, establish Working Groups to discuss further steps on implementing this Agreement and to exchange information on the progress of joint projects and programs and other issues of mutual interest.

6. Each Party shall bear the cost of participation in the Joint Coordinating Committee, subject to the limits of the budgets available to the Parties.

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ARTICLE 8
SAFETY AND SECURITY

The Parties shall ensure in the cooperation carried out under this Agreement the achievement and maintenance of the highest level of nuclear safety and security in accordance with the principles and provisions of the Convention on Nuclear Safety, the Convention on the Physical Protection of Nuclear Material, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the case of a Nuclear Accident or Radiological Emergency.

ARTICLE 9
PROTECTION OF INFORMATION

1. Information provided under this Agreement or resulting from the implementation thereof and treated by any Party in accordance with their national laws and regulations as sensitive or classified shall be clearly defined and marked as such.

2. As cooperation develops, the Parties may consider the conclusion of a Security Agreement for the exchange of classified information, bearing in mind the following principles:
   (a) The Parties shall protect the classified information and material to which they may have access under this Agreement in accordance with their respective national laws and regulations;
   (b) The classified information and material shall only be sent through official channels or through agreed procedures between the Parties;
   (c) No classified information or material received by one of the Parties under this Agreement may be in any way be transferred, disseminated or disclosed to third parties or to entities not authorized by the other Party and without its prior consent.

S.I.F.M.

ARTICLE 13
RESTRICTIONS

1. In accordance with this Agreement, the transfer of material, nuclear material, equipment, facilities and technologies referred to in Article 12 shall be performed in compliance with the commitments of the Parties under the Guidelines and other international agreements which are binding on the Parties.

2. Should one of the Parties consider the retransfer to a third State of material, nuclear material, equipment, facilities and technology referred to in Article 12, or the transfer of material, nuclear material, equipment and technology referred to in Article 12, originating from equipment or facilities transferred originally or produced by means of transferred equipment, facilities or technology, that Party shall only do so after having obtained the same assurances from the recipient of these transfers as those laid down by this Agreement and with the consent of the other Party. Retransfers beyond the jurisdiction of the Parties of material, nuclear material, equipment, facilities and technology transferred under this Agreement or derived from those originally transferred shall take place in accordance with the NSG Guidelines (INFCIRC/254/Rev.10 /Part.I), as amended, and respective legislation.

3. Within the European Union, transfers and retransfers of items and products are subject to Chapter IX of the Treaty of 25 March 1957 establishing the European Atomic Energy Community on the nuclear common market, without prejudice to the provisions of Council Regulation (EC) No 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items.

S.I.F.M.

ARTICLE 14
SAFEGUARDS

1. Nuclear material held or imported by the Republic of South Africa, and all successive generations of nuclear material recovered or produced as a by-product, shall be subject to safeguards by the IAEA under the terms of the Agreement signed by the Republic of South Africa and the IAEA on 16 September 1991, for Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, supplemented by an Additional Protocol which entered into force on 13 September 2002, which applies to all nuclear material in all nuclear activities carried out in the territory of the Republic of South Africa, under its jurisdiction or undertaken under its control wherever that may be.

2. All nuclear material transferred to the French Republic under this Agreement and notified as such by the supplying Party, and nuclear material recovered or produced as a by-product, shall be managed in accordance with the provisions of Chapter 7 of the Euratom Treaty on Safeguards and of the Agreement between France, the European Atomic Energy Community and the IAEA for the application of Safeguards in France signed on 20 and 27 July 1978, as supplemented by the Additional Protocol signed on 22 September 1998.

3. In the event of the IAEA Safeguards referred to in this Article of the Agreement not being applicable within the territory of either Party, the Parties shall undertake to consult each other with a view to subjecting, as soon as possible, nuclear material transferred or produced under this Agreement, and all successive generations of nuclear material recovered or produced as a by-product, to a mutually agreed Safeguards system, the effectiveness and scope of which being comparable to those previously applied by the IAEA for such nuclear material.

S.I.F.N.

ARTICLE 15
PHYSICAL PROTECTION

1. Each Party shall ensure that the material, nuclear material, equipment, facilities and technology referred to in Article 12 of this Agreement are exclusively held by persons under its jurisdiction and authorized to do so.

2. Each Party shall ensure that, within its territory, or should the occasion arise, outside its territory up to the point where that responsibility is taken over by the other Party or by a third State, adequate measures are adopted to ensure the physical protection of the material, nuclear material, equipment and facilities referred to in this Agreement, in accordance with its national legislation and the international commitments to which it has subscribed.

3. Physical protection shall be ensured with respect to material, nuclear material, equipment, facilities and technologies transferred in accordance with this Agreement as well as with regard to material, nuclear material, equipment, facilities and technologies derived from those originally transferred or as a result of the use thereof at a level not lower than the level set out in IAEA recommendations document INFCIRC/225/Rev.5 as well as in any subsequent amendments thereto accepted by the Parties.

4. Under the three previous sub-Articles of this Article, each Party shall be responsible for the implementation and maintenance of physical protection measures in its territory.

5. Amendments to IAEA recommendations relating to physical protection shall be effective under this Agreement only after mutual written notification of acceptance of such amendments by both Parties.

S.I.F.N.

ARTICLE 16
DURATION OF APPLICATION

1. Material, nuclear material, equipment, technologies and facilities referred to in Article 12 shall remain subject to this Agreement until:

   (a) these items have been transferred beyond the jurisdiction of the receiving Party in accordance with the provisions of Article 13; or

   (b) in this framework, a determination is made in the case of material, nuclear material, equipment, facilities and technologies that they are no longer usable nor practicably recoverable for processing into a form usable for any nuclear activity relevant as regards the safeguards referred to in Article 14 of this Agreement. Both Parties shall accept a determination made by the IAEA in accordance with the provisions for the termination of safeguards under the relevant Safeguards Agreements to which the IAEA is a party; or

   (c) otherwise agreed upon by the Parties.

2. Technology shall remain subject to this Agreement until the Parties mutually agree otherwise.

ARTICLE 17
RIGHTS AND OBLIGATIONS UNDER OTHER AGREEMENTS

Nothing in this Agreement shall be interpreted as affecting the rights and obligations which, on the date of signature thereof, result from the participation of either Party in other international agreements on the use of nuclear energy for peaceful purposes, including, as regards the French Party, from its membership of the European Union and the European Atomic Energy Community and, as regards the South African Party, from its participation to the Euratom- South Africa Agreement signed on July 18, 2013.

S.I.F.N.

ARTICLE 18
SETTLEMENT OF DISPUTES

Any dispute arising out of the interpretation, application or implementation of this Agreement shall be settled amicably between the Parties through negotiations, consultation, mediation or conciliation.

ARTICLE 19
AMENDMENTS

This Agreement may be amended by mutual consent of the Parties through an Exchange of Notes between the Parties through the diplomatic channel. Such amendment shall enter into force on the date on which the Parties have notified each other in writing that their respective internal procedures required for its entry into force have been completed.

ARTICLE 20
ENTRY INTO FORCE, DURATION AND TERMINATION

1. Both Parties shall notify each other in writing through the diplomatic channel of the completion of the internal procedures required to give effect to this Agreement. The date of entry into force shall be on the day the latest notification is received.

2. This Agreement shall remain in force for a period of 10 (ten) years, whereafter it shall automatically be renewed for successive ten-year periods. It may be terminated by either Party at any time giving six (6) months written notice in advance through the diplomatic channel of its intention to terminate this Agreement.

3. In the event of this Agreement expiring or being terminated in accordance with the procedure referred to in sub-Article (1) of this Article:

S.I.F.N.

- the relevant provisions of this Agreement shall remain applicable to the specific agreements and contracts in force signed under Article 5, until expiration for whatever reason, unless otherwise mutually agreed to by the Parties;

- the provisions of Articles 8, 9, 10, 11, 12, 13, 14, 15 and 16 shall continue to apply to the material, nuclear material, equipment, facilities and technology referred to in Article 12 and transferred pursuant to this Agreement, as well as to nuclear material recovered or obtained as by-products.

IN WITNESS WHEREOF, the undersigned, being duly authorised thereto by their respective Governments, have signed and sealed this Agreement in two originals in the English and French languages, all texts being equally authentic.

DONE at Paris on this 14 day of October 2014.

FOR THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA	**FOR THE GOVERNMENT OF THE FRENCH REPUBLIC**

S.I.F.N.

81/172468
(Z 19E)

PRESIDENT'S MINUTE NO. 314

In terms of section 231 of the Constitution of the Republic of South Africa, 1996, I hereby approve that the attached Agreement between the Government of the Republic of South Africa and the Government of the French Republic on Cooperation in the Development of Peaceful Uses of Nuclear Energy be entered into, and I hereby authorise the Minister of Energy to sign the Agreement.

Given under my Hand and the Seal of the Republic of South Africa at Pretoria on this 10 day of October Two Thousand and Fourteen.

PRESIDENT

MINISTER OF THE CABINET

S.I.F.N.

AGREEMENT

BETWEEN

THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

AND

THE GOVERNMENT OF THE FRENCH REPUBLIC

ON COOPERATION

IN THE DEVELOPMENT OF PEACEFUL USES OF NUCLEAR ENERGY

S.I.F.N.

The Government of the French Republic and the Government of the Republic of South Africa (hereinafter referred to as the "Parties" or a "Party");

AFFIRMING their determination to develop the traditional ties of friendship existing between the two countries;

NOTING with satisfaction the fruitful outcome of economic, technical and scientific cooperation between the two countries;

RECALLING the Agreement on Co-operation regarding the Koeberg Nuclear Power Units I and II, between France and South Africa and which entered into force on 29 October 1976, and the Agreement between the International Atomic Energy Agency, the Government of the French Republic and the Government of the Republic of South Africa for the Application of Safeguards to the Koeberg Nuclear Power Station and to the Nuclear Material to be used therein, and which entered into force on 16 December 1976;

CONSIDERING the Agreement on Cooperation in the Field of Energy, between France and South Africa and which entered into force on 28 February 2008;

NOTING that both Parties are IAEA Member States;

CONSIDERING the participation of the two states in the Nuclear Suppliers Group (hereinafter referred to as "the NSG");

RECOGNIZING the respective nuclear disarmament and non-proliferation commitments of the French Republic and the Republic of South Africa, particularly the Treaty on the Non-Proliferation of Nuclear Weapons of 1 July 1968 (hereinafter referred to as "the NPT") signed by the French Republic as a nuclear weapons State Party and by the Republic of South Africa as a non-nuclear weapons State Party, as well as the African Nuclear-Weapon-Free zone treaty (Pelindaba Treaty), done on 11 April 1996 and entered into force on 15 July 2009;

NOTING the Agreement for the Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons, which entered into force on 16 September 1991, and the Protocol Additional to the Agreement between the Government of the Republic of South Africa and the International Atomic Energy Agency for the Application of

S.T.B.N.

Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, which entered into force on 13 September 2002;

NOTING the Agreement of 27 July 1978 between France, the European Atomic Energy Community and the International Atomic Energy Agency for the Application of Safeguards in France, which entered into force on 12 September 1981, and the Protocol Additional to the Agreement between France, the European Atomic Energy Community and the International Atomic Energy Agency for the Application of Safeguards in France, which entered into force on 30 April 2004;

NOTING the Agreement between the Government of the Republic of South Africa and the European Atomic Energy Community (EURATOM) for Cooperation in the Peaceful Uses of Nuclear Energy, signed on 18 July 2013;

CONSIDERING further the determination of the Parties to adopt the provisions within their jurisdictions required for the safe and responsible development of nuclear energy in compliance with the principles and provisions under the Convention on Nuclear Safety, the Convention on the Physical Protection of Nuclear Material, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the Convention on Early Notification of a Nuclear Accident, and the Convention on Assistance in the case of Nuclear Accident or Radiological Emergency;

SEEKING to broaden and deepen the mutually beneficial economic scientific and technical cooperation between the two Parties on the basis of mutual respect for each other's internal affairs;

HEREBY AGREE as follows:

ARTICLE 1
DEFINITIONS

For the purposes of this Agreement:

S.I.F.M.

(a) "equipment" shall mean any facility, equipment, or component listed in sections 1 and 3 to 7 of Annex B of the NSG Guidelines;

(b) "facilities" shall mean plants referred to in Annex B, sections 1, 3, 4, 5, 6 and 7 of the most recently published NSG Guidelines;

(c) "Guidelines" shall mean the NSG Guidelines for Nuclear Transfers published by the IAEA under INFCIRC/254/Rev.10/Part1 and their subsequent amendments as agreed to by the Parties;

(d) "information" shall mean any piece of information, documentation or data of whatever nature, which relates to material, equipment, facilities or technology subject to this Agreement, but excluding information, documentation and data accessible to the public;

(e) "intellectual property" shall have the meaning given in Article 2 of the Convention Establishing the World Intellectual Property Organization, signed at Stockholm on 14 July 1967, and which entered into force for South Africa on 23 March 1975 and for France on 18 October 1974;

The definition may be broadened as agreed by the Parties;

(f) "material" shall mean non-nuclear material for reactors listed in Annex B of the NSG Guidelines;

(g) "nuclear material" shall mean any special fissionable material or source material in accordance with the definitions in Article XX of the Statute of the IAEA;

(h) "person" shall mean any individual or legal entity subject to the territorial jurisdiction of one of the Parties, but shall not include the Parties to this Agreement;

(i) "technology" shall mean the specific information necessary for the "development", "production" or "use" of any item listed in Annex B of the

S.I.F.N.

NSG Guidelines as updated from time to time, except data made available to the public, for instance data published in reviews or books, or which have become available internationally without any restrictions on dissemination.

This information can either be in the form of "technical data" or of "technical assistance";

(j) "development" shall mean all phases preceding "production", including studies, research pertaining to the design, assembly and tests of prototypes and as-built drawings;

(k) "production" shall mean all production phases;

(l) "use" shall mean operation, installation (including on-site installation), maintenance, repairs, refurbishing and overhauling;

(m) "technical assistance" may take different forms including instruction, skills, training, working knowledge, and consulting services;

(n) "technical data" may consist of tracings, diagrams, blue-prints, manuals and instructions written or recorded on other media such as disks, magnetic tapes or storage units;

(o) "use for peaceful purposes" shall mean peaceful and non-explosive applications.

ARTICLE 2
OBJECTIVES

In accordance with this Agreement, the Parties shall, in compliance with the laws and regulations in force in each country and on the basis of mutual benefit, equality and reciprocity, develop and strengthen scientific, technical, industrial and economic cooperation in the field of peaceful uses of nuclear energy in accordance with the principal needs and

S.I.F.N.

priorities of their national nuclear programs and with the international agreements and commitments in the field of nuclear non-proliferation to which they are respectively parties.

ARTICLE 3
SCOPE OF COOPERATION

Cooperation mentioned in Article 2 may cover the following areas:

(a) fundamental and applied research and development in the field of energy, not including the supply to research reactors of uranium enriched to twenty (20) per cent or more in the U 235 isotope;

(b) use of nuclear energy for electricity generation, including the design, construction, operation and decommissioning of nuclear power plants in the Republic of South Africa, with total installed capacity of about 9.6 GW, and the fabrication of nuclear fuel;

(c) nuclear spent fuel and radioactive waste management;

(d) nuclear safety, radiation protection and radiological environmental protection;

(e) accounting, control and physical protection of nuclear material;

(f) manufacturing and application of radioisotopes;

(g) radiation technology and its applications;

(h) controlled nuclear fusion, plasma physics and plasma technologies;

(i) exchange of information on legislation and regulation in the nuclear field;

(j) decommissioning and decontamination of and supply of equipment to sites and nuclear facilities;

or any other areas of cooperation agreed upon by the Parties.

ARTICLE 4
FORMS OF COOPERATION

The cooperation stipulated in this Agreement may be undertaken in the following forms:

S.I.F.H.

(a) exchange of experts, scientific and technological information, organization of scientific seminars and conferences and training of administrative, scientific and technological personnel;

(b) manufacturing and supply of material, nuclear material, equipment, facilities and related technologies (hereinafter referred to as "nuclear items and technologies") and services;

(c) consultations on research and technological issues and performing joint research under programmes agreed by the Parties;

or any other form of cooperation agreed to by the Parties.

ARTICLE 5
IMPLEMENTATION OF THE AGREEMENT

1. The Parties may agree on the participation of public or private organizations of the two States (hereinafter referred to as "organizations") in the implementation of cooperation under this Agreement.

2. The conditions of implementation of cooperation as defined in Articles 3 and 4 shall be specified on a case-by-case basis and in compliance with the provisions of this Agreement:

(a) by specific agreements between the Parties or by arrangements between organizations designated by each of the Parties, for instance to specify the programmes and conditions of scientific and technical exchanges;

(b) by contracts signed between organizations designated by each of the Parties on industrial developments and the supply of material, nuclear material, equipment, facilities or technology.

ARTICLE 6
COMPETENT AUTHORITIES

S.I.F.N.

1 The Competent Authorities responsible for the implementation of this Agreement shall be:

(a) for the Government of the Republic of South Africa, the Department of Energy; and

(b) for the Government of the French Republic, the Ministry in charge of Energy;

2. The Competent Authorities may agree to involve organizations of both countries to participate in the implementation of this Agreement.

3 The Parties shall take the necessary measures to ensure the proper implementation of the Agreement as well as of specific agreements and contracts referred to in Article 5(2), in accordance with their respective laws, regulations and international obligations

ARTICLE 7
ESTABLISHMENT OF A JOINT COORDINATING COMMITTEE AND WORKING GROUPS

1. The Parties shall establish a Joint Coordinating Committee composed of the representatives appointed by the competent authorities to-

(a) review the implementation of this Agreement;

(b) to consider issues arising from its implementation and

(c) to hold consultations on issues of mutual interest related to the peaceful uses of nuclear energy.

2 The competencies and procedures of this Committee shall be defined jointly by the Competent Authorities.

3 The Joint Coordinating Committee meetings shall be held as necessary alternately in the French Republic and in the Republic of South Africa or as mutually agreed upon.

4. Each Party shall be responsible for its own travel and accommodation costs when attending meetings of the Joint Coordinating Committee.

S.I.F.N.

5. The Competent Authorities may, if necessary, establish Working Groups to discuss further steps on implementing this Agreement and to exchange information on the progress of joint projects and programs and other issues of mutual interest.

6. Each Party shall bear the cost of participation in the Joint Coordinating Committee, subject to the limits of the budgets available to the Parties.

ARTICLE 8
SAFETY AND SECURITY

The Parties shall ensure in the cooperation carried out under this Agreement the achievement and maintenance of the highest level of nuclear safety and security in accordance with the principles and provisions of the Convention on Nuclear Safety, the Convention on the Physical Protection of Nuclear Material, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the case of a Nuclear Accident or Radiological Emergency.

ARTICLE 9
PROTECTION OF INFORMATION

1. Information provided under this Agreement or resulting from the implementation thereof and treated by any Party in accordance with their national laws and regulations as sensitive or classified shall be clearly defined and marked as such.

2. As cooperation develops, the Parties may consider the conclusion of a Security Agreement for the exchange of classified information, bearing in mind the following principles:

   (a) The Parties shall protect the classified information and material to which they may have access under this Agreement in accordance with their respective national laws and regulations;

   (b) The classified information and material shall only be sent through official channels or through agreed procedures between the Parties;

S.I.F.M.

(c) No classified information or material received by one of the Parties under this Agreement may be in any way be transferred, disseminated or disclosed to third parties or to entities not authorized by the other Party and without its prior consent.

ARTICLE 10
INTELLECTUAL PROPERTY

The intellectual property rights gained through the cooperation provided by this Agreement shall be allocated on a case-by-case basis under the specific agreements and contracts referred to in Article 5 of this Agreement.

ARTICLE 11
CIVIL NUCLEAR LIABILITY

The Parties shall ensure that a civil nuclear liability regime is set up in their respective jurisdictions in accordance with the internationally established principles, including:

(a) exclusive liability of operators of nuclear facilities;

(b) objective liability of the operator (i.e. liability even in the absence of fault);

(c) liability limited in amount and duration, covered by a financial guarantee or insurance, where necessary complemented by the State;

(d) unique and exclusive jurisdiction of the courts of the Party in whose territory the accident occurred to hear claims;

(e) non-discriminating nature of compensation (all damage to persons and property must be covered, except the installation itself and the items therein).

ARTICLE 12
PEACEFUL PURPOSES

The Parties shall ensure that material, nuclear material, equipment, facilities and technology transferred under this Agreement or under arrangements entered into under

S.I.F.N.

this Agreement, as well as the nuclear material recovered or obtained as by-products, are used for peaceful purposes only.

ARTICLE 13
RESTRICTIONS

1. In accordance with this Agreement, the transfer of material, nuclear material, equipment, facilities and technologies referred to in Article 12 shall be performed in compliance with the commitments of the Parties under the Guidelines and other international agreements which are binding on the Parties.

2. Should one of the Parties consider the retransfer to a third State of material, nuclear material, equipment, facilities and technology referred to in Article 12, or the transfer of material, nuclear material, equipment and technology referred to in Article 12, originating from equipment or facilities transferred originally or produced by means of transferred equipment, facilities or technology, that Party shall only do so after having obtained the same assurances from the recipient of these transfers as those laid down by this Agreement and with the consent of the other Party. Retransfers beyond the jurisdiction of the Parties of material, nuclear material, equipment, facilities and technology transferred under this Agreement or derived from those originally transferred shall take place in accordance with the NSG Guidelines (INFCIRC/254/Rev.10 /Part.1), as amended, and respective legislation.

3. Within the European Union, transfers and retransfers of items and products are subject to Chapter IX of the Treaty of 25 March 1957 establishing the European Atomic Energy Community on the nuclear common market, without prejudice to the provisions of Council Regulation (EC) No 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items.

ARTICLE 14
SAFEGUARDS

S.I.F.N.

1. Nuclear material held or imported by the Republic of South Africa, and all successive generations of nuclear material recovered or produced as a by-product, shall be subject to safeguards by the IAEA under the terms of the Agreement signed by the Republic of South Africa and the IAEA on 16 September 1991, for Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, supplemented by an Additional Protocol which entered into force on 13 September 2002, which applies to all nuclear material in all nuclear activities carried out in the territory of the Republic of South Africa, under its jurisdiction or undertaken under its control wherever that may be.

2. All nuclear material transferred to the French Republic under this Agreement and notified as such by the supplying Party, and nuclear material recovered or produced as a by-product, shall be managed in accordance with the provisions of Chapter 7 of the Euratom Treaty on Safeguards and of the Agreement between France, the European Atomic Energy Community and the IAEA for the application of Safeguards in France signed on 20 and 27 July 1978, as supplemented by the Additional Protocol signed on 22 September 1998.

3. In the event of the IAEA Safeguards referred to in this Article of the Agreement not being applicable within the territory of either Party, the Parties shall undertake to consult each other with a view to subjecting, as soon as possible, nuclear material transferred or produced under this Agreement, and all successive generations of nuclear material recovered or produced as a by-product, to a mutually agreed Safeguards system, the effectiveness and scope of which being comparable to those previously applied by the IAEA for such nuclear material.

ARTICLE 15
PHYSICAL PROTECTION

1. Each Party shall ensure that the material, nuclear material, equipment, facilities and technology referred to in Article 12 of this Agreement are exclusively held by persons under its jurisdiction and authorized to do so.

S.I.F.N.

2. Each Party shall ensure that, within its territory, or should the occasion arise, outside its territory up to the point where that responsibility is taken over by the other Party or by a third State, adequate measures are adopted to ensure the physical protection of the material, nuclear material, equipment and facilities referred to in this Agreement, in accordance with its national legislation and the international commitments to which it has subscribed.

3. Physical protection shall be ensured with respect to material, nuclear material, equipment, facilities and technologies transferred in accordance with this Agreement as well as with regard to material, nuclear material, equipment, facilities and technologies derived from those originally transferred or as a result of the use thereof at a level not lower than the level set out in IAEA recommendations document INFCIRC/225/Rev.5 as well as in any subsequent amendments thereto accepted by the Parties.

4. Under the three previous sub-Articles of this Article, each Party shall be responsible for the implementation and maintenance of physical protection measures in its territory.

5. Amendments to IAEA recommendations relating to physical protection shall be effective under this Agreement only after mutual written notification of acceptance of such amendments by both Parties.

ARTICLE 16
DURATION OF APPLICATION

1 Material, nuclear material, equipment, technologies and facilities referred to in Article 12 shall remain subject to this Agreement until:

(a) these items have been transferred beyond the jurisdiction of the receiving Party in accordance with the provisions of Article 13; or

(b) in this framework, a determination is made in the case of material, nuclear material, equipment, facilities and technologies that they are no longer usable nor practicably recoverable for processing into a form usable for any nuclear

S.I.F.N.

activity relevant as regards the safeguards referred to in Article 14 of this Agreement. Both Parties shall accept a determination made by the IAEA in accordance with the provisions for the termination of safeguards under the relevant Safeguards Agreements to which the IAEA is a party; or

(c) otherwise agreed upon by the Parties.

2. Technology shall remain subject to this Agreement until the Parties mutually agree otherwise.

ARTICLE 17
RIGHTS AND OBLIGATIONS UNDER OTHER AGREEMENTS

Nothing in this Agreement shall be interpreted as affecting the rights and obligations which, on the date of signature thereof, result from the participation of either Party in other international agreements on the use of nuclear energy for peaceful purposes, including, as regards the French Party, from its membership of the European Union and the European Atomic Energy Community and, as regards the South African Party, from its participation to the Euratom- South Africa Agreement signed on July 18, 2013.

ARTICLE 18
SETTLEMENT OF DISPUTES

Any dispute arising out of the interpretation, application or implementation of this Agreement shall be settled amicably between the Parties through negotiations, consultation, mediation or conciliation.

ARTICLE 19
AMENDMENTS

This Agreement may be amended by mutual consent of the Parties through an Exchange of Notes between the Parties through the diplomatic channel. Such amendment shall enter into

S.I.F.N.

force on the date on which the Parties have notified each other in writing that their respective internal procedures required for its entry into force have been completed.

ARTICLE 20
ENTRY INTO FORCE, DURATION AND TERMINATION

1. Both Parties shall notify each other in writing through the diplomatic channel of the completion of the internal procedures required to give effect to this Agreement. The date of entry into force shall be on the day the latest notification is received.

2. This Agreement shall remain in force for a period of 10 (ten) years, where-after it shall automatically be renewed for successive ten-year periods. It may be terminated by either Party at any time giving six (6) months written notice in advance through the diplomatic channel of its intention to terminate this Agreement.

3. In the event of this Agreement expiring or being terminated in accordance with the procedure referred to in sub-Article (1) of this Article:

- the relevant provisions of this Agreement shall remain applicable to the specific agreements and contracts in force signed under Article 5, until expiration for whatever reason, unless otherwise mutually agreed to by the Parties;

- the provisions of Articles 8, 9, 10, 11, 12, 13, 14, 15 and 16 shall continue to apply to the material, nuclear material, equipment, facilities and technology referred to in Article 12 and transferred pursuant to this Agreement, as well as to nuclear material recovered or obtained as by-products.

S.I.F.N.

IN WITNESS WHEREOF, the undersigned, being duly authorised thereto by their respective Governments, have signed and sealed this Agreement in two originals in the English and French languages, all texts being equally authentic.

DONE at .....on this.....day of..... 2014.

FOR THE GOVERNMENT OF
THE FRENCH REPUBLIC

FOR THE GOVERNMENT OF
THE REPUBLIC OF SOUTH AFRICA

S.I.F.M.

PL24.2 251

AGREEMENT

BETWEEN

THE GOVERNMENT OF THE REPUBLIC OF KOREA

AND

THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

REGARDING COOPERATION

IN THE PEACEFUL USES OF NUCLEAR ENERGY

S.I.F.N.

The Government of the Republic of Korea and the Government of the Republic of South Africa (hereinafter jointly referred to as the "Parties" and in the singular as a "Party")

TAKING into account the friendly relations and cooperation existing between the two countries;

NOTING with satisfaction the fruitful outcome of economic, technical and scientific cooperation between the two countries;

RECOGNISING that the Parties are Member States of the International Atomic Energy Agency (hereinafter referred to as "the IAEA") and also Parties to the Treaty on the Non-Proliferation of Nuclear Weapons of July 1, 1968 (hereinafter referred to as "the NPT"); and

SEEKING further to broaden and deepen the mutually beneficial economic, scientific and technical cooperation between the two Parties on the basis of mutual respect for each other's internal affairs;

HEREBY AGREE as follows:

ARTICLE 1
DEFINITIONS

In this Agreement, unless the context indicates otherwise:

(a) "classified information" refers to information categorised in terms of information security requirements;

(b) "Guidelines" means the Guidelines for Nuclear Transfers published in the IAEA document INFCIRC/254/Rev. 9/Part 1 and its subsequent revisions and modifications as agreed to by the Parties;

S.I.F.M.

(c) "equipment" means any facilities, equipment, or component listed in Annex B of the Guidelines;

(d) "intellectual property" has the meaning given in Article 2 of the Convention Establishing the World Intellectual Property Organisation, signed at Stockholm on 14 July 1967;

(e) "materials" means non-nuclear material for reactors listed in Annex B of the Guidelines;

(f) "nuclear material" means any source material or any special fissionable material as these terms are defined in Annex A of the Guidelines;

(g) "person" means any individual, corporation, partnership, firm or company, association, trust, public or private institute, group, governmental agency or corporation, but does not include the Parties to this Agreement; and

(h) "technology" means specific information required for the development, production, or use of any equipment or material as defined in Annex A of the Guidelines.

ARTICLE 2
OBJECTIVES

The Parties shall, on the basis of mutual benefit, equality and reciprocity, develop and strengthen scientific, technical and economic cooperation in the field of peaceful uses of nuclear energy in accordance with the needs and priorities of their national nuclear programs.

ARTICLE 3
AREAS OF COOPERATION

The Parties shall in terms of this Agreement cooperate in the following areas:

(a) fundamental and applied research and development in the field of nuclear power engineering;

S.I.F.N.

(b) design, construction, operation and modernization of nuclear power plants and commercial and research nuclear reactors;

(c) use of nuclear energy for electricity generation, heating and desalination of salt water and nuclear research;

(d) exploration and mining of uranium;

(e) fuel manufacture for commercial and research reactors including fuel development and design, construction, operation, technology and modernization of fuel fabrication facilities;

(f) radioactive waste management;

(g) development, manufacturing and supply of components and materials, including nuclear material (source material and special fissionable material) to be used in nuclear reactors and their nuclear cycles;

(h) nuclear safety, radiation protection and radiological environmental protection;

(i) accounting, control and physical protection of nuclear materials;

(j) manufacturing and application of radioisotopes;

(k) radiation technology and its applications;

(l) controlled nuclear fusion, plasma physics and plasma technologies;

(m) state regulation of nuclear and radiation safety;

(n) decommissioning and decontamination of nuclear facilities; and

(o) other areas of cooperation to be agreed upon by the Parties.

ARTICLE 4
MODE OF COOPERATION

The cooperation stipulated in this Agreement may be undertaken in the following forms:

(a) exchange of experts, scientific and technological information, organization of scientific seminars and conferences and training of administrative, scientific and technological personnel;

(b) the establishment of joint working groups in terms of paragraph 3 of Article 6 of this Agreement, if necessary, to implement specific studies and projects

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in the area of scientific research and technological development;

(c) the supply of nuclear material, non-nuclear material, equipment, facilities and related technologies (hereinafter referred to as "nuclear items and technologies");

(d) consultations on research and technological issues and performing joint research under agreed programs; and

(e) other forms of cooperation to be agreed upon by the Parties.

ARTICLE 5
COMPETENT AUTHORITIES

1. The Competent Authorities responsible for the implementation of this Agreement shall be:

(a) in the case of the Government of the Republic of Korea, the Ministry of Education, Science and Technology; and

(b) in the case of the Government of the Republic of South Africa, the Department of Energy.

2. The Competent Authorities may agree to involve state and private organizations of both countries to participate in the implementation of this Agreement.

ARTICLE 6
ESTABLISHMENT OF A JOINT COORDINATING COMMITTEE AND WORKING GROUP

1. The Parties shall establish a Joint Coordinating Committee composed of the representatives designated by the Competent Authorities to review the implementation of this Agreement, to consider issues arising from its implementation and to hold consultations on issues of mutual interest related to the peaceful uses of nuclear energy.

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2. The Joint Coordinating Committee meetings shall be held as necessary alternately in the Republic of South Africa and in the Republic of Korea as mutually agreed upon.

3. The Competent Authorities may, if necessary, establish Working Groups to discuss further steps on implementing this Agreement and to exchange information on the progress of joint projects and programs and other issues of mutual interest.

ARTICLE 7

PROTECTION OF INFORMATION

1. Classified information of the Parties shall not be exchanged under this Agreement.

2. Information provided under this Agreement or resulting from the implementation thereof and treated by any Party as sensitive or confidential shall be clearly defined and marked as such.

3. In accordance with the domestic laws of the Parties, the information referred to in paragraph 2 of this Article shall be treated as confidential.

4. Sensitive or confidential information shall be handled in accordance with the domestic laws of the receiving Party; and such information shall not be disclosed or transferred to a third party, which is not participating in the implementation of this Agreement, without the written consent of the sending Party.

5. In accordance with the domestic laws, the Parties shall provide for the effective protection and distribution of the rights to the intellectual property transferred or created under this Agreement, including its ownership and legal use. The issues of protection and distribution of Intellectual Property Rights including protection of a third party's legitimate rights, taking into full consideration the equitable portion of ownership based on the contribution of the respective participants, shall be regulated by the Agreement concluded by the Parties.

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ARTICLE 8
RESTRICTIONS

1. In terms of this Agreement, the export of nuclear items and technologies shall be performed in accordance with the commitments of the Parties under the Guidelines for Nuclear Suppliers Group and other international agreements which are binding on the Parties.

2. The Parties shall ensure that nuclear items and technologies received in accordance with this Agreement as well as nuclear items and technologies produced on the basis thereof or as the result of their utilization shall:

(a) not be used for the research on the development and the manufacture of nuclear weapons and other nuclear explosive devices or for any military purposes; and

(b) not be transferred to an unauthorized person or, unless the Parties agree in writing, beyond the jurisdiction of the receiving Party.

ARTICLE 9
SAFEGUARDS

1. Nuclear material transferred to the Republic of South Africa pursuant to this Agreement and any nuclear material produced through the utilization of any material, equipment, or technologies so transferred shall be subject to the terms of the Agreement between the Government of the Republic of South Africa and the International Atomic Energy Agency for the Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons signed on 16 September, 1991 as complemented by the additional protocol.

2. Nuclear material transferred to the Republic of Korea pursuant to this Agreement and any nuclear material produced through the utilization of any material, equipment,

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or technologies transferred shall be subject to the terms of the Agreement between the Government of the Republic of Korea and the International Atomic Energy Agency for the Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons signed on 31 October, 1975 as complemented by the additional protocol.

3. If, for any reason or at any time, the IAEA is not administering such safeguards within the jurisdiction of a Party, that Party shall forthwith enter into arrangements with the other Party which conform to IAEA safeguards principles and procedures for the application of safeguards to nuclear material transferred pursuant to this Agreement.

ARTICLE 10
PHYSICAL PROTECTION

1. Physical protection shall be maintained with respect to nuclear materials and equipment transferred in accordance with this Agreement as well as with regard to nuclear materials and equipment produced on the basis thereof or as a result of the utilization thereof at a level not lower than the level set out in the IAEA document INFCIRC/225/Rev. 4 as well as in any subsequent amendments thereto accepted by the Parties.

2. Each Party shall be responsible for the implementation and maintenance of physical protection measures on its territory.

ARTICLE 11
DURATION OF APPLICATION

1. Nuclear material, material and equipment shall remain subject to this Agreement until:

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(a) such items have been transferred beyond the jurisdiction of the receiving Party in accordance with the provisions of Article 8;

(b) a determination is made, in the case of nuclear material, that it is no longer usable nor practicably recoverable for processing into a form in which it is usable for any nuclear activity relevant from the point of view of safeguards referred to in Article 9 of this Agreement. Both Parties shall accept a determination made by the IAEA in accordance with the provisions for the termination of safeguards in terms of the relevant safeguards agreements to which the IAEA is a party; or

(c) otherwise agreed upon by the Parties.

2. Technology shall remain subject to this Agreement until the Parties otherwise agree.

ARTICLE 12
SETTLEMENT OF DISPUTES

Any dispute between the Parties arising out of the interpretation, application or implementation of this Agreement shall be settled amicably through negotiations or consultation between the Parties.

ARTICLE 13
AMENDMENTS

This Agreement may be amended by mutual consent of the Parties through an Exchange of Notes between the Parties through the diplomatic channel.

ARTICLE 14
ENTRY INTO FORCE, DURATION AND TERMINATION

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1. This Agreement shall enter into force on the date on which both Parties have notified each other in writing through the diplomatic channel of its compliance with the constitutional requirements necessary for the implementation of this Agreement. The date of entry into force shall be the date of the last notification.

2. This Agreement shall remain in force for a period of five (5) years, whereafter it shall automatically be renewed for successive five-year periods. It may be terminated by either Party at any time giving six (6) months written notice in advance through the diplomatic channel of its intention to terminate this Agreement.

3. Notwithstanding termination of this Agreement, the obligations and implementing arrangements contained in this Agreement shall remain in force, until otherwise agreed to by the Parties.

IN WITNESS WHEREOF the undersigned, being duly authorized thereto by their respective Governments, have signed and sealed this Agreement in two originals in Korean and English languages, all texts being equally authentic.

DONE at Seoul on this 8th day of October 2010.

FOR THE GOVERNMENT OF THE REPUBLIC OF KOREA

FOR THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

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남아프리카공화국 정부와 대한민국 정부 간의
원자력의 평화적 이용에 관한 협력을 위한 협정

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남아프리카공화국 정부와 대한민국 정부(이하 복수로는 "당사자들", 단수로는 "당사자"라 한다)는,

양국 간의 기존의 우호 관계와 협력을 고려하고,

양국 간의 경제, 기술 및 과학 협력의 뛰어난 성과를 긍정적으로 주목하며,

당사자들이 국제원자력기구(이하 "IAEA"라 한다)의 회원국이고, 1968년 7월 1일 체결된 「핵무기의 비확산에 관한 조약」(이하 "핵비확산조약"이라 한다)의 당사자들임을 인식하고,

각자의 국내 문제에 대한 상호 존중을 바탕으로 양 당사자 간의 호혜적인 경제, 과학 및 기술 협력을 확대하고 강화하고자,

다음과 같이 합의하였다.

제 1 조
정의

이 협정에서 문맥상 달리 의미하지 않는다면

가. "비밀 정보"란 정보 보안 요건에 따라 분류된 정보를 가리킨다.

나. "지침"이란 IAEA의 문서 INFCIRC/254/Rev.9/Part 1에서 발간된 원자력 이전을 위한 지침 및 당사자들이 합의한 그 후속 개정 및 수정본을 말한다.

다. "장비"란 지침의 "부속서 나"에 열거된 모든 시설, 장비 또는 부품을 말한다.

라. "지식재산권"은 1967년 7월 14일 스톡홀름에서 서명된 「세계지적소유권기구 설립협약」 제2조에서 주어진 의미를 가진다.

마. "물질"이란 지침의 "부속서 나"에 열거된 원자로용 비핵물질을 말한다.

바. "핵물질"이란 지침의 "부속서 가"에서 정의된 바와 같이 모든 원료 물

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질 또는 특수핵분열성물질을 말한다.

사. "자(者)"란 모든 개인, 법인, 조합, 상사 또는 회사, 사단, 신탁, 공공 또는 민간 기구, 단체, 정부 기관 또는 공사를 말하며, 이 협정의 당사자들은 이에 포함되지 아니한다.

아. "기술"이란 지침의 "부속서 가"에서 정의된 바와 같이 모든 장비 또는 물질의 개발, 생산 또는 이용에 필요한 특정 정보를 말한다.

제 2 조
목적

당사자들은 호혜, 평등 및 상호주의에 기초하여 국가 원자력 프로그램의 필요와 우선순위에 따라 원자력의 평화적 이용 분야에서 과학, 기술 및 경제 협력을 발전시키고 강화한다.

제 3 조
협력 분야

당사자들은 이 협정에 따라 다음의 분야에서 협력한다.

가. 원자력 공학 분야의 기초 및 응용 연구와 개발

나. 원자력 발전소와 상업용 및 연구용 원자로의 설계, 건설, 운영 및 최신화

다. 발전, 열수 자열 및 담수화와 핵 연구를 위한 원자력 사용

라. 우라늄 탐사 및 채취

마. 연료 개발과 연료 가공시설의 설계, 건설, 운영, 기술 및 최신화를 포함하여 상업용 및 연구용 원자로를 위한 연료 제조

바. 방사성 폐기물 관리

사. 원자로와 그 핵주기에 사용될 핵물질(원료 물질과 특수핵분열성물질)을 포함하는 부품과 물질의 개발, 제조 및 공급

아. 원자력 안전, 방사선 방호 및 방사선 환경 방호

자. 핵물질의 계량, 통제 및 물리적 방호

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차. 방사성 동위원소의 제조 및 응용
카. 방사선 기술 및 그 응용
타. 제어 핵융합, 플라즈마 물리 및 플라즈마 기술
파. 원자력 및 방사선 안전 관련 정부 규제
하. 원자력 시설의 해체 및 제염
거. 당사자들이 합의하는 그 밖의 협력 분야

제 4 조
협력 방식

이 협정에 규정된 협력은 다음의 형태로 수행될 수 있다.
가. 전문가 및 과학·기술 정보의 교환, 과학 세미나 및 회의의 개최, 행정·과학 및 기술 인력의 훈련
나. 필요 시 과학 연구와 기술 개발 분야의 특별 연구 및 프로젝트 수행을 위하여 이 협정 제6조제3항에 따른 공동 작업반 설립
다. 핵물질, 비핵물질, 장비, 시설 및 관련 기술(이하 "원자력 품목 및 기술"이라 한다)의 공급
라. 연구와 기술 문제에 대한 협의와 합의된 프로그램에 따른 공동 연구의 수행
마. 당사자들이 합의하는 그 밖의 형태의 협력

제 5 조
권한 있는 당국

1. 이 협정의 이행을 책임지는 권한 있는 당국은 다음과 같다.
가. 대한민국 정부의 경우 교육과학기술부
나. 남아프리카공화국 정부의 경우 에너지부

2. 권한 있는 당국은 이 협정의 이행에 양국의 정부와 민간 기관이 참여하도

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록 합의할 수 있다.

제 6 조
공동조정위원회 및 작업반의 설치

1. 당사자들은 이 협정의 이행을 검토하고, 이 협정의 이행에서 야기되는 문제들을 심의하며, 원자력의 평화적 이용과 관련된 상호 관심 사항을 협의하기 위하여 권한 있는 당국이 지명하는 대표들로 구성된 공동조정위원회를 설치한다.

2. 공동조정위원회 회의는 상호 합의에 의하여 필요에 따라 대한민국과 남아프리카공화국에서 번갈아 개최된다.

3. 권한 있는 당국은 필요 시 이 협정 이행의 추가 조치를 논의하고 공동 프로젝트와 프로그램의 진전 및 다른 상호 관심 사항에 대한 정보를 교환하기 위하여 작업반을 설치할 수 있다.

제 7 조
정보 보호

1. 당사자들의 비밀 정보는 이 협정에 따라 교환되지 아니한다.

2. 이 협정에 따라 제공되거나 그 이행의 결과로 생성된 정보로서 어느 당사자가 민감하거나 비밀로 취급하는 정보는 그러한 것으로 명확하게 정의되고 명시되어야 한다.

3. 이 조 제2항에 언급된 정보는 당사자들의 국내법에 따라 비밀로 취급된다.

4. 민감하거나 비밀인 정보는 접수 당사자의 국내법에 따라 처리된다. 그리고 이러한 정보는 제공 당사자의 서면 동의 없이는 이 협정의 이행에 참여하지

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않는 제삼자에게 공개되거나 이전되지 아니한다.

5. 당사자들은 국내법에 따라 그 소유권과 법적 사용을 포함하여 이 협정에 따라 이전되거나 발생하는 지식재산권에 대한 효과적인 보호와 분배를 규정한다. 제삼자와 정당한 권리 보호를 포함한 지식재산권의 보호 및 분배 문제는 각 참여자의 기여도에 기초한 소유권의 공평한 몫을 충분히 고려하여 당사자들의 체결한 협정에 따라 규율된다.

제 8 조

재한

1. 이 협정과 관련하여, 원자력 품목 및 기술의 수출은 「원자력 공급국 그룹을 위한 지침」 및 당사자들을 구속하는 다른 국제적 합의에 따른 당사자들의 약속에 따라 수행된다.

2. 당사자들은 이 협정에 따라 접수된 원자력 품목 및 기술에 대해서뿐만 아니라 그것에 기초하거나 그 이용의 결과로 생산된 원자력 품목 및 기술에 대해서도 다음을 보장한다.

가. 핵무기 및 다른 핵폭발장치의 개발과 제조에 대한 연구나 어떠한 군사적 목적을 위해서도 사용되지 아니할 것

나. 허가받지 아니한 자에게 또는 당사자들이 서면으로 동의하지 않는 한 접수 당사자의 관할권 밖으로 이전되지 아니할 것

제 9 조

안전조치

1. 이 협정에 따라 남아프리카공화국에 이전된 핵물질과 그렇게 이전된 물질, 장비 또는 기술을 이용하여 생산된 모든 핵물질은 1991년 9월 16일 서명되고, 추가의정서에 의해 보완된 「남아프리카공화국 정부와 국제원자력기구 간의 핵무

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기의 비확산에 관한 조약과 관련된 안전조치의 적용을 위한 협정」 규정의 적용을 받는다.

2. 이 협정에 따라 대한민국에 이전된 핵물질과 이전된 물질, 장비 또는 기술을 이용하여 생산된 모든 핵물질은 1975년 10월 31일 서명되고, 추가의정서에 의해 보완된 「대한민국 정부와 국제원자력기구 간의 핵무기의 비확산에 관한 조약에 관련된 안전조치의 적용을 위한 협정」 규정의 적용을 받는다.

3. 사유나 지기를 불문하고 IAEA가 한쪽 당사자의 관할권 내에서 그러한 안전조치를 시행하지 아니하는 경우 그 당사자는 즉시 다른 쪽 당사자와 이 협정에 따라 이전되는 핵물질에 대한 안전조치의 적용을 위하여 IAEA와 안전조치 원칙 및 절차에 부합하는 약정을 체결한다.

제 10 조
물리적 방호

1. 물리적 방호는 이 협정에 따라 이전된 핵물질 및 장비에 대해서뿐만 아니라 그것에 기초하거나 그 이용의 결과로 생성된 핵물질 및 장비에 대해서도 IAEA의 문서 INFCIRC/225/Rev.4 및 당사자들이 수락한 모든 후속 개정에 규정된 수준보다 낮지 않은 수준으로 유지되어야 한다.

2. 각 당사자는 그 영역에서 물리적 방호 조치의 이행과 유지에 대한 책임을 진다.

제 11 조
적용 기간

1. 핵물질, 물질 및 장비는 아래의 시점까지 이 협정의 적용을 받는다.

가. 그러한 품목이 제8조에 따라 접수 당사자의 관할권 밖으로 이전될 때

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까지

나. 핵물질의 경우, 이 협정 제9조에 언급된 안전조치의 관점에서 관련 있는 모든 원자력 활동에 이용될 수 있는 형태로 가공하는 데 더 이상은 이용할 수 없거나 사실상 회수가 불가능하다는 결정이 내려질 때까지. 양 당사자들은 IAEA가 당사자인 관련 안전조치 협정의 안전조치 종료를 위한 규정에 따라 IAEA가 내리는 결정을 수락한다. 또는

다. 당사자들이 달리 합의할 때까지

2. 기술은 당사자들이 달리 합의할 때까지 이 협정의 적용을 받는다.

제 12 조

분쟁 해결

이 협정의 해석, 적용 또는 이행과 관련하여 당사자들 간에 발생하는 모든 분쟁은 당사자들 간의 교섭 또는 협의를 통하여 우호적으로 해결한다.

제 13 조

개정

이 협정은 외교 경로를 통한 각서 교환 방식에 따른 당사자들의 상호 동의로 개정될 수 있다.

제 14 조

발효, 유효기간 및 종료

1. 이 협정은 양 당사자들이 외교 경로를 통하여 서면으로 이 협정의 이행을 위해 필요한 헌법적 요건을 준수하였음을 상호 통보하는 날에 발효한다. 발효일은 마지막 통보일이 된다.

S.I.F.N.

2. 이 협정은 5년간 유효하며, 그 후 자동으로 다음 5년간 갱신된다. 어느 당사자가 6개월 전에 외교 경로를 통해 서면으로 이 협정 종료 의사를 미리 통보하면 언제든지 종료될 수 있다.

3. 이 협정의 종료에도 불구하고 이 협정에 포함된 의무와 이행 약정은 당사자들이 달리 합의하지 아니하는 한 계속 유효하다.

이상의 증거로, 아래 서명자는 그들 각자의 정부로부터 정당히 권한을 위임받아 영어와 한국어로 각 2부씩 동등한 정본으로 작성한 이 협정에 서명, 봉인하였다.

2010년 10월 8일 서울에서 작성되었다.

남아프리카공화국 정부를 대표하여

신 강수

대한민국 정부를 대표하여

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PL24.3 270

AGREEMENT FOR COOPERATION BETWEEN THE REPUBLIC OF SOUTH AFRICA AND THE UNITED STATES OF AMERICA CONCERNING PEACEFUL USES OF NUCLEAR ENERGY

The Government of the Republic of South Africa and the Government of the United States of America;

Mindful of their respective obligations under the Treaty on the Non-Proliferation of Nuclear Weapons ("NPT") to which both the United States of America ("United States") and the Republic of South Africa ("South Africa") are parties;

Reaffirming their commitment to ensuring that the international development and use of nuclear energy for peaceful purposes are carried out under arrangements which will to the maximum possible extent further the objectives of the NPT;

Affirming their support of the objectives of the International Atomic Energy Agency ("IAEA") and their desire to promote universal adherence to the NPT;

Desiring to cooperate in the development, use and control of peaceful uses of nuclear energy; and

Mindful that peaceful nuclear activities must be undertaken with a view to protecting the international environment from radioactive, chemical and thermal contamination;

Have agreed as follows :

Article I - Definitions

For the purposes of this Agreement :

(A) "Byproduct material" means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material;

(B) "Component" means a component part of equipment or other item so designated by agreement of the parties;

S.I.F.N.

(C) "Equipment" means any reactor, other than one designed or used primarily for the formation of plutonium or uranium 233, or any other item so designated by agreement of the parties;

(D) "High enriched uranium" means the uranium enriched to twenty percent or greater in the isotope 235;

(E) "Low enriched uranium" means uranium enriched to less than twenty percent in the isotope 235;

(F) "Major critical component" means any part or group of parts essential to the operation of a sensitive nuclear facility;

(G) "Material" means source material and special nuclear material, moderator material, or any other such substance so designated by agreement of the parties;

(H) "Moderator material" means heavy water or graphite or beryllium of a purity suitable for use in a reactor to slow down high velocity neutrons and increase the likelihood of fission, or any other such material so designated by agreement of the parties;

(I) 'Parties" means the Government of the Republic of South Africa and the Government of the United States of America;

(J) "Peaceful purposes" include the use of information, material, equipment and components in such fields as research, power generation, medicine, agriculture and industry but do not include use in, research on or development of any nuclear explosive device, or any military purpose;

(K) "Person" means any individual or any entity subject to the jurisdiction of either party but does not include the parties to this Agreement;

(L) "Reactor" means any apparatus, other than a nuclear weapon or other nuclear explosive device, in which a self-sustaining fission chain reaction is maintained by utilizing uranium, plutonium or thorium or any combination thereof;

S.I.F.N.

M) "Restricted data" means all data concerning (1) design, manufacture or utilization of nuclear weapons, (2) the production of special nuclear material, or (3) the use of special nuclear material in the production of energy, but shall not include data of a party which it has declassified or removed from the category of restricted data;

N) "Sensitive nuclear facility" means any facility designed or used primarily for uranium enrichment, reprocessing of nuclear fuel, heavy water production, or fabrication of nuclear fuel containing plutonium;

O) "Sensitive nuclear technology" means any information (including information incorporated in equipment or an important component) which is not in the public domain and which is important to the design, construction, fabrication, operation or maintenance of any sensitive nuclear facility, or other such information which may be so designated by agreement of the parties; but shall not include restricted data;

P) "Source material" means (1) uranium, thorium or any other material so designated by agreement of the parties, or (2) ores containing one or more of the foregoing materials in such concentration as the parties may agree from time to time;

(Q) "Special nuclear material" means (1) plutonium, uranium 233, or uranium enriched in the isotope 235, or (2) any other material so designated by agreement of the parties.

Article 2 - Scope of Cooperation

1. The parties shall cooperate in the use of nuclear energy for peaceful purposes in accordance with the provisions of this Agreement and their applicable treaties, national laws, regulations and license requirements.

2. Transfer of information, material, equipment and components under this Agreement may be undertaken directly between the parties or through authorised persons. Such transfers shall be subject to this Agreement and to such additional terms and conditions as may be agreed by the parties.

S.I.F.N.

Article 3 - Transfer of Information

1. Information concerning the use of nuclear energy for peaceful purposes may be transferred. Transfers of information may be accomplished through various means, including reports, data banks, computer programs, conferences, visits, and assignments of staff to facilities. Fields which may be covered include, but shall not be limited to, the following :

   (A) Development, design, construction, operation, maintenance and use of reactors, and reactor experiments;

   (B) The use of material in physical and biological research, medicine, agriculture and industry;

   (C) Fuel cycle studies of ways to meet future world-wide civil nuclear needs, including multilateral approaches to guaranteeing nuclear fuel supply and appropriate techniques for management of nuclear wastes;

   (D) Safeguards and physical protection;

   (E) Health, safety and environmental considerations related to the foregoing; and

   (F) Assessing the role nuclear power may play in national energy plans.

2. This Agreement does not require the transfer of any information which the parties are not permitted by law to transfer.

3. Restricted data shall not be transferred under this Agreement.

4. Sensitive nuclear technology shall not be transferred under this Agreement unless provided for by an amendment to this Agreement.

S.I.F.N.

Article 4 - Transfer of Material, Byproduct Material, Equipment and Components

1. Material, byproduct material, equipment and components may be transferred for applications consistent with this Agreement. Sensitive nuclear facilities and major critical components shall not be transferred under this Agreement.

2. Low enriched uranium may be transferred for use as fuel in reactor experiments and in reactors, for conversion or fabrication, or for such other purposes as may be agreed by the parties.

3. The quantity of special nuclear material transferred under this Agreement shall not at any time be in excess of that quantity the parties agree is necessary for any of the following purposes : use in reactor experiments or the loading of reactors, the efficient and continuous conduct of such reactor experiments or operation of such reactors, and the accomplishment of other purposes as may be agreed by the parties.

4. Small quantities of special nuclear material may be transferred for use as samples, standards, detectors, targets and for such other purposes as the parties may agree. Transfers pursuant to this paragraph shall not be subject to the quantity limitations in paragraph 3.

5. The United States shall endeavour to take such actions as are necessary and feasible to ensure a reliable supply of nuclear fuel to South Africa, including the export of material on a timely basis and the availability of the capacity to carry out this undertaking during the period of this Agreement.

Article 5 - Storage and Retransfers

1. Plutonium and uranium 233 (except as contained in irradiated fuel elements), and high enriched uranium, transferred pursuant to this Agreement or used in or produced through the use of material or equipment so transferred shall only be stored in a facility to which the parties agree.

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2. Material, equipment and components transferred pursuant to this Agreement and any special nuclear material produced through the use of any such material or equipment shall not be transferred to unauthorized persons or, unless the parties agree, beyond the recipient Party's territorial jurisdiction.

Article 6 - Reprocessing and Enrichment

1. Material transferred pursuant to this Agreement and material used in or produced through the use of material or equipment so transferred shall not be reprocessed unless the parties agree.

2. Plutonium, uranium 233, high enriched uranium and irradiated source or special nuclear material, transferred pursuant to this Agreement or used in or produced through the use of material or equipment so transferred, shall not be altered in form or content, except by irradiation or further irradiation, unless the parties agree.

3. Uranium transferred pursuant to this Agreement or used in any equipment so transferred shall not be enriched after transfer unless the parties agree.

Article 7 - Physical Protection

1. Adequate physical protection shall be maintained with respect to source or special nuclear material and equipment transferred pursuant to this Agreement and special nuclear material used in or produced through the use of material or equipment so transferred.

2. The parties agree to the levels for the application of physical protection set forth in the Annex to this Agreement, which may be modified by mutual consent of the parties without amending this Agreement. The parties shall maintain adequate physical protection measures in accordance with these levels. These measures shall as a minimum provide protection comparable to the recommendations set forth in IAEA document INFCIRC/225/Revision 2 concerning the physical protection of nuclear material, or in any revision of that document agreed to by the parties.

S.I.F.N.

3. The adequacy of physical protection measures maintained pursuant to this Article shall be subject to review and consultations by the parties periodically and whenever either party is of the view that revised measures may be required to maintain adequate physical protection.

4. Each party shall identify those agencies or authorities having responsibilities for ensuring that levels of physical protection are adequately met and having responsibility for coordinating response and recovery operations in the event of unauthorized use or handling of material subject to this Article. Each party shall also designate points of contact within its national authorities to cooperate on matters of out-of-country transportation and other matters of mutual concern.

5. The provisions of this Article shall be implemented in such a manner as to avoid undue interference in the parties' nuclear activities and so as to be consistent with prudent management practices required for the economic and safe conduct of their nuclear programs.

Article 8 - No Explosive or Military Application

Material, byproduct material, equipment and components transferred pursuant to this Agreement and material and byproduct material used in or produced through the use of any material, equipment or components so transferred shall not be used for any nuclear explosive device, for research on or development of any nuclear explosive device, or for any military purpose.

Article 9 - Safeguards

1. Cooperation under this Agreement shall require the application of IAEA safeguards with respect to all nuclear activities within the territory of South Africa, under its jurisdiction or carried out under its control anywhere. Implementation of a safeguards Agreement pursuant to Article III (4) of the NPT shall be considered to fulfill this requirement.

2. Source or special nuclear material transferred to South Africa pursuant to this Agreement and any source or special nuclear material used in or produced through the use of material, equipment or components so transferred shall be subject to safeguards in accordance with the agreement between South Africa and the IAEA for the application of safeguards in connection with the NPT, signed on 16 September 1991.

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3. Source or special nuclear material transferred to the United States pursuant to this Agreement and any source or special nuclear material used in or produced through the use of any material, equipment or components so transferred shall be subject to the agreement between the United States of America and the IAEA for the application of safeguards in the United States of America, done at Vienna 18 November 1977, entered into force on 9 December 1980.

4. If either party becomes aware of circumstances which demonstrate that the IAEA for any reason is not or will not be applying safeguards in accordance with the agreement as provided for in paragraph 2 or paragraph 3, to ensure effective continuity of safeguards the parties shall immediately enter into arrangements with the IAEA or between themselves which conform with IAEA safeguards principles and procedures and with the coverage required by that paragraph and which provide assurance equivalent to that intended to be secured by the system they replace.

5. Each party shall take such measures as are necessary to maintain and facilitate the application of safeguards provided for under this Article.

6. Each party shall establish and maintain a system of accounting for and control of source and special nuclear nuclear material transferred pursuant to this Agreement and source and special nuclear material used in or produced through the use of any material, equipment or components so transferred. The procedures for this system shall be comparable to those set forth in IAEA Document INFCIRC/153 (Corrected), or in any revision of that document agreed to by the parties.

7. Upon the request of either party, the other party shall report or permit the IAEA to report to the requesting party on the status of all inventories of source and special nuclear material subject to this Agreement.

8. The provisions of this Article shall be implemented in such a manner as to avoid undue interference in the parties' nuclear activities and so as to be consistent with prudent management practices required for the economic and safe conduct of their nuclear programs.

S.I.F.N.

Article 10 - Multiple Supplier Controls

If any agreement between either party and another nation or group of nations provides such other nation or group of nations rights equivalent to any or all of those set forth under Article 5 or 6 with respect to material, equipment or components subject to this Agreement, the parties may, upon request of either of them, agree that the implementation of any such rights will be accomplished by such other nation or group of nations.

Article 11 - Cessation of Cooperation

1. If either party at any time following entry into force of this Agreement :

   (A) does not comply with the provisions of Article 5, 6, 7, 8, or 9 or;

   (B) terminates, abrogates or materially violates a safeguards agreement with the IAEA;

   the other party shall have the rights to cease further cooperation under this Agreement and to require the return of any material, equipment and components transferred under this Agreement and any special nuclear material produced through their use.

2. If South Africa at any time following entry into force of this Agreement detonates a nuclear explosive device, the United States shall have the same rights as specified in paragraph 1.

3. If the United States at any time following entry into force of this Agreement detonates a nuclear explosive device which contains nuclear material of South African origin or derived from South African source material transferred to the United States under this Agreement, South Africa shall have the same rights as specified in paragraph 1.

4. If either party exercises its rights under this Article to require the return of any material, equipment or components, it shall, after removal from the territory of the other party, reimburse the other party for the fair market value of such material, equipment or components. Fair market value for purposes of this Agreement shall be determined by negotiation between the parties.

S.I.F.N.

Article 12 - Consultations and Environmental Protection

1. The parties undertake to consult at the request of either party regarding the implementation of this Agreement and the development of further cooperation in the field of peaceful uses of nuclear energy.

2. The parties shall consult, with regard to activities under this Agreement, to identify the international environmental implications arising from such activities and shall cooperate in protecting the international environment from radioactive, chemical or thermal contamination arising from peaceful nuclear activities under this Agreement and in related matters of health and safety.

Article 13 - Entry into Force, Duration, and Amendment

1. This Agreement replaces the previous Agreement for Peaceful Nuclear Cooperation between the United States and South Africa signed 8 July 1957, as subsequently amended, which shall terminate upon the entry into force of this Agreement. Cooperation initiated under the previous Agreement shall continue in accordance with the provisions of this Agreement. The provisions of this Agreement shall apply to material and equipment subject to the previous Agreement. This Agreement shall enter into force on the date on which the parties exchange diplomatic notes informing each other that they have completed all applicable requirements for its entry into force, and shall remain in force for a period of 25 years. This term may be extended for such additional periods as may be agreed between the parties in accordance with their applicable requirements. This Agreement may be terminated at any time by either party on one year's written notice to the other party.

2. Notwithstanding the suspension, termination or expiration of this Agreement or any cooperation hereunder for any reason, Articles 5, 6, 7, 8, 9, and 11 shall continue in effect so long as any material, equipment or components subject to these articles remains in the territory of the party concerned or under its jurisdiction or control anywhere, or until such time as the parties agree that such material, equipment or components are no longer usable for any nuclear activity relevant from the point of view of safeguards.

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3. The parties shall, at the request of either party, consult on amendments to this Agreement. All amendments shall require the agreement in writing of both parties.

IN WITNESS WHEREOF the undersigned, being duly authorized, have signed this Agreement.

DONE at PRETORIA, this 25 TH day of August, 1995, in two originals in the English language.

FOR THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA:

FOR THE GOVERNMENT OF THE UNITED STATES OF AMERICA:

S.I.F.N.

ANNEX

Pursuant to paragraph 2 of Article 7, the agreed levels of physical protection to be ensured by the competent national authorities in the use, storage and transportation of the materials listed in the attached table shall as a minimum include protection characteristics as below.

Category III

Use and storage within an area to which access is controlled.

Transportation under special precautions including prior arrangements among sender, recipient and carrier, and prior agreement between entities subject to the jurisdiction and regulation of supplier and recipient states, respectively, in case of international transport specifying time, place and procedures for transferring transport responsibility.

Category II

Use and storage within a protected area to which access is controlled, i.e., an area under constant surveillance by guards or electronic devices, surrounded by a physical barrier with a limited number of points of entry under appropriate control, or any area with an equivalent level of physical protection.

Transportation under special precautions including prior arrangements among sender, recipient and carrier, and prior agreement between entities subject to the jurisdiction and regulation of supplier and recipient states, respectively, in case of international transport, specifying time, place and procedures for transferring transport responsibility.

Category I

Material in this category shall be protected with highly reliable systems against unauthorized use as follows :

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Use and storage within a highly protected area, i.e., a protected area as defined for category II above, to which, in addition, access is restricted to persons whose trustworthiness has been determined, and which is under surveillance by guards who are in close communication with appropriate response forces. Specific measures taken in this context should have as their objective the detection and prevention of any assault, unauthorised access or unauthorized removal of material.

Transportation under special precautions as identified above for transportation of categories II and III materials and, in addition, under constant surveillance by escorts and under conditions which assure close communication with appropriate response forces.

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TABLE : CATEGORIZATION OF NUCLEAR MATERIAL

Material	Form	Category I	Category II	Category III [c]
1. Plutonium [a]	Unirradiated [b]	2 kg or more	Less than 2 kg but more than 500 g	500 g or less but more than 15 g
2. Uranium-235	Unirradiated [b]			
	- uranium enriched to 20 % ^{235}U or more	5 kg or more	Less than 5 kg but more than 1 kg	1 kg or less but more than 15 g
	- uranium enriched to 10 % ^{235}U but less than 20 %		10 kg or more	Less than 10 kg but more than 1 kg
	- uranium enriched above natural but less than 10 % ^{235}U			10 kg or more
3. Uranium-233	Unirradiated [b]	2 kg or more	Less than 2 kg but more than 500 g	500 g or less but more than 15 g
4. Irradiated fuel			Depleted or natural uranium, thorium or low-enriched fuel (less than 10 % fissile content) [d e]	

[a] / All plutonium except that with isotopic concentration exceeding 80 % in plutonium-238.

[b] / Material not irradiated in a reactor or material irradiated in a reactor but with a radiation level equal to or less than 100 rads/hour at one metre unshielded.

[c] / Quantities not falling in Category III and natural uranium should be protected in accordance with prudent management practice.

[d] / Although this level of protection is recommended, it would be open to States, upon evaluation of the specific circumstances, to assign a different category of physical protection.

[e] / Other fuel which by virtue of its original fissile material content is classified as Category I and II before irradiation may be reduced one category level while the radiation level from the fuel exceeds 100 rads/hour at one metre unshielded.

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AGREED MINUTE

During the negotiation of the Agreement for Cooperation between the Republic of South Africa and the United States of America Concerning Peaceful Uses of Nuclear Energy ("Agreement") signed today, the following understandings, which shall be an integral part of the Agreement, were reached.

Coverage of Agreement

Material, equipment and components transferred from the territory of one party to the territory of the other party, whether directly or through a third country, will be regarded as having been transferred pursuant to the Agreement only if, prior to transfer, the appropriate government authority of the recipient party confirms in writing to the appropriate government authority of the supplier party that such material, equipment or components will be subject to the Agreement.

For the purposes of implementing the rights specified in Articles 5 and 6 with respect to special nuclear material produced through the use of nuclear material transferred pursuant to the Agreement and not used in or produced through the use of equipment transferred pursuant to the Agreement, such rights shall in practice be applied to that proportion of special nuclear material produced which represents the ratio of transferred material used in the production of the special nuclear material to the total amount of material so used, and similarly for subsequent generations.

With reference to Article 8 it is understood that "military purpose" does not include power to a military base drawn from the civil power network or production of radioisotopes to be used for diagnosis or therapeutic purposes in a military hospital.

Safeguards

If either party becomes aware of circumstances referred to in paragraph 4 of Article 9, either party shall have the rights listed below, which rights shall be suspended if both parties agree that the need to exercise such rights is being satisfied by the application of IAEA safeguards under arrangements pursuant to paragraph 4 of Article 9:

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(1) To review in a timely fashion the design of any equipment transferred pursuant to the Agreement, or of any facility which is to use, fabricate, process, or store any source or special nuclear material so transferred or any special nuclear material used in or produced through the use of such material or equipment;

(2) To require the maintenance and production of records and of relevant reports for the purpose of assisting in ensuring accountability for material transferred pursuant to the Agreement and any source material or special nuclear material used in or produced through the use of any material, equipment or components so transferred; and

(3) To designate personnel, in consultation with the other party, who shall have access to all places and data necessary to account for the material in paragraph 2, to inspect any equipment or facility referred to in paragraph 1, and to install any devices and make such independent measurements as may be deemed necessary to account for such material. Such personnel shall, if either party so requests, be accompanied by personnel designated by the other party.

FOR THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA :

FOR THE GOVERNMENT OF THE UNITED STATES OF AMERICA :

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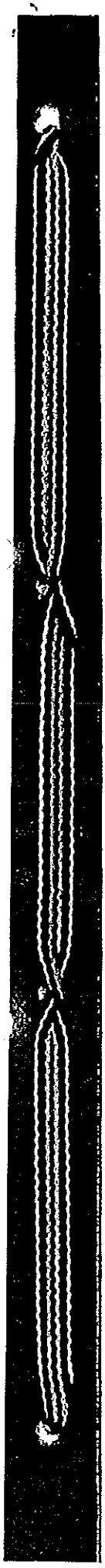

AGREEMENT

BETWEEN

THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

AND

THE GOVERNMENT OF THE RUSSIAN FEDERATION

ON STRATEGIC PARTNERSHIP AND COOPERATION IN THE FIELDS OF NUCLEAR POWER AND INDUSTRY

S. I. F. M.

The Government of the Republic of South Africa and the Government of the Russian Federation, hereinafter jointly referred to as the "Parties" and separately as a "Party";

CONSIDERING that both States are members of the International Atomic Energy Agency (hereinafter referred to as "the IAEA") and the Nuclear Suppliers Group, as well as Parties to the Treaty for Non-Proliferation of Nuclear Weapons as of July 1, 1968;

ACKNOWLEDGING the Agreement between the Government of the Russian Federation and the Government of the Republic of South Africa on Cooperation in the field of Peaceful Uses of Nuclear Energy as of November 20, 2004;

TAKING INTO ACCOUNT the intentions of the Government of the Republic of South Africa for the implementation of the large-scale national plan for the power sector development, involving the construction by 2030 of new nuclear power plant (hereinafter referred to as "NPP") units in the Republic of South Africa;

NOTING the rights and obligations of the Parties under the Agreement between the Government of the Russian Federation and the Government of the Republic of South Africa on the Promotion and Reciprocal Protection of Investments as of November 28, 1998;

REFERRING to the Joint Presidential Statement on establishment of comprehensive strategic partnership between the Russian Federation and the Republic of South Africa of March 26, 2013;

AIMING to further expand and deepen the mutually beneficial economic, scientific and technical cooperation between the Russian Federation and the Republic of South Africa in the fields of nuclear energy and industry for peaceful uses, based on the principles of equality, non-interference in the internal affairs and respect of the sovereignty of both States; and

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CONVINCED that legal fixation of the strategic partnership in the fields of nuclear power and industry will contribute to the development of cooperation in other areas between the Russian Federation and the Republic of South Africa;

Hereby agree as follows:

Article 1

This Agreement creates the foundation for the strategic partnership and cooperation in the fields of nuclear power and industry for peaceful uses between the Parties, aimed at the successful implementation of the national plan for the power sector development of the Republic of South Africa, based on the principles of equality and mutual benefit.

Article 2

Cooperation within the framework of this Agreement shall be implemented strictly in compliance with the Parties' respective national legislations and with respect to international treaties, to which the states of the Parties are signatories.

Article 3

The Parties shall create the conditions for the development of strategic cooperation and partnership in the following areas:

(i) development of a comprehensive nuclear new build program for peaceful uses in the Republic of South Africa, including enhancement of key elements of nuclear energy infrastructure in accordance with IAEA recommendations;

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(ii) design, construction, operation and decommissioning of NPP units based on the VVER reactor technology in the Republic of South Africa, with total installed capacity of about 9.6 GW;

(iii) design, construction, operation and decommissioning of the multi-purpose research reactor in the Republic of South Africa;

(iv) development of joint business in the fields of radioisotopes manufacturing and global marketing, including the involvement of the multi-purpose research reactor facilities planned for construction in the Republic of South Africa;

(v) enhancement and implementation of the program on the development of South-African human resources for work at the nuclear facilities, including NPPs, in the Republic of South Africa;

(vi) support the enhancement of the regulatory framework in the field of nuclear and radiation safety in the Republic of South Africa, including development of relevant legal base, licensing system and regulation;

(vii) strengthening of nuclear radiation safety system in the field of peaceful uses of nuclear energy in the Republic of South Africa;

(viii) support the enhancement of the industrial base development program essential for the re-development of nuclear energy in the Republic of South Africa;

(ix) localization of the manufacture of components for the NPP equipment in the Republic of South Africa;

(x) assist in the integration of the developed nuclear joint manufacturing capacities and capabilities in the supply chain as well as for the joint marketing and promotion of the produced products to the third countries markets;

(xi) enhancement of security and assurance of physical protection of nuclear facilities in the Republic of South Africa;

(xii) strengthening and adaptation of nuclear and radiological emergency response system in the Republic of South Africa;

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(xiii) radioactive waste management in the Republic of South Africa;

(xiv) rendering of the nuclear fuel cycle front-end services to secure the needs of the new units of NPPs to be built in the Republic of South Africa, including the accession of the respective South-African organization to the International Uranium Enrichment Center;

(xv) support of feasibility activities for site investigation for NPP construction in the Republic of South Africa; and

(xvi) activities in other areas that may be agreed upon by the Parties in writing through diplomatic channels.

Article 4

1. The Parties collaborate in areas as outlined in Article 3 of this Agreement which are needed for the implementation of priority joint projects of construction of two new NPP units with VVER reactors with the total capacity of up to 2,4 GW at the site selected by the South African Party (either Koeberg NPP, Thyspunt or Bantamsklip) in the Republic of South Africa and other NPP units of total capacity up to 7,2GW at other identified sites in the Republic of South Africa and construction of a multi-purpose research reactor at the researeh center located at Pelindaba, Republic of South Africa. The mechanism of implementation of these priority projects will be governed by separate intergovernmental agreements, in which the Parties shall agree on the sites, parameters and installed capacity of NPP units planned to be constructed in the Republic of South Africa.

2. The Parties shall create such conditions as to issue timely permits (licenses) for nuclear energy and industry capacities design, construction, commissioning, operation and decommissioning, as well as related export and import of facilities, equipment, technologies, nuclear and radioactive materials, special non-nuclear materials and services in the field of peaceful uses of nuclear energy in

S.I.F.M.

accordance with the Parties' respective national legislations.

Article 5

1. For the purpose of implementing this Agreement each Party shall designate competent authorities:
   (i) For the Russian Party the Competent Authority shall be the State Atomic Energy Corporation "Rosatom" (for all areas of cooperation) and the Federal Service for Ecological, Technological and Atomic Inspectorate (for support of enhancement of the regulatory framework in the field of nuclear and radiation safety in the Republic of South Africa, including development of relevant legal base, licensing system and regulation);
   (ii) For the South-African Party the Competent Authority shall be the Department of Energy of the Republic of South Africa.
2. The Parties shall promptly notify each other in writing through diplomatic channels of any change of Competent Authorities, their titles or functions or designation of new Competent Authorities.

Article 6

1. The Parties shall establish a Joint Coordination Committee to provide guidance, to coordinate and to control the implementation of this Agreement.

2. Each Party shall appoint the representatives of the relevant government institutions to the Joint Coordination Committee.

3. Representatives of the Parties' Competent Authorities shall be appointed as the co-chairs of the Joint Coordination Committee. The co-chairs of the Joint Coordination Committee shall develop and agree on the Term of Reference for the Committee.

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4. In three years of entry into force of this Agreement the co-chairs of the Joint Coordination Committee shall make comprehensive review of the progress in the implementation of this Agreement and provide appropriate recommendations to the Competent Authorities of the Parties regarding further implementation of this Agreement.

Article 7

Cooperation in areas as outlined in Article 3 of this Agreement, will be governed by separate agreements between the Parties, the Competent Authorities, as well as by agreements (contracts) between Russian and (or) South African authorized organizations, which are involved by the Competent Authorities of the Parties for the implementation of cooperation in the framework of this Agreement. The Competent Authorities of the Parties can, by mutual consent, involve third countries' organizations for the implementation of particular cooperation areas in the framework of this Agreement.

Article 8

The sources and format of financing of the activities within the implementation of cooperation areas as outlined in Article 3 of this Agreement will be agreed on after consultations and fixed by separate agreements between the Parties.

Article 9

For the purpose of implementation of this Agreement the South African Party will facilitate the provision of a special favorable regime in determining tax and non-tax payments, fees and compensations, which will be applied to the projects implemented in the Republic of South Africa within the areas of cooperation as outlined in Article 3 of this Agreement, subject to its domestic legislation.

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Article 10

Implementation of the areas of cooperation as outlined by Article 3 of this Agreement shall be with gradual increase and shall be mutually agreed upon by the Competent Authorities of the Parties. The terms for the scope of supplies of equipment, materials and services for the projects developed and implemented in terms of the framework of this Agreement shall be provided by South African enterprises, and also by joint ventures to be set up for this purpose.

Article 11

The conditions for the protection, use and distribution of the Intellectual Property rights under this Agreement shall be determined in agreements between the Parties and agreements (contracts) between Russian and (or) South African authorized organizations concluded in accordance with Article 7 of this Agreement.

Article 12

1. Information specified as STATE SECRET of the Russian Federation or CLASSIFIED INFORMATION of the Republic of South Africa shall not be exchanged under this Agreement.

2. Information transferred under this Agreement or created from the implementation thereof and regarded by the transferring Party as CONFIDENTIAL shall be clearly marked as such.

3. The Party transferring the information under this Agreement shall mark such information in the Russian language as « Для служебного пользования » and in English language as "CONFIDENTIAL".

S.I.F.N.

4. The Party receiving information marked in the Russian language as «Для служебного пользования» and in English language as "CONFIDENTIAL" shall protect it at a level equivalent to the level of protection applied by the transferring Party to such information. Such information shall not be disclosed or transferred to a third party without the written consent of the transferring Party.

5. The Parties shall limit the number of individuals having access to information which the transferring Party regards as confidential.

6. Such information shall be treated in the Russian Federation as OFFICIAL INFORMATION of LIMITED DISTRIBUTION and shall be protected in accordance with the legislation of the Russian Federation.

7. Such information shall be treated in the Republic of South Africa as «RESTRICTED INFORMATION» and shall be protected in accordance with the legislation of the Republic of South Africa.

8. All information transferred under this Agreement shall be used exclusively in accordance with this Agreement.

Article 13

1. Nuclear material, equipment, special non-nuclear material and relevant technology, as well as material (goods) of dual purpose shall be exported under this Agreement in accordance with the Parties' obligations, arising from the Treaty on Non-proliferation of Nuclear Weapons of 1 July, 1968 and other international treaties that contain provisions on export control to which the Russian Federation and/or the Republic of South Africa are parties.

2. Nuclear material, equipment, special non-nuclear material and relevant technology received by the Republic of South Africa under this Agreement, and

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nuclear material, special non-nuclear material, facilities and equipment produced thereof or as a result of their use, shall---

(i) not be used for manufacturing of nuclear weapons and other nuclear explosive devices or for achieving any other military purpose;

(ii) be under the IAEA safeguards in accordance with the Agreement for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons between the Republic of South Africa and the IAEA of 16 September, 1991 (INFCIRC/394) throughout the entire period of their location under the jurisdiction of the Republic of South Africa;

(iii) be ensured with measures of physical protection at levels not lower than the levels recommended by the IAEA document "The Physical Protection of Nuclear Material and Nuclear Facilities" (INFCIRC/225/Rev.5);

(iv) be re-exported or transferred from the jurisdiction of the Republic of South Africa to any other country only with prior written consent of the Russian Federation and under above-mentioned conditions.

3. Nuclear material transferred to the Republic of South Africa under this Agreement shall not be enriched to 20% or more in the isotope uranium-235.

4. Nuclear material transferred to the Republic of South Africa under this Agreement shall not be enriched and reprocessed without prior written consent of the Russian Federation.

5. Equipment and material (goods) of dual purpose and related technology received from the Russian Federation under this Agreement and any of their reproduced copies, shall---

(i) be used only for the declared purposes, unconnected with any activitiesrelated to the manufacturing of nuclear explosive devices;

(ii) not be used in nuclear fuel cycle related activities that are not under the IAEA safeguards;

S.I.F.N.

(iii) not be copied, modified, re-exported or transferred to any third party without the written consent of the Russian competent authority in compliance with the legislation of the Russian Federation.

6. The Parties shall cooperate on matters of export control of equipment, material (goods) and relevant technology. Control over the use of supplied nuclear and special non-nuclear material, equipment and relevant technology shall be executed by means agreed upon through consultations between the Parties.

Article 14

Technology and facilities for chemical reprocessing of irradiated fuel, isotopic uranium enrichment and heavy water production, their major components or any items produced thereof, as well as uranium enriched to 20 percent or more in uranium-235, plutonium and heavy water shall not be transferred under this Agreement.

Article 15

1. The authorized organization of the South African Party at any time and at all stages of the construction and operation of the NPP units and Multi-purpose Research Reactor shall be the Operator of NPP units and Multi-purpose Research Reactor in the Republic of South Africa and be fully responsible for any damage both within and outside the territory of the Republic of South Africa caused to any person and property as a result of a nuclear incident occurring at NPP or Multi-purpose Research Reactor and also in relation with a nuclear incident during the transportation, handling or storage outside the NPP or Multi-purpose Research Reactor of nuclear fuel and any contaminated materials or any part of NPP or Multi-purpose Research Reactor equipment both within and outside the territory of the Republic of South Africa. The South African Party shall ensure that, under no circumstances shall the Russian Party or its authorized

S.I.F.N.

organization nor Russian organizations authorized and engaged by their suppliers be liable for such damages as to the South African Party and its Competent authorities, and in front of its authorized organizations and third parties.

2. Nuclear liability due to nuclear incident occurring when handling and transporting the nuclear fuel shall be transferred from the authorized Russian organization to the authorized South African organization after the physical handing over of the nuclear fuel at a place determined in separate agreements (contracts) as concluded in accordance with Article 7 of this Agreement.

3. Should the Vienna Convention on Civil Liability for Nuclear Damage enter into force for the Republic of South Africa, the issues of civil liability for nuclear damage under this Agreement for the South African Party shall be regulated by this Vienna Convention.

Article 16

The Parties shall settle all disputes arising from the interpretation or implementation of this Agreement amicably by Parties' Competent Authorities consultations or negotiations through diplomatic channels. In case of any discrepancy between this Agreement and agreements (contracts), concluded under this Agreement, the provisions of this Agreement shall prevail.

Article 17

1. This Agreement shall enter into force on the date of the receipt through diplomatic channels of the final written notification of the completion by the Parties of internal government procedures necessary for its entry into force.

2.This Agreement shall remain in force for a period of twenty (20) years and shall automatically be renewed for a further period of ten (10) years unless

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terminated by either Party giving 1 (one) year written notice in advance through diplomatic channels to the other Party of its intention to terminate it.

3. Upon the receipt by one of the Parties of the written notification from the other Party on the termination of this Agreement, the Parties shall hold consultations immediately on the possibility of implementing all obligations of the Parties under this Agreement, in accordance with the domestic law of the Parties.

4. The termination of this Agreement shall not affect the rights and obligations of the Parties which have arisen as a result of the implementation of this Agreement before its termination, unless the Parties agree otherwise.

5. This Agreement may be amended by mutual consent of the Parties through an Exchange of Notes between the Parties through diplomatic channels. Such amendments shall form an integral part of this Agreement.

6. The termination of this Agreement shall not affect the performance of any of the obligations under agreements (contracts) which arise during the validity period of this Agreement and are uncompleted at the moment of such termination, unless the Parties agree otherwise.

S.I.F.N.

IN WITNESS WHEREOF the undersigned, being duly authorised thereto by their respective Governments, have signed and sealed this Agreement in two originals in the Russian and English languages, all texts being equally authentic. In the case of divergence of interpretation, the English text shall be used.

Done at _____ this _____ day of _____ 201_.

FOR THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

FOR THE GOVERNMENT OF THE RUSSIAN FEDERATION

S.I.F.N.

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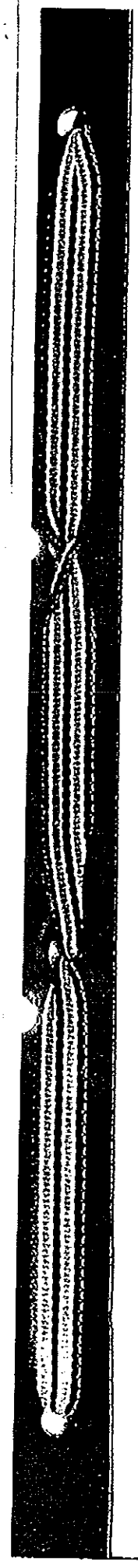

AGREEMENT

BETWEEN

THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

AND

THE GOVERNMENT OF THE PEOPLE'S REPUBLIC OF CHINA

ON

COOPERATION IN THE FIELD OF

CIVIL NUCLEAR ENERGY PROJECTS

S.I.F.N.

PREAMBLE

The Government of the Republic of South Africa and the Government of the People's Republic of China (hereinafter jointly referred to as the "Parties" and separately as a "Party"),

CONSIDERING the comprehensive strategic partnership between our two countries;

RECOGNIZING the Agreement between the Government of the People's Republic of China and the Government of the Republic of South Africa on Cooperation in the Peaceful Uses of Atomic Energy signed on June 21, 2006, at Cape Town; and the Memorandum of Understanding between the Government of the People's Republic of China and the Government of the Republic of South Africa on Cooperation in the Energy Sector, signed on August 24, 2010, at Beijing;

TAKING INTO ACCOUNT that the Republic of South Africa is planning civil nuclear energy new-builds with a total capacity of 9.6 GWe, with the aim of satisfying the increasing power demand, reduce carbon emissions, facilitate localisation for industrialisation, economic and social development, and is also willing to conduct cooperation with the People's Republic of China based on the significant on-going and long-standing cooperation between the two countries;

MINDFUL that the People's Republic of China possesses a complete nuclear industry, has the capabilities in design, construction, operation and management of various research reactors, and commercial reactors, as well as in nuclear fuel fabrication and supply, and is willing to participate in the civil nuclear energy development in the Republic of South Africa and to form long term and strategic collaborative relationships with local businesses;

EXPRESSING the willingness of both Parties to foster increased cooperation through investment, development of technology and expertise, and the construction of civil nuclear energy projects in the Republic of South Africa for their mutual benefit;

AFFIRMING their commitment towards further enhancing the bilateral cooperation in the civil nuclear energy sector, by encouraging and facilitating the building of closer relationships between relevant Government agencies, intermediaries, independent regulatory agencies, academic, legal and financial institutions, developers and other enterprises active in the civil nuclear energy sector;

HEREBY AGREE as follows:

S.I.F.N.

Article 1

1. Cooperation between the Parties under this Agreement shall follow the principle of mutual benefit and reciprocity based on the recognition of the achievements and developments in the field of nuclear energy made by the People's Republic of China and the Republic of South Africa, as well as the willingness and interest of the relevant Chinese and South African nuclear energy enterprises to participate in the development, construction and operation of civil nuclear energy projects in South Africa, China and any other third country. The Governments may authorize state or private organizations of the Parties to participate in the implementation of this Agreement.

2. The Parties will advance and support cooperation in the civil nuclear energy sector in their respective countries.

Article 2

1. The Parties will encourage and facilitate their respective enterprises to cooperate in the civil nuclear energy sector, including but not limited to, the fields of experience exchange, personnel training, site evaluation and selection, localization, project planning, project management, consultancy, enhance infrastructure development, fundamental research, design and engineering, investment and financing, construction, operation, maintenance, equipment and fuel supply as well as development of new technology for civil nuclear energy new-builds in the Republic of South Africa and the People's Republic of China, and any other third country.

2. The Parties undertake to support enterprises of both countries with their expertise and technologies into their civil nuclear energy sectors, by providing information and the necessary guidance regarding their laws, policies and regulations which are relevant to the civil nuclear energy projects but subject to the applicable national legislation.

3. Both Parties will consider how to realize the goals of this Agreement. This may, where appropriate, include signing agreements as well as contracts between enterprises, intermediaries, independent regulatory agencies, academic, legal and financial institutions and the developers for civil nuclear energy projects and agreeing on the step by step implementation plans in accordance with the Peaceful Uses Agreement and this Framework Agreement.

S.I.F.N.

Article 3

1. It is the understanding of both Parties that participation of the relevant civil nuclear energy enterprises in the construction of nuclear energy projects, must comply with the applicable domestic laws of the respective countries and any other necessary independent regulatory requirements. The Parties shall protect all the relevant legal rights of investors and project participants in accordance with the applicable laws. The Parties also agree to uphold the international non-proliferation framework, including the relevant international treaties, Conventions and IAEA safeguards.

2. It is the understanding of both Parties that the implementation of any civil nuclear energy project pursuant to this Agreement in the Republic of South Africa and the People's Republic of China or any other third country, should be based on equal and mutual benefit regarding the commercial negotiations and agreements of the respective Parties as well as the long term development of the organizations respectively.

Article 4

1. The Competent Authorities responsible for the implementation of this Agreement and for coordinating all cooperation programmes entered into under this Agreement shall be–

   (a) in the case of the Republic of South Africa, the Department of Energy; and

   (b) in the case of the Government of the People's Republic of China, the China National Energy Administration.

2. The Parties shall establish a working group for the purpose of the joint development of plans of cooperation as well as implementation and analysis of the work to be performed in the areas referred to in Article 2.
   This Working group may report to the Energy Sub-Committee of China and South Africa Bi-National Commission.

3. The Co-Chairs, Representatives and Secretariat members of the Working Group will be appointed by China National Energy Administration and the Department of Energy of the Republic of South Africa respectively. The Co-Chairs will be Director-General of Nuclear Power Department of China National Energy Administration and the Director-General of the Department of Energy for the Republic of South Africa. The Representatives of the Working Group will include but not limited to personnel from the relevant government agencies, where appropriate, jointly agreed personnel from the civil nuclear energy enterprises.

S.I.F.N.

4. The agenda, time and place of the meetings of the Working Groups shall be agreed upon by the Parties.

5. The Working Group may establish sub-working group for conducting collaboration in specific area or project. The sub-working group so established, will stay active until such a time as the work is completed.

6. The subsistence and travel expenses of participants attending to cooperation programmes and meetings of implementing agencies or Working Groups contemplated under this Agreement shall be borne by the respective Parties or their implementing agencies.

Article 5

The Working Group tasks include:

1. Reviewing progress of the implementation and delivery set out in this Agreement, and to report to and seek approval of specific projects from the Parties respectively;

2. Coordination and support of implementation of specific projects as referred to in Article 2 of this Agreement;

3. Facilitating cooperation between Chinese and South African enterprises in the civil nuclear energy field, to deepen their mutual understanding and cooperation by, where appropriate, holding exhibitions, seminars and symposiums;

4. To coordinate and seek to solve difficulties and eliminate barriers to investment, joint projects and market entry; and

5. Any other areas which may be agreed to by the Parties within the framework of this Agreement.

Article 6

1. The outcome or results of specific programmes of cooperation carried out under this Agreement, which are not yet in the public domain, shall be kept confidential by the Parties.

2 If a Party wishes to share the results with a third party, prior written consent of the other Party shall be obtained.

S.I.F.N.

3 The outcome and results of specific programmes of cooperation carried out under this Agreement shall be published only with the written consent of both Parties.

4 Any notification concerning this Agreement shall be addressed in writing to the Parties through an Exchange of Notes between Parties through the diplomatic channel.

Article 7

Any dispute arising out of the interpretation, application or implementation of this Agreement shall be settled amicably between the Parties through negotiations or consultations.

Article 8

This Agreement may be amended by mutual consent of the Parties through an Exchange of Notes between the Parties through the diplomatic channel.

Article 9

1. Upon signature of the Agreement, the Agreement shall enter into force on the date on which Parties have notified each other in writing, through the diplomatic channel, that their respective internal procedures necessary for its entry into force have been completed.

2. This Agreement shall be valid for twenty years and shall be automatically extended for a further term of ten years, unless either Party notifies the other Party, six months in advance through the diplomatic channel, of its intention to terminate the Agreement.

3. The termination of this Framework Agreement shall not affect the implementation of any arrangement and/or contracts made during the period of its validity but still not completed by the date of its termination, unless otherwise agreed upon in writing by the Parties through the diplomatic channel.

4. Either Party may propose an amendment to the Agreement by means of a written notice through the diplomatic channel to the other Party. The amendment will be effected by mutual written consent between the Parties.

S.I.F.N.

IN WITNESS WHEREOF, the undersigned, being duly authorized by their respective Governments, have signed and sealed this Agreement, in the Chinese and English languages, both texts being equally authentic.

DONE at .....on this.....day of ..... 2014.

FOR THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

FOR THE GOVERNMENT OF THE PEOPLE'S REPUBLIC OF CHINA

S.I.F.N.

AGREEMENT
BETWEEN
THE GOVERNMENT OF THE PEOPLE'S REPUBLIC OF CHINA
AND
THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA
ON COOPERATION IN THE FIELD OF
CIVIL NUCLEAR ENERGY PROJECTS

PREAMBLE

The Government of the People's Republic of China and the Government of the Republic of South Africa (hereinafter jointly referred to as the "Parties" and separately as a "Party"),

CONSIDERING the comprehensive strategic partnership between our two countries;

RECOGNIZING the *Agreement between the Government of the People's Republic of China and the Government of the Republic of South Africa on Cooperation in the Peaceful Uses of Atomic Energy* signed on June 21, 2006, at Cape Town; and the *Memorandum of Understanding between the Government of the People's Republic of China and the Government of the Republic of South Africa on Cooperation in the Energy Sector*, signed on August 24, 2010, at Beijing;

TAKING INTO ACCOUNT that the Republic of South Africa is planning civil nuclear energy new-builds with a total capacity of 9.6 GWe, with the aim of satisfying the increasing power demand, reduce carbon emissions, facilitate localisation for industrialisation, economic and social development, and is also willing to conduct cooperation with the People's Republic of China based on the significant on-going and long-standing cooperation between the two countries;

MINDFUL that the People's Republic of China possesses a complete nuclear industry, has the capabilities in design, construction, operation and management of various research reactors, and commercial reactors, as well as in nuclear fuel fabrication and supply, and is willing to participate in the civil nuclear energy development in the Republic of South Africa and to form long term and strategic collaborative relationships with local businesses;

S.I.F.N.

EXPRESSING the willingness of both Parties to foster increased cooperation through investment, development of technology and expertise, and the construction of civil nuclear energy projects in the Republic of South Africa for their mutual benefit;

AFFIRMING their commitment towards further enhancing the bilateral cooperation in the civil nuclear energy sector, by encouraging and facilitating the building of closer relationships between relevant Government agencies, intermediaries, independent regulatory agencies, academic, legal and financial institutions, developers and other enterprises active in the civil nuclear energy sector;

HEREBY AGREE as follows:

Article 1

1. Cooperation between the Parties under this Agreement shall follow the principle of mutual benefit and reciprocity based on the recognition of the achievements and developments in the field of nuclear energy made by the People's Republic of China and the Republic of South Africa, as well as the willingness and interest of the relevant Chinese and South African nuclear energy enterprises to participate in the development, construction and operation of civil nuclear energy projects in South Africa, China and any other third country. The Governments may authorize state or private organizations of the Parties to participate in the implementation of this Agreement.

2. The Parties will advance and support cooperation in the civil nuclear energy sector in their respective countries.

Article 2

1. The Parties will encourage and facilitate their respective enterprises to cooperate in the civil nuclear energy sector, including but not limited to, the fields of experience exchange, personnel training, site evaluation and selection, localization, project planning, project management, consultancy, enhance infrastructure development, fundamental research, design and engineering, investment and financing, construction, operation, maintenance, equipment and fuel supply as well as development of new technology for civil nuclear energy new-builds in the Republic of South Africa and the People's Republic of China, and any other third country.

S.I.F.N.

2. The Parties undertake to support enterprises of both countries with their expertise and technologies into their civil nuclear energy sectors, by providing information and the necessary guidance regarding their laws, policies and regulations which are relevant to the civil nuclear energy projects but subject to the applicable national legislation.

3. Both Parties will consider how to realize the goals of this Agreement. This may, where appropriate, include signing agreements as well as contracts between enterprises, intermediaries, independent regulatory agencies, academic, legal and financial institutions and the developers for civil nuclear energy projects and agreeing on the step by step implementation plans in accordance with the Peaceful Uses Agreement and this Framework Agreement.

Article 3

1. It is the understanding of both Parties that participation of the relevant civil nuclear energy enterprises in the construction of nuclear energy projects, must comply with the applicable domestic laws of the respective countries and any other necessary independent regulatory requirements. The Parties shall protect all the relevant legal rights of investors and project participants in accordance with the applicable laws. The Parties also agree to uphold the international non-proliferation framework, including the relevant international treaties, Conventions and IAEA safeguards.

2. It is the understanding of both Parties that the implementation of any civil nuclear energy project pursuant to this Agreement in the Republic of South Africa and the People's Republic of China or any other third country, should be based on equal and mutual benefit respecting the commercial negotiations and agreements of the respective Parties as well as the long term development of the organizations respectively.

Article 4

1. The Competent Authorities responsible for the implementation of this Agreement and for coordinating all cooperation programmes entered into under this Agreement shall be–

   (a) in the case of the Government of the People's Republic of China, the China National Energy Administration; and

S.I.F.N.

(b) in the case of the Republic of South Africa, the Department of Energy.

2. The Parties shall establish a working group for the purpose of the joint development of plans of cooperation as well as implementation and analysis of the work to be performed in the areas referred to in Article 2.
This Working group may report to the Energy Sub-Committee of China and South Africa Bi-National Commission.

3. The Co-Chairs, Representatives and Secretariat members of the Working Group will be appointed by China National Energy Administration and the Department of Energy of the Republic of South Africa respectively. The Co-Chairs will be Director-General of Nuclear Power Department of China National Energy Administration and the Director-General of the Department of Energy for the Republic of South Africa. The Representatives of the Working Group will include but not limited to personnel from the relevant government agencies, where appropriate, jointly agreed personnel from the civil nuclear energy enterprises.

4. The agenda, time and place of the meetings of the Working Groups shall be agreed upon by the Parties.

5. The Working Group may establish sub-working group for conducting collaboration in specific area or project. The sub-working group so established, will stay active until such a time as the work is completed.

6. The subsistence and travel expenses of participants attending to cooperation programmes and meetings of implementing agencies or Working Groups contemplated under this Agreement shall be borne by the respective Parties or their implementing agencies.

Article 5

The Working Group tasks include:

1. Reviewing progress of the implementation and delivery set out in this Agreement, and to report to and seek approval of specific projects from the Parties respectively;

2. Coordination and support of implementation of specific projects as referred to in Article 2 of this Agreement;

3. Facilitating cooperation between Chinese and South African enterprises in the civil nuclear energy field, to deepen their mutual understanding and

S.I.F.N.

cooperation by, where appropriate, holding exhibitions, seminars and symposiums;

4. To coordinate and seek to solve difficulties and eliminate barriers to investment, joint projects and market entry; and

5. Any other areas which may be agreed to by the Parties within the framework of this Agreement.

Article 6

1. The outcome or results of specific programmes of cooperation carried out under this Agreement, which are not yet in the public domain, shall be kept confidential by the Parties.

2 If a Party wishes to share the results with a third party, prior written consent of the other Party shall be obtained.

3 The outcome and results of specific programmes of cooperation carried out under this Agreement shall be published only with the written consent of both Parties.

4 Any notification concerning this Agreement shall be addressed in writing to the Parties through an Exchange of Notes between Parties through the diplomatic channel.

Article 7

Any dispute arising out of the interpretation, application or implementation of this Agreement shall be settled amicably between the Parties through negotiations or, consultations.

Article 8

This Agreement may be amended by mutual consent of the Parties through an Exchange of Notes between the Parties through the diplomatic channel.

Article 9

1. Upon signature of the Agreement, the Agreement shall enter into force on

S.I.F.N.

the date on which Parties have notified each other in writing, through the diplomatic channel, that their respective internal procedures necessary for its entry into force have been completed.

2. This Agreement shall be valid for twenty years and shall be automatically extended for a further term of ten years, unless either Party notifies the other Party, six months in advance through the diplomatic channel, of its intention to terminate the Agreement.

3. The termination of this Framework Agreement shall not affect the implementation of any arrangement and/or contracts made during the period of its validity but still not completed by the date of its termination, unless otherwise agreed upon in writing by the Parties through diplomatic channel.

4. Either Party may propose an amendment to the Agreement by means of a written notice through the diplomatic channel to the other Party. The amendment will be effected by mutual written consent between the Parties.

IN WITNESS WHEREOF, the undersigned, being duly authorized by their respective Governments, have signed and sealed this Agreement, in the Chinese and English languages, both texts being equally authentic.

DONE at Beijing on this 7th day of November 2014.

For the Government of the People's Republic of China

吴新雄

For the Government of the Republic of South Africa

S.I.F.N.

PL25

MINISTER
ENERGY
REPUBLIC OF SOUTH AFRICA

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Private Bag X9111, Cape Town, 8000, Parliamentary Building 7th floor, 120 Plein Street, Cape Town. Tel: (+27 21) 469 6425. Fax: (+27 21) 469 5980

Our Ref. No.: 8/4/6/12 *please quote ref*
Enquiries: Mr. Sipho Mokwana
E-mail: sipho.mokwana@energy.gov.za
Tel. No.: (012) 406 7512

Ms Gabriella Razzano
Open Democracy Advice Centre
Springtime Studios
2nd Floor, 1 Scott Raod
OBSERVATORY
7708

Per E-mail: info@safcei.org.za / gabriella@odac.org.za

Dear Madam

APPEAL IN TERMS OF SECTION 74(1) OF THE PROMOTION OF ACCESS TO INFORMATION ACT, 2000 (Act No. 2 of 2000) (hereafter referred to as "the Act") AGAINST THE REFUSAL OF A REQUEST FOR ACCESS TO INFORMATION

I, the Minister of Energy, have considered the internal appeal lodged on behalf of the Southern African Faith Communities' Environment Institute in terms of section 74(1) of the Act against the decision of the Deputy Information Officer (hereinafter referred to as the "DIO") to refuse their request for access to certain records held by the Department of Energy.

After careful consideration of your appeal and by virtue of powers conferred on me in terms of section 77(2) of the Act, I hereby substitute the DIO's decision to refuse your request for access to the record with a decision to partially grant access to the record sought. Accordingly, access to the President's Minute No. 289 dated 20 September 2014 is hereby granted.

S.I.F.N.

Having regard to your client's request for "The record of the authority for the Minister to sign the framework agreement on nuclear partnership with Rostatom", I am of the opinion that the President's Minute served as the record of the authority for myself, as the Minister of Energy, to have signed the Framework Agreement with the Russian Federation. I am unable to interpret the request in any other fashion as your client's request is unclear, vague and/or ambiguous.

Having regard to the request for - "The record of decision by Government of the Republic of South Africa to procure 9,6 GW of nuclear energy power as part of the energy supply". Once more, this request is open-ended and vague. In this regard, I must advise that it is general public knowledge that as far back as 1998, the White Paper on the Energy Policy of the Republic of South Africa stated that - "Government will ensure that decisions to construct new nuclear power stations are taken within the context of an integrated energy policy planning process with due consideration given to all relevant legislation, and the process subject to structured participation and consultation with all stakeholders." The Integrated Resource Plan of 2010, approved after public consultation [and by Cabinet], included a nuclear fleet of 9,6 GW to the energy mix. Additionally, the Nuclear Energy Policy for the Republic of South Africa has reference. All of this information can be obtained on the website of the Department of Energy.

Having regard to your wide request for "A copy of any affordability or feasibility study conducted by the Department of Energy with regard to the procurement of nuclear power", I am of the opinion that any feasibility studies conducted relating to the procurement of nuclear power for the energy security of the country falls squarely within the ambit of section 42(1) and (3)(b) and (c) of the Act. Given the nature of such studies, the records contain financial, commercial, scientific and technical information, the disclosure of which would likely cause harm to the commercial and financial interests of the State, and put it at a disadvantage in contractual or other negotiations.

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The release of such records will adversely impact on any procurement process to be undertaken and any future negotiations with the nuclear vendors. If the information were to be released, then the procurement process would be compromised and State financial and economic interests will be jeopardised. The State stands to lose, amongst others, any competitive advantage it would have during the procurement process and negotiations.

Lastly, I am of the opinion that the public interest in the disclosure of the aforementioned studies sought does not outweigh the harm contemplated by its release.

In terms of section 77(5)(c) of the Act you are hereby informed of your right to lodge an application with a court against this decision on the internal appeal within 180 days of receipt of this outcome notification.

Yours sincerely

(MS) TINA JOEMAT-PETTERSSON, MP
MINISTER OF ENERGY
DATE: 13/7/2015

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PRESIDENT'S MINUTE NO. 289

In terms of section 231 of the Constitution of the Republic of South Africa, 1996, I hereby approve that the attached Agreement between the Government of the Republic of South Africa and the Government of the Russian Federation on Strategic Partnership and Cooperation in the Fields of Nuclear Power and Industry be entered into, and I hereby authorise the Minister of Energy to sign the Agreement.

Given under my Hand and the Seal of the Republic of South Africa at PRETORIA on this 20th day of September Two Thousand and Fourteen.

PRESIDENT

MINISTER OF THE CABINET

S.I.F.N.

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energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

Media Statement: Nuclear Procurement Process Update

Pretoria, 14 July 2015

Good Morning Ladies and Gentlemen of the media.

Thank you for accepting our invitation.

This Nuclear Energy Policy approved in 2008, provided a framework within which; prospecting, milling, mining, the use of nuclear materials and the development and utilization of nuclear energy for peaceful purposes take place. Some of the key government objectives for the nuclear new build programme include:

- ***Attainment of global leadership and self-sufficiency in the nuclear energy sector in the long term;***
- ***Contribution to the country's national programme of social and economic transformation, growth and development;***
- ***Improvement of the quality of human life and to support the advancement of science and technology;***

In March 2011, Cabinet approved and promulgated a 20 year Integrated Resource Plan (IRP2010-30), which is the electricity plan of Government with a mixed energy agenda that puts nuclear at 23% (9600MW) of energy source by 2030. In accordance with this plan the first unit will be commissioned by 2023.

The National Development Plan, approved in 2012 enjoins us to conduct thorough investigations on various aspects of the Nuclear New Build Programme (NNBP) before a procurement decision is taken. In line with this policy prescript Government

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undertook detailed studies on various aspects of the nuclear fuel cycle value chain, including amongst other, costs, financing, funding model, skills development, and economic impact of localisation. These studies have confirmed that this programme is fundable and will contribute positively to the economy of the country.

THE INTERGRATED NUCLEAR INFRASTRUCTURE REVIEW (INIR) REPORT

The South African Government, as the first nuclear operating state voluntarily invited the International Atomic Energy Agency (IAEA) to conduct the Integrated Nuclear Infrastructure Review (INIR) mission, which is an assessment of the country's infrastructure as it relates to readiness to start purchasing, constructing, and operating nuclear power plants; known as Phase I, II, III respectively. It is important to note that an INIR Review Mission is not an audit, but a peer review by independent experts from the IAEA. The Department of Energy, together with stakeholder government departments and relevant entities, conducted an Integrated Nuclear Infrastructure Review (INIR) in accordance with the IAEA guidelines, with a final mission report having being received on 30 May 2013.

The following are recommendations of the INIR:

1. South Africa should finalize its contracting strategy for new nuclear build.

   Progress Made: Contracting strategy has been completed.

2. In consideration of the future amendment to its nuclear legislation South Africa should explicitly address the Fundamental Safety Principles, including assigning prime responsibility for safety to the operator.

   Progress Made: Amendment of the NNR Act and NE Act is under review.

3. The Bid Invitation Specification (BIS) and related evaluation criteria should be completed as a prerequisite for the tendering and procurement process.

   Progress Made: To be finalised by end July 2015.

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4. The designation of the Procuring Agency should be made in the near future so that it can initiate the necessary organizational provisions, including HR development.

   Progress Made This is completed – DoE is the designated "Procuring Agency".

5. Once the Contracting Strategy has been finalized, South Africa should complete its financing arrangements for the new build programme.

   Progress Made: Studies completed and recommendations undergoing approval process.

6. South Africa should join the relevant international legal instrument(s) on civil liability for nuclear damage.

   Progress Made: Consultation with necessary stakeholders is currently in progress and on-going

7. South Africa should complete regulations on nuclear security and safeguards.

   Progress Made: Nuclear Security regulations completed, Nuclear Safeguards – Government considering options on transfer of the function.

8. South Africa should complete the process of revising its legislative framework to address the independence of the regulatory body, nuclear security and civil liability for nuclear damage.

   Progress Made: Benchmark studies on regulatory independence and institutional arrangements are completed and being processed with relevant authorities.

9. South Africa should develop and implement a national human resources strategy and plan to address required improvements in: technical subjects at secondary school level; graduation rates for university engineering programmes; and training of artisans in areas relevant to nuclear industry.

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Progress Made: The Strategy has been developed and now it is being implemented.

10. South Africa should develop an integrated national Nuclear Fuel Cycle strategy, including Spent Fuel/High Level Waste disposal.

Progress Made: The development of strategies is completed.

STUDY TOURS:

As part of a preparatory stage, the Department of Energy undertook study tours to various nuclear vendor countries in order to familiarise itself with various technologies offered by these countries and lessons learned during their history of deployment of nuclear energy as part of their energy mix.

INTER-GOVERNMENTAL AGREEMENTS:

To date Government signed IGAs with several of these vendor countries that have expressed interest in the South African nuclear new build programme. To date Government has signed IGAs with China, France, Russia, USA and South Korea. Negotiations are underway to conclude IGA's with Canada and Japan. Each one of these IGA's lays foundation for cooperation, trade and exchange of nuclear technology as well as procurement. Each vendor country was focusing on its own capabilities taking into account the requirements of South Africa to achieve self-sufficient policy objectives. The IGA's also describe broad areas of nuclear cooperation and they differ on emphasis based on unique needs and capacity of each country. These were presented to CABINET for discussion and approval and recently have been tabled in Parliament and now ready for further debate and Parliamentary endorsement.

VENDOR PARADES:

South Africa professionals from Government departments, State Owned Entities, Universities (professors for nuclear engineering programmes) participated in the

S.I.F.N.

vendor parade workshops. There were 50-80 South African nuclear professionals (experts) who participated in these workshops and thoroughly interrogated their technological offerings. The vendor parade workshops provided a platform for South Africa professionals to exchange views with their peers on the nuclear new build programme.

The vendor parade workshops covered key focus areas forming part of the entire nuclear programme:

- Nuclear Power Plant Technology and Construction,
- Multipurpose Research Reactor Technology and Construction;
- Financing and Commercial Matters;
- Manufacturing, Industrialization and Localization;
- Human Resources and Skills Development;
- Public Awareness and Information Centers;
- Safety, Liability and Licensing;
- Nuclear Fuel Cycle (Front and back end);
- Nuclear Siting and Permitting;
- Nuclear Non-proliferation Matters

This process was completed in March 2015.

A **Progress Report** appraising Energy Security Sub-Committee of Cabinet, The National Nuclear and Energy Coordination Committee (NNEECC) was compiled and processed and recently has been endorsed by CABINET.

Further work done in preparation for the Nuclear New Build Programme includes:

THE SKILLS DEVELOPMENT & TRAINING:

As part of the ramping out for readiness of the programme for the Nuclear New Build Programme, the national skills development activities have started:

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China: 50 trainees from the Government, entities and industry have been sent to China for Phase 1 nuclear training in April 2015. Plans are underway to send an additional 250 trainees to China this year. Additionally, a Memorandum of Agreement on Skills Development was entered into between NECSA and State Nuclear Power Technology Cooperation of China.

Russian: has offered 10 new Scholarships for Master's Degree in Nuclear Technology. In addition to this, a Memorandum of Understanding Agreement has been concluded covering the training and development of 200 South African candidates at Russian universities and educational organizations.

South Korea: has an existing programme to train South African students for Master's Degree in Nuclear Engineering. So far 3 students graduated in 2013 and 2015 respectively.

France: has put in place 14 bursaries for young people coming from previously disadvantaged groups. Through this four-year engineering program in different universities, these young professionals will acquire the skills and expertise to support the South-African governmental effort in preparation of the new Nuclear build program. In addition, South-African engineers already engaged in nuclear activities will follow job training in France, equivalent to a total of 400 months. Necsa has also signed a Memorandum of Understanding with Electricity De France on Skills Development.

The negotiations on Nuclear Skills Development with the French government are at an advance stage that could see an establishment of a Nuclear Campus in South Africa.

FUNDING AND FINANCING MODELS:

Government has completed various technical studies in response to the National Development Plan directives. Inter alia, these include in depth studies into the cost of nuclear power, funding and financing models and economic impact of localisation, amongst others. It is important to note that government is still to negotiate the price tag in the procurement process which is why exact figures for the study cannot be

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made available to the public at this stage. These studies were done to ensure that South Africa is a knowledgeable customer.

However, the current world experience for quoted numbers for real export would indicate an overnight cost of around 5 billion US dollars per 1200MW which is equivalent for 4200 dollars per kilowatt per reactor in new comer states. The examples include UAE, Pakistan, Turkey and Belarus. In countries with established domestic construction programmes (e.g. China, South Korea and India) the prices are in order of 2500 dollar per kilowatts are being quoted. Amongst the 70 plus reactors in the world, there are number of projects where because of the local market and political conditions, the project costs are higher than these figures.

Going forward, Government plans the following as part of the broad procurement process:

- To follow the approved procurement process that will include a competitive bidding process that is transparent and cost effective and in line with legislation.
- Start procurement in Second Quarter (July 2015)
- Procurement Process to be completed by end of 2015 financial year
- Select Strategic Partner or Partners by end of 2015 financial year

Government remains committed to ensure energy security for the country, through the roll out of the nuclear new build programme as an integral part of the energy mix. Government remains committed to ensuring the provision of reliable and sustainable electricity supply, as part of mitigating the risk of carbon emissions.

The nuclear new build programme will enable the country to create jobs, develop skills, create industries, and catapult the country into a knowledge economy. Government remains committed to a procurement process that is in line with the country's legislation and policies.

ISSUED BY THE DEPARTMENT OF ENERGY

For Enquiries: Mr. Zizamele Mbambo: DDG Nuclear Energy at +27795295646, or zizamele.mbambo@energy.gov.za / Mediadesk@energy.gov.za

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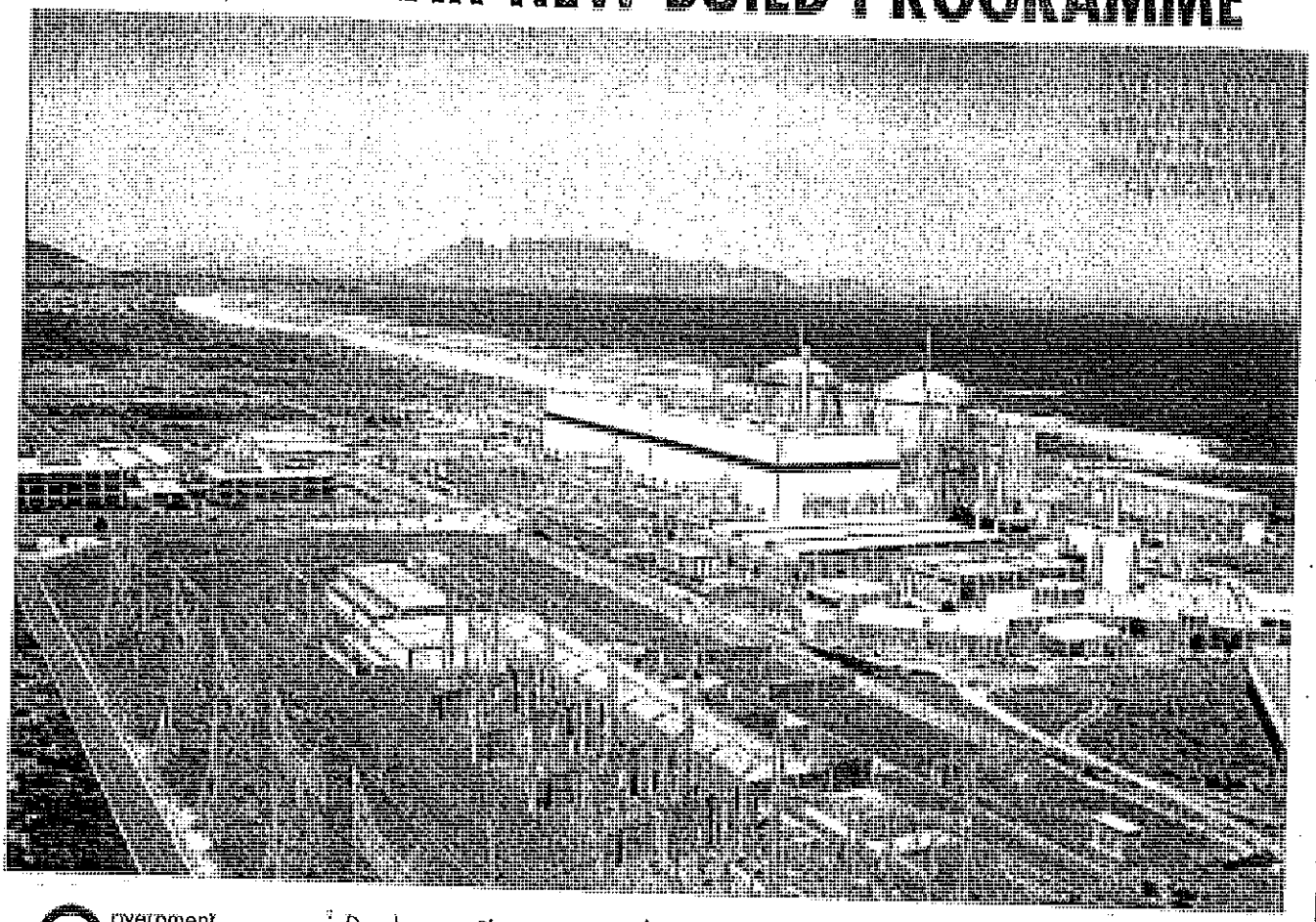
ADVERTORIAL

PL28

GOVERNMENT CONCLUDES THE PRE-PROCUREMENT PREPARATORY PHASE FOR THE NUCLEAR NEW BUILD PROGRAMME



Government continues to make significant progress in its engagements with various prospective nuclear vendor countries as part of the process towards the implementation of the expansion of the Nuclear New Build Programme, as required for energy security based on a sustainable energy mix. This programme is premised on the Nuclear Energy Policy of 2008, the Nuclear Energy Act 46 of 1999 and the Integrated Resource Plan adopted in 2011.

Similarly, the National Development Plan enjoins us to do thorough investigations on various aspects of the nuclear power generation programme before a procurement decision is taken. These policy prescripts are meant to add 9 600mW to the national electricity grid and ensure we keep the lights on in a sustainable manner.

Government held consultations with a number of nuclear vendor countries, including the USA, South Korea, Russia, France, Japan and China. These are the countries that have pressurised water reactor nuclear technology, similar to the Koeberg Nuclear Power Plant in the Western Cape. SA has been safely using this technology for the past 30 years.

As part of the pre-procurement phase and preparation for the roll-out of the Nuclear New Build Programme, government has entered into several negotiations with vendor countries and has signed inter-governmental framework agreements with Russia, France and China. SA has also signed agreements with the USA and South Korea. Inter-governmental framework agreements with Canada and Japan are at an advanced stage and are expected to be concluded soon.

These agreements set out potential frameworks of co-operation in which each country foresees where or how it can participate in SA's Nuclear New Build Programme. They also mark the initiation of the preparatory stage for the procurement process that will be undertaken in line with the country's legislation and policies.

Parallel to this work and

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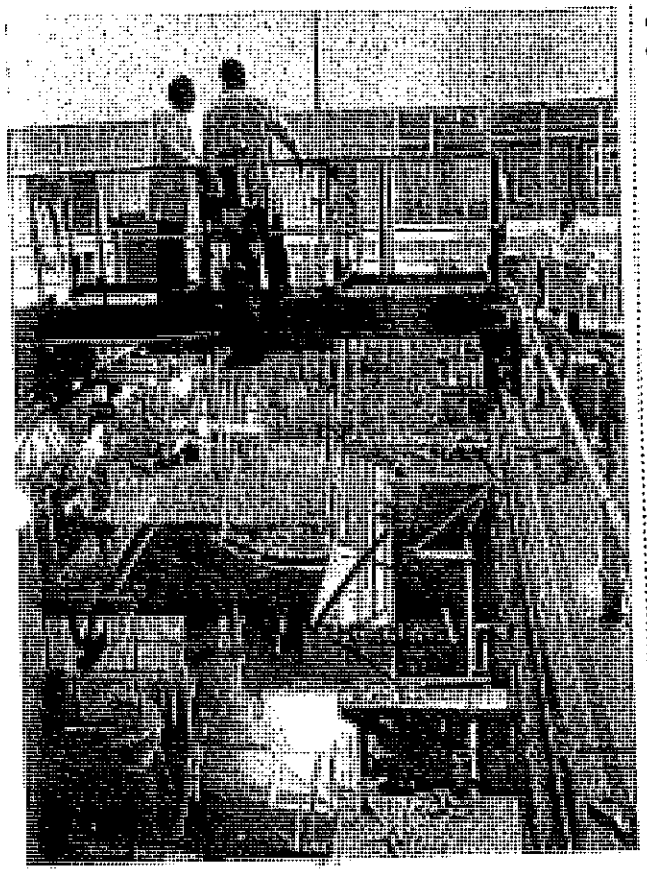

as part of the preparatory phase, government successfully concluded the nuclear vendor parade workshops. The first of these was held during the week of 20 October 2014 with Russia. The second workshop was held with France, China, South Korea and the USA during the period 16-25 November 2014. From 21-29 March this year, government concluded the third and final workshop with Canada and Japan.

The nuclear vendor parade workshops entail vendor countries presenting their nuclear technology offerings. The platform was created for vendor countries to showcase and demonstrate their capabilities, showing how – if chosen – they would meet SA's needs for the Nuclear New Build Programme, including the required 9 600mW (9,6GW) nuclear power capacity. The vendor parade workshops form part of government's technical investigation in preparation for a procurement decision.

Senior technical officials from different government departments, energy-related state-owned entities and academics involved in nuclear and engineering programmes (nuclear experts) participated in the workshops to engage in robust, open technical discussions with the vendors, as well as among themselves.

As previously explained by government, vendor parade workshops were held with countries which were ready to engage in this manner, having signed the inter-governmental framework agreement as a requirement. The conclusion of the vendor parades marks a significant milestone in the government pre-procurement phase for rolling out the Nuclear New Build Programme.

Government wants to be self-sufficient in exploiting the entire nuclear fuel cycle for peaceful use of nuclear technology to address the socio-economic needs of the country. In keeping with this policy requirement, the vendor countries were requested to present their offerings to address the entire Nuclear New Build Programme value chain, focusing on the following key aspects: nuclear power plant technology and construction; multi-purpose research reactor technology and construction; financing and commercial matters; manufacturing, industrialisation and localisation; human resources and skills development; public awareness and information centres; safety, liability and licensing; nuclear fuel cycle (front and back end); nuclear siting and permitting, and nuclear non-proliferation matters.

Over the past six months, a high-powered delegation of up to 80 South African nuclear experts, guided by the policy prescripts, have thoroughly interrogated and analysed the technological offerings for the vendor countries during the pre-procurement phase. Each of the vendor countries presented unique proposals (solutions) to implement the Nuclear New Build Programme. This outcome will support government's decision-making processes to develop a transparent, fair, cost-effective and competitive procurement process for selecting a strategic partner(s) to implement the programme.

Going forward, the procurement process will be presented for approval by the Energy Security Cabinet Sub-committee and endorsed by Cabinet. The procurement process will then be presented for deliberation by Parliament, after which government will launch a procurement process well in time to ensure that SA commissions the first unit by 2023 and the last unit by 2030.

Government remains committed to ensuring energy security for the country through the roll-out of the Nuclear New Build Programme as an integral part of the energy mix. As such, it aims to ensure the provision of a reliable and sustainable electricity supply, as part of mitigating the risk of carbon emissions. The Nuclear New Build Programme will enable the country to create jobs, develop skills, create industries and catapult itself into a knowledge economy. Government remains committed to a procurement process that is in line with the country's legislation and policies.

energy

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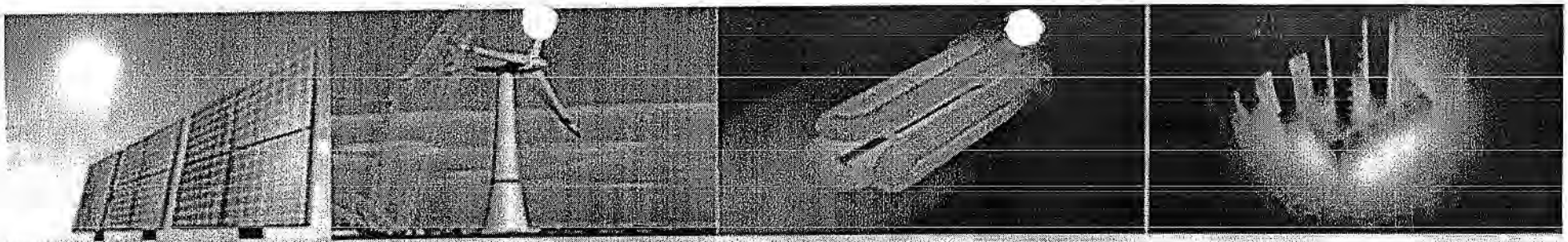

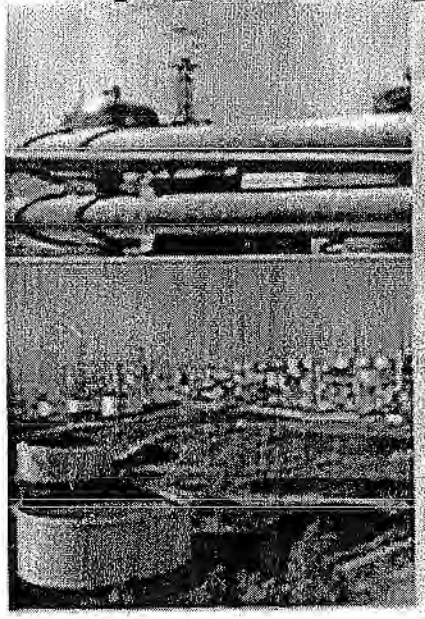

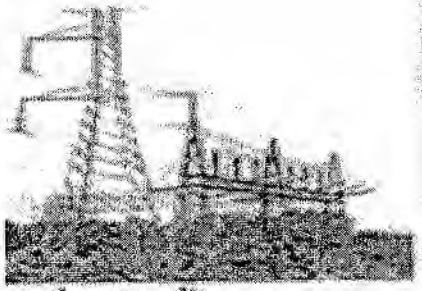

Department of Energy

PORTFOLIO COMMITTEE ON ENERGY
4th Qt 2014/15 and 1st Qt 2015/16
PERFORMANCE REPORTS

4 August 2015

energy

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Energy
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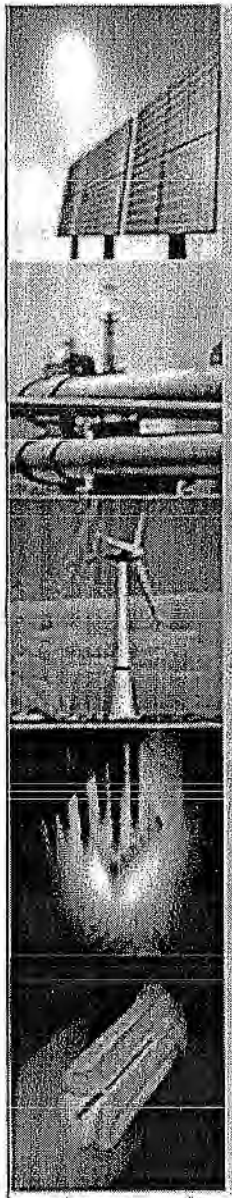

Programme 5 (Nuclear Energy, 4th Qt 2014/15)

Highlights of Targets achieved

- Development of the implementation plan on the Mission Report was finalised and approved.
- Nuclear security compliance reports developed and approved.
- 2 nuclear safeguards compliance report developed and approved.
- 1 nuclear safeguards compliance report developed and approved.
- 3 public awareness campaigns conducted.

Summary of Targets not achieved

- Development of the Fund Bill is in progress and consultations with Chief State Law Adviser is in progress. This target was partially achieved.

Comments

- Procurement process for new nuclear build programme in progress.

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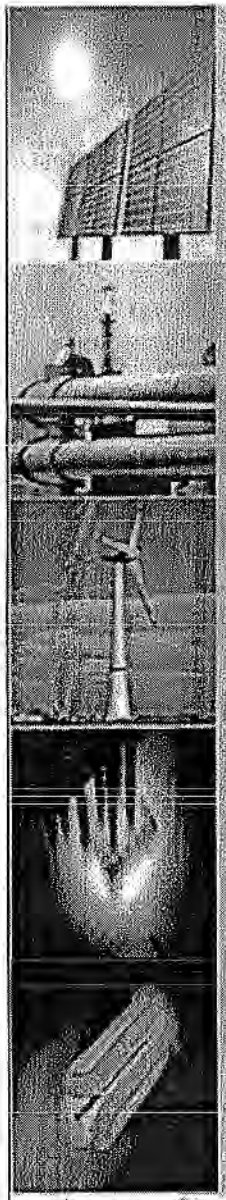

Programme 5: Nuclear Energy , 4th Qt 2014/15

Annual Target 2014/15 *(from Strategic Plan - link to Technical Indicator Description)*	Quarterly Target *(from APP)*	Progress this Quarter *("achieved", or "partially achieved", or "not achieved", and support for the self-assessment)*	Comments *(constraints, variances, likelihood of annual achievement, corrective actions, etc)*
Fully operational and funded NRWDI.	Transferred Vaalputs disposal facility and related functions, assets and staff to the NRWDI and produce status report.	**Partially achieved:** Business Plan to assist the Board of NRWDI to draft its strategy was submitted to the Board	Business Plan to assist the Board of NRWDI to draft its strategy was submitted to the Board. Task Team addressing section 197 transitional arrangements at Necsa was formed. TOR to establish Steering Committee to address transitional arrangements submitted to ADG in February 2015.
Develop implementation plan based on the Mission Report and commence with implementation.	Implementation commenced.	**Achieved:** Action plan approved by the acting DG	None
Implementation of procurement process (if approved).	Implementation of procurement process (if approved)	**Partially Achieved:** Pre-procurement process completed	Preparation for a procurement process only ended in March2015.
Submission to Cabinet for approval of implementation plan to support Nuclear Fuel Cycle Strategy.	Submission to Cabinet for approval of implementation plan to support Nuclear Fuel Cycle Strategy	**Partially Achieved:** Extract of the Minutes from NEWG	Strategy presented at Nuclear Sub working Group and it is 90% completed as noted at the NEWG.

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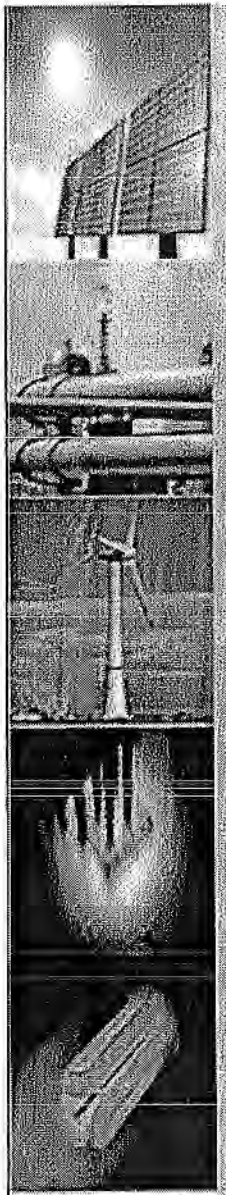

Programme 5: Nuclear Energy 1st Qt 2015/16

Annual Target 2015/16 *(from Strategic Plan - link to Technical Indicator Description)*	Quarterly Target *(from APP)*	Progress this Quarter *("achieved", or "partially achieved", or "not achieved", and support for the self-assessment)*	Comments *(constraints, variances, likelihood of annual achievement, corrective actions, etc)*
Draft updated National Nuclear Disaster Management Plan completed.	Relevant stakeholders consulted on progress regarding the implementation & response of the action plan on the emergency plan.	Achieved: Minutes of the Emergency Preparedness Review (EPREV) meeting.	None
Procurement of the nuclear power reactor as per the procurement process launched.	Implementation of the procurement process (if approved).	Not achieved	Cabinet Granted Conditional approval pending few other submissions.
Programme plan completed & implementation commenced.	Development of optimized programme plan completed in line with 2023 as per IRP 2010-30.	Not achieved	None
Transactional advisors motivation completed.	Draft report for transactional advisor motivation completed.	Achieved: MTEF Submission	None
PMO established & operational.	Submission on PMO motivation submitted to Minister for approval.	Not achieved	None

energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

PL30

Cape Town Office

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PBO No. 930003292
NPO No. 023-004

LRC
Legal Resources Centre

Your Ref:

Our Ref: AA

9th July 2015

Mr FZ Majola
Chairperson
Portfolio Committee on Energy
Parliament
Cape Town

Attention :
Arico Kotze
Committee Secretary
Per email: akotze@parliament.gov.za
Per fax: 086 505 5618

Dear Sir

Re: INTERGOVERNMENTAL AGREEMENTS REGARDING NUCLEAR CO-OPERATION

We act for Earthlife Africa, a nongovernmental organization.

We refer to five international inter-governmental agreements relating to nuclear energy, tabled before Parliament on June 11, 2015 under Section 231(3) of the South African Constitution,[1] In terms of this section these agreements will bind the Republic without the approval of the National Assembly and National Council of Provinces, but must be tabled in the Assembly and National Council of Provinces within a reasonable time. According to the Rules of the National Assembly, such agreements must be referred by the Speaker for information to either the portfolio committee under which the subject of the agreement falls, or by resolution of the Assembly to any other Assembly committee.
(See: http://www.parliament.gov.za/content/NA%20RULES%202014.pdf).

Please advise whether these agreements have been referred to the Portfolio Committee for Energy, and if so whether our clients will be afforded an opportunity to make representations to this committee regarding their concerns, before the agreements become binding. Kindly also advise whether a date been set for when these agreements will be before the Portfolio Committee on Energy for discussion, and public input.

[1] Act 108 of 1996

S.I.F.N.

Additionally, according to a guide to tabling of papers for Parliament – compiled by the office of Clerk of the Papers – the State Law Advisers give their opinion as to whether an agreement is classified as falling under section 231(2) or 231(3) of the Constitution, as well as whether the agreement is consistent with domestic law, with international obligations of the Republic, and with international law, and this information should form part of the documents presented for tabling (See: http://www.parliament.gov.za/content/Guide%20to%20Tabling%20of%20Papers%202011%20Final[1].pdf). Kindly advise where we may access this information before making submissions on behalf of our clients to the committee in regard to the agreements.

Finally, as per an advertorial in SA Airways magazine published in July 2015, it is stated "Going forward, the (nuclear) procurement process will be presented for approval by the Energy Security Cabinet Sub-committee and endorsed by Cabinet. The procurement process will then be presented for deliberation by Parliament, after which government will launch a procurement process well in time to ensure that SA commissions the first unit by 2023 and the last unit by 2030." Kindly advise when this discussion is likely to take place in the Portfolio Committee for Energy.

Many thanks for your assistance.

LEGAL RESOURCES CENTRE
Per:

Ms A ANDREWS

S.I.F.H.

PL31

PARLIAMENT
OF THE REPUBLIC OF SOUTH AFRICA

COMMITTEES SECTION
Portfolio Committee on Energy
P.O. Box 15 Cape Town 8000 RSA
Tel: 27 (21) 403 3662
Fax: 086 5055 618
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Email: akotze@parliament.gov.za

13 August 2015

Ms A Andrews

Legal Resource Centre

3rd Floor Greenmarket Place

54 Shortmarket Street

Cape Town

8001

Per e-mail: angela@lrc.org.za

Dear Ms Andrews

RE: INTERNATIONAL NUCLEAR AGREEMENTS (Your ref.: AA)

Your correspondence dated 9 July 2015, with regard to the "Intergovernmental Agreements regarding Nuclear Co-operation" refers.

As indicated in your letter, on 11 June 2015, the Minister of Energy tabled in Parliament five international agreements in terms of section 231(3) of the Constitution of the Republic of South Africa, 1996. The agreements were formally referred to the Portfolio Committee on Energy on 5 August 2015.

I believe that you have corresponded with Adv F Jenkins, Senior Parliamentary Legal Adviser, regarding the question whether these agreements have become binding. In terms of section 231(3) of the Constitution, such agreements become binding without the approval of Parliament, but must be tabled within a reasonable time. As you are aware, the agreements have been tabled. Be that as it may, the Committee will meet in due course to decide on the manner and date to facilitate

S.I.F.N.

public involvement in the process before the Committee. You will be advised of this decision.

With regard to the legal opinions from the Office of the Chief State Law Advisor on whether the agreements fall under subsections 231(2) or 231(3) of the Constitution, it is advised that the necessary information be obtained from the said office. Their contact details are as follows: Office of the Chief State Law Adviser, Atterbury House, 9 Riebeeck Street, Cape Town 8000 South Africa Tel: +27 (0)21 441-4900 Fax: +27(0)21 441-7923 E-mail: OCSLA@justice.gov.za

On the advertorial in the SA Airways magazine published in July 2015, the said agenda item is not on the Portfolio Committee on Energy's meetings programme. I advise that the Legal Resource Centre monitor the Z-list, which is the National Assembly and National Council of Provinces: Meetings of Committees. This information is available on the Parliamentary website.

Please do not hesitate to contact the Committee Secretary. Mr Arico Kotze at (021) 403 3662 (T), 0865055618 (Fax), 0837098470 (Cell) or via e-mail at akotze@parliament.gov.za.

Yours sincerely

Regards

Hon FZ Majola, MP
Chairperson: PC on Energy

S.I.F.M.

PL 32 334

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Email: adrian@adrianpole.co.za Web: www.adrianpole.co.za

Your Reference: The Honourable Minister of Energy

My Reference: AP/LP/ELA-JHB SAFCEI

URGENT

The Honourable Minister
Department of Energy
Private Bag X 96
Pretoria
0001

Facsimiles: 021 465 5980 (Cape Town)
012 323 5849 and 012 323 5651 (Pretoria)

Email: c/o zizamele.mbambo@energy.gov.za; Duncan.Hindle@energy.gov.za; Olga.Maczali@energy.gov.za; olga.obkhuis-maczali@energy.gov.za and Malusi.Ndlovu@energy.gov.za

26 July 2015

The Honourable Minister Joemat-Pettersson

Re: National Nuclear Power Development Programme – Procurement of 9.6GW of nuclear power stations and Tabling of International Governmental Agreements

1. We refer to our letter dated 30 January 2015 (and to follow-up letters dated 23 February 2015 and 16 March 2015),[1] in respect of which we have to date received no response. Your failure to respond to those previous letters, which traverse material issues raised in this letter, is regrettable and has taken on particular significance given the new facts revealed in the last few weeks. In light of recent revelations about the procurement of nuclear power stations and government's plans and intentions in that regard, the urgent need for a response from your office – exacerbated by your failure to respond to each of our previous letters – is now manifest.

2. As noted in our previous letters we represent Earthlife Africa - Johannesburg and the South African Faith Communities' Environmental Institute (our clients), who over a number of years have engaged in public participation processes relating to integrated energy and resource planning. Our clients have also been engaged in the Nuclear 1 environmental impact assessment process, which has currently stalled.

[1] Copies are attached to this letter for ease of reference marked as bundle A.

S.I.F.N.

3. As discussed more fully below, we note from your 19 May 2015 Budget Speech, recent press statements and a Department of Energy (the **Department**) advertorial that South Africa has signed inter-governmental agreements (**IGAs**) on nuclear co-operation with certain nuclear vendor countries and conducted nuclear vendor parades towards the end of 2014 which (amongst other decisions and steps) are indicative of nuclear procurement proceedings having commenced.

4. On 10 June 2015, you authorised the Parliamentary Liaison Officer to submit the IGAs for tabling in Parliament in accordance with section 231(3) of the Constitution, and it is understood that these IGAs were tabled in Parliament on 12 June 201S. In particular, we point out that the Russian IGA, given its content, and in particular articles 3, 4, 7, 15, 16, and 17, is an international agreement which required parliamentary approval under section 231(2) and therefore could not lawfully be tabled and made binding in terms of section 231(3). We are of the view that the content of the Russian IGA renders it unlawful and unconstitutional since it records binding undertakings in relation to the procurement of new nuclear generation capacity (including in respect of South Africa's liability consequent on such procurement), prior to any constitutionally and statutorily compliant procurement process having been undertaken, and before any determination as to the requirement for nuclear new generation capacity having been made (as more fully discussed below).

5. On 14 July 201S, the Department issued a media statement titled "Nuclear Procurement Process Update" (which appears to have been the basis of Mr. Zizamele Mbambo's (Deputy Director-General: Nuclear Energy) press briefing of the same day)[2] which makes public for the first time, *inter alia*, the following:

   5.1. The Department is the designated "Procuring Agency".
   5.2. "The Bid Invitation Specification (BIS) and related evaluation criteria" are to be finalised by the end of July 2015.
   5.3. "Going forward, Government plans the following as part of the broad procurement process:
      - To follow the approved procurement process that will include a competitive bidding process that is transparent and cost effective and in line with legislation.
      - Start procurement in Second Quarter (July 2015)
      - Procurement Process to be completed by end of 2015 financial year
      - Select Strategic Partner or Partners by end of 2015 financial year".

6. Having regard to this media statement, the actions and/or decisions by you, the Department and government appear to have occurred and/or been made in a manner that is not compliant with established constitutional procurement principles and without properly putting in place the prerequisites for such nuclear new generation capacity procurement, including in terms of section 34 of the Electricity Regulation Act 2006 (**ERA**).

7. In this respect we are instructed to raise the following questions in respect of which our clients require, and the public is entitled to expect, urgent responses:

   7.1. Have you, in consultation with the National Energy Regulator of South Africa (Nersa), made any determination/s in terms of sections 34(1)(a) and (b) of the ERA that new generation capacity is needed, that electricity must be generated from nuclear energy sources, and determining the percentages of electricity that must be generated from such nuclear sources?
   7.2. If so, could you please provide us with copies of these section 34 determinations?

[2] Also attached for ease of reference, marked B.

S.I.F.N.

7.3. Under what statutory power was the determination made that nuclear new generation capacity was required and the amount thereof?

7.4. In terms of what statutory power has the Department been designated as "the Procuring Agency"?

7.5. What does the Department's designation as the "Procuring Agency" entail: will the Department's role be limited to overseeing any procurement process, or is it intended that the Department itself will contract with any successful bidder for the provision of the nuclear new generation capacity? If the Department's role will be limited to overseeing the procurement process, with which entity will the successful bidder be contracting?

7.6. Have you, in consultation with Nersa, made any decision in terms of section 34(1)(e) read with section 217 of the Constitution requiring that new nuclear generation capacity must be established through a tendering system which is fair, equitable, transparent, competitive and cost-effective, that is a system specifically created for the procurement of nuclear new generation capacity?

7.7. If not, in line with and in terms of what legislation has "the approved [nuclear] procurement process" been created?

7.8. Why has the nuclear procurement system – to the extent it has been established – not been made public, which is an essential requirement of a "transparent" system as required by section 217 of the Constitution and section 34(1)(e) of the ERA?

7.9. If such a system has not been put in place, on what basis and in terms of what power has the creation of "the Bid Invitation Specification (BIS) and related evaluation criteria" (which is soon to be finalised) for nuclear procurement been undertaken?

8. Our clients, who have direct interests in any determination that there is a need for nuclear new generation capacity and in any system to procure such nuclear new generation capacity, would wish to, and have a right to be afforded an opportunity to, make representations in any such processes (as indicated in our letter of 30 January 2015).[3]

9. Our clients are of the view that any decisions and steps taken to date that form part of the procurement of nuclear new generation capacity, have been taken in the absence of a lawful determination that such nuclear new generation capacity is required, in the absence of any fair, equitable, transparent, competitive and cost-effective system established specifically for the procurement of nuclear new generation capacity, and/or in the absence of any system (since no system of any nature has been made public, a basic necessity of transparency), and as a result are unlawful and unconstitutional.

10. We have been instructed to put you on notice, as we hereby do, that any further procurement decisions and steps in relation to nuclear procurement will be unlawful and unconstitutional until such time as:

---

[3] In that letter you will recall that our clients indicated as follows (relevant parts in bold):
"In the circumstances, our clients respectfully request that you:

(a) **Confirm that no decision on procuring a fleet of nuclear reactors will be taken without affording our client (and other stakeholders) an opportunity to make representations on (amongst other things) the need for, financial viability of and economic risks associated with procuring a fleet of nuclear reactors;**

(b) Provide clarity on when the IEP and IRP 2010 Update will be finalised;

(c) Confirm that no nuclear procurement process will commence until such time as the IEP and IRP 2010 Update processes have been completed;

(d) Confirm that a nuclear energy procurement system that complies with section 217 of the Constitution will be established before any further steps are taken to procure a fleet of nuclear reactors; and

(e) **Confirm that our client (and other stakeholders) will be afforded an opportunity to make representations on any proposed nuclear energy procurement system before it is finalised and implemented."**

S.I.F.N.

10.1. lawful and constitutionally compliant determinations are made that new generation capacity is needed, that electricity must be generated from nuclear energy sources, and the percentages of electricity that must be generated from nuclear sources;
10.2. a lawful and constitutionally compliant system for the procurement of nuclear new generation capacity has been established (which in the context of nuclear procurement clearly requires a context specific and public and published procurement system); and
10.3. procedurally fair public participation processes in respect of the above are conducted.

11. In the circumstances, we are instructed to request, as we hereby do, that you provide our clients with answers to the questions set out in this letter. Furthermore, our clients request that you provide a written undertaking that the nuclear procurement process will not continue or commence until such time as:

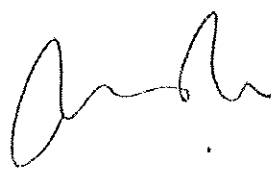
11.1. in consultation with Nersa, you have made the necessary and lawful determinations and decisions in relation to nuclear new generation capacity; and
11.2. a lawful and constitutional nuclear procurement system has been established.

12. We are also instructed to advise you that should you nevertheless proceed with the nuclear procurement in the absence of having complied with the necessary statutory and constitutional requirements, and notwithstanding that this has been expressly drawn to your attention, you do so in full knowledge, and having accepted the risk, that any nuclear procurement process, award made or contract entered into must, in terms of section 172(1)(a) of the Constitution, be declared constitutionally invalid. We furthermore trust that if you nevertheless proceed with the nuclear procurement notwithstanding this letter, you would only do so having fully advised the prospective bidders of the risks involved in bidding, including the risk that in due course any procurement decisions and contracts entered into pursuant thereto will be declared invalid by a Court.

13. Given that the Department's media statement indicates that the bid invitation specifications and evaluation criteria are about to be published, we require the requested written undertaking and answers to the aforesaid questions by no later than **7 August 2015.**

14. In the event that you fail to answer the questions and/or fail to provide our clients with the undertaking requested by 7 August 2015, our clients will have no choice but to approach the High Court for a declaratory order on the legality and constitutionality of the nuclear procurement process outlined for the first time in the Department's media statement of 14 July 2015. In those circumstances, and in the absence of an undertaking by you that any nuclear procurement will be stayed pending the final determination of our clients' case, our clients may be forced to seek urgent interdictory relief.

Yours sincerely



Adrian Leonard Pole

S.I.F.N.

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Insurance/Versekering R c
Total/Totaal R c

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Versekerde waarde van inhoud R c

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PL33 339

Adrian Pole

From: Olga Maczali <Olga.Maczali@energy.gov.za>
Sent: 27 July 2015 01:11 PM
To: Adrian Pole
Subject: RE: National Nuclear Power Development Programme - Procurement of 9.6GW of nuclear power stations and Tabling of International Governmental Agreements

Good day

I hereby confirm receipt of your correspondence and will share it with Minister. I am sorry that your correspondence did not receive the attention that it should have received.

I truly hope you find this in order.

Kind regards

Olga Ockhuis-Maczali
Ministry of Energy

From: Adrian Pole [adrian@adrianpole.co.za]
Sent: Sunday, July 26, 2015 8:57 PM
To: Olga Maczali; olga.obkhuis-maczali@energy.gov.za; Malusi Ndlovu; Duncan.Hindle@energy.gov.za; Zizamele Mbambo
Subject: RE: National Nuclear Power Development Programme - Procurement of 9.6GW of nuclear power stations and Tabling of International Governmental Agreements

URGENT

For the Attention of the Honourable Minister Joemat-Pettersson

Please find attached our clients' letter addressed to the Honourable Minister Joemat-Pettersson, which includes as attachments our previous letters dated 30 January 2015, 23 February 2015 and 16 March 2015 (in respect of which to date we have received no response).

We would be most grateful if the letter could be brought to the attention of the Honourable Minister as a matter of urgency, and look forward to receiving a response to our clients' queries from the Honourable Minister.

We would also be most grateful if you could acknowledge receipt of our correspondence.

Yours sincerely

Adrian Leonard Pole
BA.LL.B.MEnvDev.LLM(environmental law)

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S.I.F.N.

PL34 340

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Your Reference: NERSA

My Reference: AP/LP/ELA-JHB SAFCEI

URGENT

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Email: info@nersa.org.za; elizabeth.taylor@nersa.org.za; charles.hlebela@nersa.org.za

26 July 2015

THE NATIONAL ENERGY REGULATOR OF SOUTH AFRICA

Re: **National Nuclear Power Development Programme – Procurement of 9.6GW of nuclear power stations and Tabling of International Governmental Agreements**

1. We represent Earthlife-Africa Johannesburg and the South African Faith Communities' Environmental Institute (**our clients**), who over a number of years have engaged in public participation processes relating to integrated energy and resource planning. Our clients have also been engaged in the Nuclear 1 environmental impact assessment process, which has currently stalled.

2. On 14 July 2015, the Department issued a media statement titled "Nuclear Procurement Process Update" (which appears to have been the basis of Mr. Zizamele Mbambo's (Deputy Director-General: Nuclear Energy) press briefing of the same day) (attached for ease of reference) this now makes public for the first time, *inter alia*, the following:

   2.1. The Department is the designated "Procuring Agency";
   2.2. "The Bid Invitation Specification (BIS) and related evaluation criteria" are to be finalised by the end of July 2015;

S.I.F.H.

2.3. "Going forward, Government plans the following as part of the broad procurement process:
- To follow the approved procurement process that will include a competitive bidding process that is transparent and cost effective and in line with legislation.
- Start procurement in Second Quarter (July 2015)
- Procurement Process to be completed by end of 2015 financial year
- Select Strategic Partner or Partners by end of 2015 financial year".

3. Having regard to the media statement the actions and/or decisions by the Minister appear to have taken place in a manner that is not constitutionally compliant with established procurement principles and without properly putting in place the prerequisites for such nuclear new generation capacity procurement, including in terms of section 34 of the Electricity Regulation Act 2006 (**ERA**). Our clients are instructed to consider launching an urgent legal challenge to the procurement process.

4. In this respect we are instructed to raise the follow questions, to which our clients require urgent responses:

4.1. Has the National Energy Regulator of South Africa (**Nersa**) been consulted and given its concurrence in respect of any determination/s in terms of sections 34(1)(a) and (b) of the ERA that new generation capacity is needed, that electricity must be generated from nuclear energy sources, and determining the percentages of electricity that must be generated from such nuclear sources?

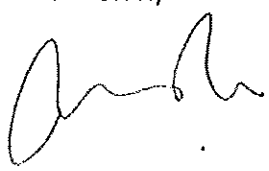
4.2. Has Nersa been consulted and given its concurrence in respect of any determination by the Minister that the purportedly required new nuclear generation capacity must be established through a tendering system which is fair, equitable, transparent, competitive and cost-effective, that is system-specifically created for the procurement of nuclear new generation capacity, in terms of section 34(1)(e), as read together with section 217 of the Constitution?

If the answer to either question 4.1 or 4.2 is positive, please provide evidence (minutes, records, decision-memoranda, etc.) of the consultation and concurrence.

5. Our clients, who have direct interests in any determination that there is a need for nuclear new generation capacity and in any system to procure such nuclear new generation capacity, would wish to, and have a right to be afforded an opportunity to, make representations in any such processes.

6. Given that the Department's media statement indicates that the bid invitation specifications and evaluation criteria are about to be published and that the procurement process is about to begin with a view to it being completed by the end of this year, you will appreciate that we require answers to the aforesaid questions by no later than **7 August 2015**. Please note that if you fail to respond by 7 August 2015, for purposes of any urgent court proceedings that may be initiated it will be assumed that Nersa was not consulted and did not provide the concurrence referenced in paragraphs 4.1 and 4.2 above.

Yours sincerely



Adrian Leonard Pole

S.I.F.N.

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P O Box 40343
ARCADIA
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701281

S.I.F.N.

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Ref: 7/5 COO

MR ANDRIAN LEONARD POLE
ANDRIAN POLE
P.O Box 671
Hillcrest
3650

Dear Mr A L POLE

RE: NATIONAL NUCLEAR POWER DEVELOPMENT PROGRAMME – PROCUREMENT OF 9.6GW OF NUCLEAR POWER STATION AND TABLING OF INTERNATIONAL GOVERNMENTAL AGREEMENTS

Thank you for your letters dated 29 June 2015 addressed to the Acting CEO, Mr Paseka Nku

The letter will be brought to the attention of the Acting CEO, and will revert back to you in due course.

Thank you

Yours faithfully

Kapika

ZETHU KAPIKA
Senior Manager: Office of the CEO

Date: 30/07/2015

S.I.F.N.

PL35 344

Print this page

Model and cost of nuclear 'not yet decided'

Aug 31, 2015 | Sikonathi Mantshantsha and Natasha Marrian

Energy minister denies government has taken a decision to build 9,600MW of nuclear generation infrastructure

A COSTING study on nuclear power has been submitted to the Cabinet for a decision on the size, model and cost of new-generation infrastructure to be built by the government.

This is according to Energy Minister Tina Joemat-Pettersson, who denied on Sunday that the government has taken a decision to build 9,600MW of nuclear generation infrastructure.

"We never said we'd build 9,600MW of nuclear. We never said what the model would be," Ms Joemat-Pettersson said on the sidelines of an event marking the commercial launch of Medupi power station's unit 6 in Limpopo.

"Anyone who says we will build 9,600MW of nuclear stations is thumb-sucking; anyone who says they know the model we'll follow is thumb-sucking. We never said we'll build it all in one go," she said.

President Jacob Zuma announced that the government would build 9600MW of nuclear generation capacity in his state of the nation address.

Eskom is currently building 10,300MW in three coal-fired power stations — including Medupi, Kusile and Ingula.

The proposed construction of the nuclear stations has become controversial after the government pressed ahead with plans to build the infrastructure, despite a slower economy and lower demand for power. Critics of the nuclear plan argue that demand for electricity has dropped to levels below what was envisaged when the energy plan was approved in 2007.

The Treasury has also been sidelined in costing for the project, raising questions about the affordability of the infrastructure.

The plan to build nuclear power stations supplying 9,600MW was first approved in the Integrated Resource Plan 2010, but SA's economic growth had dropped to about 1% a year by last year. It contracted 1.3% quarter on quarter in the second quarter of this year.

Ms Joemat-Pettersson said in May that the government would begin its nuclear procurement last month and was likely to have a successful bidder by December.

The government has signed numerous co-operation agreements with international companies vying to win the infrastructure. Russia's Rosatom is regarded as a favourite to win the tender.

Companies ranging from Japanese-US contractor Westinghouse to France's Areva as well as Chinese and Korean firms have also been in talks with the government.

"I do not know what the cost of the infrastructure will be," said Ms Joemat-Pettersson. "Cabinet will decide that."

Medupi's unit 6 came on stream in March and its commercial launch was held amid fanfare in sweltering Lephalale on Sunday.

The first unit was initially expected to begin producing in August 2011, but a series of delays and cost escalations have prevented this.

On August 7 2007, then Eskom CE Jacob Maroga turned the sod that kicked off the building, promising a R70bn infrastructure project. Since then, the cost has ballooned to more than R105bn.

345

Acting Eskom CEO Brian Molefe on Sunday said that the focus in future would be on ensuring that the parastatal kept to its timelines in getting unit 5 onto the grid — this step is scheduled for the first quarter of 2017.

A major challenge, according to construction managers, who gave journalists a tour of the site on Sunday, was the rolling back of construction staff as the units' generation of power kicked in. Workers would have to be let go as the project neared completion.

At its peak, the project employed about 18,000 people. That number has since dropped to 14,000 and is expected to decrease even further, a process that will have to be carefully managed.

As the units were completed, labour would be scaled back, but most employees would be leaving Medupi with additional skills.

"It is better to leave as an artisan than the situation before, when workers were unemployable," Mr Molefe said.

The last unit at Medupi is expected to be completed by 2019 and commercialised early the following year.

~ o O o ~

S.I.F.N.

 346

PL36

REUTERS

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South Africa says "no deal" struck with any country on nuclear expansion

Mon Aug 31, 2015 12:52pm GMT

By Peroshni Govender

PRETORIA (Reuters) - South Africa has not struck a deal so far with any country on nuclear expansion but its immediate focus was to build more renewable power projects, the energy minister said on Monday.

The government of Africa's most advanced economy, which is battling an energy crunch, said in May it will procure a nuclear fleet to generate 9,600 megawatts of power this year, estimated by analysts to cost as much as $100 billion.

"There is no deal that has been struck with any country," Energy Minister Tina Joemat-Petterson told journalists at a media briefing near Pretoria.

Joemat-Petterson dismissed the projected cost of the nuclear build, saying the Treasury and the Department of Energy was still working on a funding model, without giving details.

"Once that model is complete, we will decide on time-frames," she said.

The government was due to release its bid requirements by end July, but this has been delayed.

Concern is mounting that agreements to build the nuclear power plants that could be the most expensive procurement in the country's history will be made behind closed doors, without the necessary public scrutiny.

"Once we have taken a decision as a government and cabinet, we will communicate. There is no secrecy," Joemat-Petterson said.

President Jacob Zuma's government signed agreements with France, Russia, China, South Korea and energy officials said they were speaking to Japan, Canada and the United States about possible co-operation.

The process appears to be delayed following concerns that the Treasury is not included in the procurement discussions, despite its budgetary implications.

Joemat-Petterson said there was "no rush" for nuclear power and that South Africa was focusing on renewable and gas power generation projects to address the immediate energy shortages.

"That is why we went ahead in announcing the additional acquisition of renewable energy, that's why the renewable energy programme is so important, that is why gas is so important. It's our immediate solution to our current challenges," she said.

However, new renewable energy projects will find it hard to connect to the grid, an official said, saying that the department was working with power utility Eskom to improve access for new projects.

"We need to upgrade the grid so the new projects can feed," head of Independent Power Producers unit Karen Breytenbach told Reuters.

President Zuma opened South Africa's first new power plant in 20 years on Sunday with a warning that the perennial energy shortages were hampering economic growth.

PL37 347

PARLIAMENT
OF THE REPUBLIC OF SOUTH AFRICA

PARLIAMENTARY COMMUNICATION SERVICES
PO Box 15 Cape Town 8000 Republic of South Africa
Tel: 27 (21) 403 2911
www.parliament.gov.za

MEDIA STATEMENT

ENERGY COMMITTEE ADOPTS INTERNATIONAL NUCLEAR AGREEMENTS

Parliament, Tuesday, 01 September 2015 – The Portfolio Committee on Energy received a briefing from the Department of Energy on the five international nuclear agreements. The agreements were tabled to Parliament on the 11 June and referred to the Committee on 5 August.

Chairperson of the Committee, Mr Fikile Majola, said the nuclear agreements have been tabled before to Committee for consideration, not for reporting to the National Assembly. The Portfolio Committee expressed concerns about the different formats of the agreements. Members questioned the department if there were different contracts for the various vendors.

In its response, the department said countries negotiated uniquely with South Africa (SA) and have expressed interest based on the capacity to help SA to achieve its strategic goal for the country. The Committee welcomed the cost benefit analysis that the department and National Treasury was undertaking with regards to the nuclear build programme. Members of the Committee said the cost benefit analysis was important to know what the country would be entering into.

Minister of Energy, Tina Joemat-Pettersson, said South Africa had not struck a deal so far with any country on nuclear expansion. She dismissed the projected cost of one trillion rand of the nuclear build which has been reported in the media. She said National Treasury and the Department of Energy were still working on a funding model. "Once we have taken a decision as a government and Cabinet, we will communicate. There is no secrecy," she said.

S.I.F.N.

The Committee sought an answer as to when the two outstanding agreements with Japan and Canada would be concluded. Members of the Committee accepted the presentation and said it was empowering the country through industrialisation of the economy.

Members of the Committee reiterated that South Africa would not entertain anti-nuclear activists. The Committee is also of the view that it would not entertain media speculations that provided wrong information to the public. The Committee said people who alleged that the country favoured nuclear over renewable energy were not telling the truth. The country made a pronouncement that SA was for an energy mix, which included nuclear.

"The Portfolio Committee on Energy, having considered the five (5) inter-governmental nuclear agreements, tabled in terms of section 231 (3) of the Constitution, 1996, note and accept the Department of Energy report on the agreements," said Mr Majola. The Committee considered and adopted the international agreements.

ISSUED BY PARLIAMENTARY COMMUNICATION SERVICES ON BEHALF OF THE CHAIRPERSON FOR THE PORTFOLIO COMMITTEE ON ENERGY MR FIKILE MAJOLA

For media enquiries or interviews with the Chairperson, please contact:
Name: Ms Yoliswa Landu
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Tel: 021 403 8203
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Business Day denied nuclear cost reports

Sep 18, 2015 | Carol Paton

Department of Energy says reports by top international consultancies for cost of building 9,600MW of nuclear power in SA classified as secret

THREE reports by top international consultancies which explore the cost of building 9,600MW of nuclear power in SA have been classified as secret and will not be made available to the public, the Department of Energy has said.

The reports were commissioned in the past year by the department from KPMG, Ingerop and Deloitte to provide information on nuclear-procurement models, the cost of nuclear plants and financing models.

The Open Democracy Advice Centre requested the documents on behalf of Business Day under the Promotion of Access to Information Act last month.

In a reply received this week, deputy director-general of the department Zizamele Mbambo said "the records contain information to be used in the procurement process. The disclosure of such information will compromise the negotiations or prejudice the commercial competition as far as third parties are concerned".

These were the same grounds used to maintain the secrecy of the intergovernmental agreements on nuclear co-operation. But when the agreements were tabled in Parliament in June, they contained no proprietary or commercial information. The letter also states that the documents are classified. Mr Mbambo has said the department's studies show that the nuclear build "is affordable" without giving details.

Business Day editor Songezo Zibi said the application was made as "we have reason to believe that the cost studies the department does not want the public to see until it is too late in the process, show that 9,600MW of nuclear will be unaffordable".

The Open Democracy Advice Centre is to appeal against the refusal.

Spokesman for the Right 2 Know Campaign Murray Hunter said the affordability study for SA's strategic arms procurement in 1999 was classified until last year. "When this was unclassified, it was clear that there had been enormous financial risks. Governments often overclassify documents to shield themselves from accountability and end up making the wrong decisions. The fact that these documents are being withheld makes it impossible for SA to have the conversation about nuclear energy."

Energy Minister Tina Joemat-Pettersson recently claimed that she had never advocated nuclear build of 9,600MW.

Mr Zibi said it "was also curious how a cost study can be conducted if, as the minister claimed, the size of the procurement was yet to be determined. What, then, would be the benchmark number if not the 9,600MW already mentioned by the president and ministers of energy including Ms Joemat-Pettersson?"

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Department:
Energy
REPUBLIC OF SOUTH AFRICA

Private Bag X 96, PRETORIA, 0001, 192 Visagie Street, C/o Visagie & Paul Kruger Street, Pretoria 0001
Tel: 012 406 7665 Email: zizamele.mbambo@energy.gov.za Ref. No.: 8/4/2/193

From: DDG: Nuclear **Enquiries: Mr Z Mbambo**

Ms Alison Tilley
ODAC
Springtime Studios
2nd floor, 1 Scott Road
Observatory
CAPE TOWN
8001

Per e-mail to: alison@odac.org.za

Dear Ms Tilley

RESPONSE TO REQUEST FOR ACCESS TO RECORDS OF PUBLIC BODY IN TERMS OF THE PROMOTION OF ACCESS TO INFORMATION ACT, 2000 (ACT NO 2 OF 2000) (hereafter referred to as "the Act")

1. We refer to your request for access to information dated 14 August 2015 for the following records:

1.1 KPMG benchmarking study on procurement commissioned by the Department of Energy, 2014.

1.2 Ingerop study on the cost of nuclear power plants and proposed ownership models commissioned by the Department of Energy, 2014.

1.3 Deloitte study on financing options for nuclear energy commissioned by the Department of Energy, 2014.

1.4 Nuclear New Build Programme feasibility study commissioned by the Department of Energy, 2013.

1.5 Nuclear financing recommendations report, 2015.

2. After careful consideration of your request; the nature of the records sought and the provisions of the Act, we hereby respond as follows:

S.I.F.N.

2.1. The records (1.1 to 1.5 above) contain information to be used in the procurement process. The disclosure of such confidential information of the Department and the State will compromise the negotiations or prejudice the commercial competition as far as third parties are concerned as we are now almost about to embark on the procurement process. Therefore this record is protected from disclosure in terms of section 42(3)(b) read with section 36 (1) of the Act

We confirm that the reports are classified. Thus, at this stage, the disclosure of the reports would be premature and, therefore, access is refused for the reasons indicated above.

You are hereby informed of your right to lodge an internal appeal in terms of section 74 of the Act against this decision. The internal appeal must be lodged in the prescribed form within 60 (sixty) days of receipt of this notice.

Yours faithfully,

MR ZIZAMELE MBAMBO
DEPUTY INFORMATION OFFICER
DATE: 2015-09-11

RESPONSE TO REQUEST FOR ACCESS TO RECORDS OF PUBLIC BODY IN TERMS OF THE PROMOTION OF ACCESS TO INFORMATION ACT, 2000 (ACT NO 2 OF 2000) (hereafter referred to as "the Act")

S.I.F.N.

SEE FLOWCHART A FOR CORRECT PROCEDURE

The procedure which is followed hereafter will depend on whether the agreement falls within the ambit of section 231(2) or 231(3) of the Constitution. The line-function department together with the State Law Advisers (IL) of the Office is responsible for making the determination.

Technical, administrative or executive agreements requiring National Executive approval in terms of section 231(3) of the Constitution

The guidelines to determine whether an agreement falls within the ambit of section 231(3) of the Constitution are as follows:

- agreements that do not require parliamentary approval for ratification or accession
- agreements that have no extra-budgetary financial implications
- agreements that do not have legislative implications.

National Executive approval means that a President's Minute must be obtained. After signature, these agreements must be tabled in Parliament within a reasonable time, but for information purposes only. Tabling is the responsibility of the line-function department.

SEE FLOWCHART B FOR CORRECT PROCEDURE

Agreements requiring parliamentary approval for ratification or accession in terms of section 231 (2) of the Constitution

As a President's Minute must be obtained regardless of whether or not the agreement falls within the ambit of section 231(2) or 231(3) of the Constitution, the procedure for obtaining approval of the National Executive, as set out in Flowchart A must be followed.

For agreements falling within the ambit of section 231(2) of the Constitution, an additional procedure must be followed i.e. parliamentary approval for ratification/accession of the agreement must be obtained. Agreements requiring parliamentary approval in terms of section 231 (2) of the Constitution are agreements that:

- require ratification or accession (usually multilateral agreements)
- have financial implications that require an additional budgetary allocation from Parliament
- have legislative or domestic implications (e.g. require new legislation or legislative amendments).

S.I.F.N.