

**ENVIRONMENTAL IMPACT ASSESSMENT (EIA)
OMGEWINGSIMPAKSTUDIE (OIS)
UVAVANYO LWEMPEMBELELO ZOKUSINGQONGILEYO (EIA)
EIA: 12/12/20/944**

FOR THE PROPOSED/VIR DIE VOORGESTELDE/LWESIKHULULO ESICETYWAYO

Eskom Nuclear Power Station and Associated Infrastructure

Eskom Kernkragsentrale En Gepaardgaande Infrastruktuur

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BACKGROUND INFORMATION DOCUMENT AND INVITATION TO PARTICIPATE

This document introduces the proposed Eskom Nuclear Power Station project and the statutory environmental process to interested and affected parties and the general public, and invites your participation.

AGTERGRONDINLIGTINGSDOKUMENT EN UITNODIGING TOT DEELNAME

Hierdie dokument stel die voorgestelde Eskom Kragsentrale projek en die statutêre omgewingsproses aan belanghebbende en geïntereseerde partye asook die breë publiek bekend, en nooi u uit om deel te neem.

UXWEBHU LOLWAZI NGEMVELAPHI KUNYE NESIMEMO SOKUTHABATHA INXAXHEBA

Olu xwebhu lwazisa ngeprojekthi yeSikhululo saMandla eNyukliya esiCetywayo sikaEskom, nenkqubo yokusingqongileyo emiswe ngokomthetho kwabo banomdla kwanabo bachaphazelekayo, kwanoluntu jikelele, yaye luyakumema ukuba uthabathe inxaxheba.

**Proponent: Eskom Holdings
Environmental Assessment Practitioner: ARCUS GIBB (Pty) Ltd
Public Participation Consultant: ACER (Africa) (Pty) Ltd**



PURPOSE OF THIS DOCUMENT

The purpose of this Background Information Document (BID) is to provide you with information about the proposed project, and to obtain comments and contributions from you as an Interested and Affected Party (I&AP) with regard to potential issues and associated impacts on the environment. You are invited to register as an I&AP and to assist the EIA Team in identifying possible issues and to make suggestions for the mitigation of associated impacts.

This BID document will help I&APs to:

- Determine if they are interested and/or affected by the proposed project.
- Better understand the project in order to be able to provide comment.
- Understand the environmental authorisation process so that they are able to participate effectively.

INTRODUCTION

The Eskom Conversion Act, 2001 (Act No. 13 of 2001) established Eskom Holdings Limited (Eskom) as a State Owned Enterprise (SOE), with the Government of South Africa as the only shareholder, represented by the Minister of Public Enterprises. The main objective of Eskom, as indicated in the Memorandum of Association required by the Eskom Conversion Act and the Companies Act, 1973 (Act No. 61 of 1973) (as amended), is to "provide energy and related services including the generation, transmission, distribution and supply of electricity, and to hold interests in other entities".

In October 2004, the South African Cabinet decided that Eskom would build at least 70% of the electricity generating capacity required in the next two decades¹.

In all countries, energy is essential for sustainable development. In many countries, including South Africa, economic growth and social needs are resulting in substantially greater energy demand, even taking into account continuing and accelerated energy efficiency improvements. Electricity demand is growing faster than overall energy demand. Electricity is simply cleaner, and is more flexible and more convenient for many consumers, which is resulting in greater usage than in the past.

¹DPE Minister's address to Parliament 15 April 2005

DOEL VAN HIERDIE DOKUMENT

Die doel van hierdie Agtergrondsinsligtingdokument (AID) is om u aangaande die voorgestelde projek in te lig en om u kommentaar en insette as 'n Belanghebbende en Geaffekteerde Party (B&GP) aangaande die potensiele omgewingsimpakte en -kwessie van die projek te bekom. U word uitgenooi om as B&GP te registreer en die OIS-span by te staan met die identifisering van enige moontlike kwessie en om voorstelle aangaande versagtingsmaatreëls vir die gepaardgaande impakte te maak.

Hierdie AID sal B&GPs help om:

- Te bepaal of die B&GP geïnteresseerd is en/of geaffekteer sal word deur die voorgename projek.
- Die projek beter te verstaan om sodoende kommentaar te kan lewer.
- Die omgewingsmagtigingsproses te verstaan en effektief te kan deelneem.

INLEIDING

Die Eskom Omskakelingswet, 2001 (Wet Nr. 13 van 2001) vestig Eskom Holdings Limited (Eskom) as 'n onderneming in Staatsbesit, met die Regering van Suid-Afrika as die enigste aandeelhouer, wat deur die Minister van die Departement van Openbare Ondernemings verteenwoordig word. Die hoof doelwit van Eskom, volgens die Memorandum van Assosiasie, die Eskom Omskakelingswet en die Maatskappywet, 1973 (Wet Nr. 61 van 1973) (soos gewysig), is om energie en gepaardgaande dienste te lewer. Dit sluit in die opwekking, transmissie, verspreiding en voorsiening van elektrisiteit.

In Oktober 2004 het die Suid-Afrikaanse Kabinet besluit dat Eskom voorsiening sal tref vir minstens 70% van die elektrisiteitopwekkingskapasiteit wat binne die volgende twee dekades benodig sal word¹.

In alle lande is energie noodsaaklik vir volgehoue ontwikkeling. Ekonomiese groei en sosiale ontwikkeling in verskeie lande, insluitend Suid-Afrika, verhoog die energie aanvraag aansienlik, selfs al word voortdurende en versnelde energie doeltreffendheid in ag geneem. Die behoefte aan elektrisiteit groei vinniger as die algemene behoefte aan energie. Elektrisiteit is skoner, meer buigbaar asook meer gerieflik vir baie verbruikers.

¹DPE Minister se voorlegging aan die Parlement op 15 April 2005

INJONGO YOLU XWEBHU

Injongo yolu Xwebhu loLwazi lweMvelaphi (i-BID ngamafutshane kwisiNgesi) kukukunika ulwazi malunga neprojekthi ecetywayo, nokufumana izimvo neengcebiso ezivela kuwe njengomntu onomdla nochaphazelekayo (i-I&AP ngamafutshane kwisiNgesi) ngokubhekiselele kwimiba enokuthi ibe khona kwaneempembelelo ezihambelana nayo kokusingqongileyo. Uyamenywa ukuba ubhalise njenge-I&AP ze uncedise iQela le-EIA ekuchongeni imiba enokuthi ibe khona nokunikezela ngeengcebiso zokudambisa iimpembelelo ezingqamene nayo.

Olu xwebhu lwe-BID luza kunceda ii-I&AP koku kulandelayo:

- Ukujonga ukuba zinomdla okanye zikwachathazelwa kusini na yile projekthi icetywayo.
- Ukuyiqonda ngcono le projekthi ukuze zikwazi ukunika ezazo izimvo malunga nayo.
- Ukuyiqonda inkqubo yokugunyaziswa kokusingqongileyo khon' ukuze bakwazi ukuthabatha inxaxheba ngokupheleleyo.

INTSHAYELELO

UMthetho woGuqulo kaEskom, ka-2001 (UMthetho onguNombolo. 13 ka-2001) wamilisela uEskom Holdings Limited (uEskom) njengeShishini eliphantsi koRhulumente, (i-SOE), nelinoRhulumente woMzantsi Afrika okukuphela komnini-zabelo, nomelwe nguMphathiswa wamaShishini kaWonke-wonke. Eyona njongo iphambili kaEskom, njengoko ichaziwe kwiMemorandum yoBudlelane efunwa nguMthetho woGuqulo kaEskom noMthetho weeNkampani, ka-1973 (UMthetho onguNombolo. 61ka-1973) (njengoko ulungisiwe), "kukunikezela ngamandla ombane kwaneenkonzelo ezihambelana nawo kuquka ukuveliswa, ukugqithiselwa, ukuhanjiswa kwanokunikezelwa kombane, nokutsala umdla kwezinye izinto ezikhoyo."

NgoOktobha ka-2004 iKhabhinethi yeloMzantsi Afrika igqibe ekubeni uEskom akhe ubuncinane ama- 70% amandla okuvelisa umbane ofunekayo kumashumi amabini eminyaka ezayo¹.

Kuwo onke amazwe, umbane ubalulekile kuphuhliso oluzinzileyo. Kumazwe amaninzi, kuquka noMzantsi Afrika, ukukhula koqoqosho neemfuno zoluntu ziphela ziyimfuno ephambili yamandla ombane, kwanokuqwalasela ukuphuculwa okuqhubeka ngesantya esiphezulu kokusebenza kombane ngokuyimpumelelo. Imfuno yombane ikhula ngokukhawuleza kunaleyo yamandla ewonke. Umbane ucocekile noko, yaye uyakwazi ukutshintsha ukwalungele abasebenzisi bawo abaninzi, nokubangela ukusetyenziswa kwawo okukhulu xa kuthelekiswa nexa elidlulileyo.

¹ISebe lezoShishino loLuntu (DPE) Intetho yoMphathiswa ePalamente ngowe-15 kuEpreli ka-2005

In many applications – for example financial and banking, medical and health care, telephone and cellular phone networks, transport (harbours, airports, railways, traffic control and management, petrol-filling stations) - electricity is essential. It is now common knowledge that the demand for electricity in South Africa is rapidly growing and that South Africa needs to expand its electricity generating capacity.

In South Africa, there is a requirement for more than 40,000 Megawatts (MW) of new electricity generating capacity over the next 20 years. This additional generating capacity could come from a variety of energy sources, for example coal, liquid fuels, gas turbines, natural gas, uranium (nuclear), hydro and pumped storage schemes, wind and solar energy. Eskom evaluates all energy sources available to South Africa in determining an optimum mix for electricity generation.

This EIA entails the construction and operation of a Conventional Nuclear Power Station and associated infrastructure in the Eastern, Northern or Western Cape areas. The sites, which will be investigated during this Environmental Impact Assessment, have been identified based on previous site investigations undertaken since the 1980s.

STRATEGIC BACKGROUND

The total demand for electricity in South Africa is not constant and varies on a 24-hour basis, with peak demand in the early morning and in the late afternoon / early evening. Similarly, it varies on a weekly basis, with the demand during the working week being higher than over the weekends. In most areas, the demand in winter is higher than in summer. To optimally meet the total demand, it is necessary to have both “base load electricity generating power stations²” as well as “peaking electricity generating power stations³”. This is achieved by harnessing different energy sources and applying different technologies. The technologies differ markedly in their generation costs, performance and utilisation characteristics, their suitability for the South African environment and their state of commercial development. The choice of generation technology is multi-faceted and complex. It is conducted within the context of the framework of a multitude of South African policies (for example energy, environmental, Accelerated Shared Growth Initiative for South Africa (ASGISA) and water policies), the legal and regulatory framework and South Africa's international obligations. It also takes into account the required mix of generating technologies to optimally meet the daily, weekly and seasonal variation in demand for electricity.

² “Base load electricity generating capacity” refers to power station technology designed specifically to generate electricity continuously for all hours.

³ “Peaking electricity generating capacity” refers to power station technology designed specifically to generate electricity during periods of high demand for electricity, normally on weekdays from 07:00 to 09:00 and 18:00 to 20:00

In verskeie organisasies is elektrisiteit noodsaaklik, byvoorbeeld die finansiële sektor en bankwese, mediese- en gesondheidsorg, telekommunikasie netwerke, vervoer (hawens, lughawens, spoorweë, verkeersbeheer) asook vulstasies. Dit is algemeen bekend dat die elektrisiteit aanvraag in Suid-Afrika vinnig groei en dat dit noodsaaklik is dat Suid-Afrika se elektrisiteitopwekkingskapasiteit uitgebrei moet word.

In Suid-Afrika is daar 'n behoefte aan meer as 40 000 MW nuwe elektrisiteitopwekkingskapasiteit oor die volgende 20 jaar. Hierdie addisionele opwekkingskapasiteit kan van 'n verskeidenheid energiebronne verkry word, byvoorbeeld steenkool, vloeibare brandstof gas-turbines, aardgas, uraan (kernkrag), hidro- en pompstoorskemas asook wind- en sonkrag. Eskom evalueer alle energiebronne wat in Suid-Afrika beskikbaar is en bepaal die beste kombinasie vir elektrisiteit opwekking.

Hierdie OIS behels die konstruksie en bedryf van 'n Konvensionele Kernkragentrale en gepaardgaande infrastruktuur in die Oos-, Noord- en Wes-Kaap provinsies. Die identifikasie van terreine wat gedurende die OIS ondersoek word, is gebaseer op vorige terrein ondersoek wat sedert die 1980's onderneem is.

STRATEGIESE AGTERGROND

Die aanvraag na elektrisiteit in Suid-Afrika fluktureer op 'n 24-ur basis met die piek aanvraag in die vroeë oggend, laat middag en vroeë aand. Dit fluktureer ook op 'n weeklikse basis met die aanvraag gedurende 'n werksweek hoër as oor naweke. In meeste areas is die aanvraag gedurende die winter hoër as gedurende die somer. Ten einde optimaal aan die behoefte te voorsien, word dus beide “basis-lading elektrisiteitopwekkings-kragstasies²” en “piek elektrisiteitopwekkings-kragstasies³” benodig. Dit kan gedoen word deur die benutting van verskillende tipes energiebronne en deur die aanwending van verskillende tipes tegnologie. Die tegnologie verskil merkbaar in terme van opwekkingskoste, werksverrigting, gebruik-eienskappe, hul geskiktheid vir die Suid-Afrikaanse omgewing en hul kommersiële ontwikkeling status. Die keuse van opwekkingstegnologie het dus vele fasette, is kompleks en word binne die konteks van die raamwerk van 'n magdom Suid-Afrikaanse beleide gemaak met inagnome die nodige kombinasie van opwekkingstegnologie ten einde in die daaglikse, weeklikse en seisoenale variasies in aanvraag te voldoen. Die betrokke beleide sluit in Energie, die Omgewing, Accelerated Shared Growth Initiative for South Africa (ASGISA) en Water, die Wetlike en Regulerende raamwerk asook Suid-Afrika se internasionale verpligtinge.

² “Basis-lading elektrisiteitopwekkingskapasiteit” verwys na kragentrale tegnologie wat spesifiek ontwerp is om elektrisiteit voortdurend, alle ure, op te wek.

³ “Piek elektrisiteitopwekkingskapasiteit” verwys na kragentrale tegnologie wat spesifiek ontwerp is om elektrisiteit tydens hoë aanvraag periodes op te wek, gewoonlik op woensdae van 07:00 tot 09:00 en 18:00 tot 20:00.

Kwiindawo ezininzi – umzekelo awemali neebhanki, awonyango nezempilo, awothungelwano lweemfono-mfono neeselula, awezothutho (amazibuko eenqanawe, izikhululo zeenqwelomoya, imizila kaloliwe, ulawulo lweehambo, isikhululo zamafutha ezithuthi) – umbane ubalulekile. Lulwazi oluqhelekileyo ngoku ukuba imfuno yombane eMzantsi Afrika ikhula ngokukhawuleza, yaye uMzantsi Afrika udinga ukwandisa izinga lokuvelisa umbane.

Emzantsi Afrika, kukho imfuneko engaphezulu kwe-40,000 Megawatts (MW) yezinga lokuveliswa kombane ngaphezulu kwama-20 eminyaka ezayo. Eli zinga longezelekileyo lokuvelisa umbane lingavela kwizinto ezininzi ezivelisa umbane, umzekelo amalahl, iinjini zomsinga wokuvelisa iigesi zamafutha alulwelo, iigesi zemveli, iyuraniyam (inyukliya), ulungiselo lwawamanzi nokugcniweyo, umoya namandla elanga. UEskom uyazihlola zonke izinto ezivelisa amandla ombane ezikhoyo eMzantsi Afrika ukuchonga okona kuxutywa kulungileyo kokuveliswa kombane.

Le EIA iqulathe ulwakhiwo nokusetyenziswa kweSitishi eziQhelekileyo saMandla eNyukliya kwanezakhiwo ezinxulumene naso, kwimimandla yeMpuma, uMntla okanye iNtshona Koloni. Ezi ziza, eziza kukhangelwa ngethuba loHlobo lweMpembelelo kokusingqongileyo, zithe zachongwa ngokusekelezwe kuphando oludlulileyo lweziza obeluzenziwa ukusukela ngeminyaka yoo-1980.

IMVELAPHI YOBUCHULE

Imfuno epheleleyo yombane eMzantsi Afrika ayimanga ndawonye; yaye iyatshintsha rhoqo ngama-24 eeyure, iyaxhoma ekuseni okanye ngorhatya. Ngokunjalo ikwatshintsha veki zonke, phakathi evekini iyaxhoma kunangeempela-veki. Kwiindawo ezininzi, imfuno iyaxhoma ngexesha lasebusika kunasehlotyeni. Ukuze sikwazi ukumelana nale mfuno, kubalulekile ukuba sibe nazo zozibini “izitishi ezivelisa umbane onamandla” kwanezo “zivelisa ombane ngamaxesha esiwusebenzisa ngawo kakhulu³”. Oku kungaphumezeka ngokuthi sisebenzise izinto ezahlukeneyo ezivelisa umbane nangokuthi kusetyenziswe ubugcisa obufanelekileyo. Ubugcisa bahluka ngokuphawulekayo ngokwamaxabiso okuvelisa, umsebenzi neempawu zokusetyenziswa kwabo, ukufaneleka kwabo kwimeko yaseMzantsi Afrika, kwanemeko yokuphuhliso lwezooqoqosho. Ukhetho lobugcisa bokuvelisa luneendidi ezininzi yaye lubanzi. Luqhutywa phantsi kwemeko yobume benyambalala yemigaqo-nkqubo yaseMzantsi Afrika (umzekelo, amandla, okusingqongileyo, iLinge lokuKhula elabiweyo neliKhawulezisiweyo loMzantsi Afrika (i-ASGISA ngamafutshane kwisiNgesi) nemigaqo-nkqubo yamanzi), ubume bomthetho nolawulo, kwanezibophelelo zoMzantsi Afrika kuZwelonke. Lukwathabathela ingqalelo ukuxubana okufunekayo kweendidi zobuchule bokuvelisa ukuze kumelane neemfuno ezahlukeneyo zombane zamihla yonke, veki zonke namaxesha onke onyaka.

² “Umthamo wokuvelisa umbane onomthwalo osisiseko” ubhekisele kubugcisa besitishi sombane obubodwa bokuvelisa umbane ngokuqhubekayo yure zonke.

³ “Umthamo wokuvelisa umbane ngamaxesha empithizelo” ubhekisele kubugcisa besitishi sombane obubodwa bokuvelisa umbane ngamaxesha ofuneka ngawo, ngokuqhelekileyo phakathi evekini ukusukela ngo-07:00 ukuya ku-09:00 kusasa, nango-18:00 ukuya ku-20:00 ngokuhlwa.

STRATEGIC BACKGROUND (continued)

Base load capacity forms the major component of the 40,000 MW of new generating capacity that is required in the next 20 years. However, only a few energy sources are suitable for base load power stations. The primary energy sources in South Africa that are suitable and available in sufficient quantities are coal and uranium.

The economic lifetime of electricity generating power stations is long – on average 40 to 50 years. It is critical when determining the optimal mix of electricity generating power stations to take into account the contribution that new power stations will make to sustainable development in South Africa.

A central goal of sustainable development is to maintain or increase the overall assets (natural, man-made and human or social assets) available to current and future generations, while minimizing consumption of finite resources and not exceeding the carrying capacities of ecosystems.

The use of nuclear power broadens the natural resource base usable for energy, and particularly electricity production, increases human and man-made capital, and, when safely handled, has little impact on ecosystems. Nuclear power produces virtually no sulphur dioxide, particulates, nitrogen oxides, volatile organic compounds (VOCs) or greenhouse gases (GHGs). Over the full life cycle – from mining of the uranium, iron ore and other minerals, manufacture of the components and construction of the power station, operation and maintenance of the power station through to decommissioning of the station and the management and disposal of waste – nuclear power emits less than 11 grams of carbon equivalent per kilowatt-hour (gC_{eq}/kWh)⁴. This is the same order of magnitude as wind and solar power including construction and component manufacturing, and two orders of magnitude below (i.e. one hundredth of) the average for coal, oil, and natural gas. Therefore nuclear power has the potential to make a substantial contribution to sustainable development and a significant contribution to reducing South Africa's greenhouse gas emissions. Due to South Africa's rich resources of uranium, it makes sense for Eskom to utilise this energy source.

Therefore the Eskom Board has approved the investigation of up to 20,000 MW of nuclear capacity over the next 20 years. The initial phase of this investigation will concentrate on one nuclear power station of approximately 4,000 MW, with provision being made for future expansion, as, when and if, appropriate.

⁴ Greenhouse gas emissions from energy systems: Comparison and overview (Dones, et al., 2003)

STRATEGIESE AGTERGROND (vervolg)

Basis-ladingkapasiteit vorm die hoof komponent van die 40,000 MW nuwe opwekkingskapasiteit wat binne volgende 20 jaar benodig word. Baie min energiebronne is egter geskik vir basis-lading kragstasies. Die primêre energiebronne in Suid-Afrika wat geskik en beskikbaar is, is steenkool en uraan.

Die elektrisiteitopwekkings kragcentrales het 'n lang ekonomiese leeftyd van gemiddeld 40 tot 50 jaar. Dit is dus krities dat wanneer die optimale kombinasie van kragcentrales bepaal word dat die bydrae van die nuwe kragcentrales tot volhoubare ontwikkeling in Suid-Afrika in ag geneem word.

'n Hoofdoelwit van volhoubare benutting is om die algehele bates (natuurlike-, mens-gemaakte- en menslike of sosiale bates) wat aan huidige en toekomstige generasies beskikbaar is te volhou of te vermeerder, terwyl die verbruik van eindige hulpbronne verminder word en die drakrag van ekosisteme nie oorskry word nie.

Die gebruik van kernkrag verbreed die natuurlike hulpbron basis vir energie en spesifiek elektrisiteit opwekking. Dit verbreed ook menslike en mensgemaakte kapitaal. Onder streng veiligheidsmaatreëls het kernkrag 'n minimale impak op ekosisteme. Dit produseer basies geen swaeldioksied, partikels, koolstof-oksiede, vlugtige organiese verbindings (VOCs), of kweekhuysgasse (GHGs) nie. Gedurende die lewensiklus – vanaf die myn van uraan, yster-erts en ander minerale, die vervaardiging van die komponente, die bou van die kragcentrale, bedryf en onderhoud van die kragcentrale tot by die buite diens stelling daarvan en die verwydering van afval – straal kernkrag minder as 11 gram van die koolstof ekwivalent per kilowatt-uur (gC_{eq}/kWh)⁴, uit. Dit is gelykstaande aan wind- en sonkrag en een honderdste van die gemiddelde emissies van steenkool, olie of aardgas. Kernkrag het dus die potensiaal om 'n aansienlike bydrae tot volhoubare ontwikkeling, asook die vermindering van Suid-Afrika se kweekhuysgas emissies. Weens Suid-Afrika se rykdom aan uraan, maak dit sin vir Eskom om dit as energiebron te benut.

Die Eskom Raad het dus die ondersoek na soveel as 20,000 MW kernkrag kapasiteit oor die volgende 20 jaar goedgekeur. Die aanvanklike fase van hierdie ondersoek sal op een kernkragcentrale van ongeveer 4,000 MW fokus, maar met voorsiening vir uitbreiding indien dit gepas is.

⁴ Greenhouse gas emissions from energy systems: Comparison and overview (Dones, et al., 2003)

IMVELAPI YOBUCHULE (ukuqhubeka)

Umthamo womthwalo osisiseko uyinxelenye ebalulekileyo emlinganiselo wayo ungama-40,000 MW omlinganiselo omtsha wokuvelisa ofunekayo kwiminyaka engama-20 ezayo. Kanti, zimalwa izinto ezivelisa umbane ezithi zilungele izitishi zamandla ombane zomthwalo osisiseko. Izinto ezivelisa amandla ombane eMzantsi Afrika, ezikulungeleyo nezifumaneka ngokwaneleyo ngamalahle neyurenyam.

Ubomi bezozoqosho besitishi esivelisa umbane bude – ngokomyinge ngama-40 ukuya kuma-50 eminyaka. Kubalulekile ukuchonga izitishi ezahlukeneyo zokuvelisa umbane ukucingela nenkxaso eziza kuthi zibe nayo izitishi ezitsha zombane kuphuhliso oluzinzileyo eMzantsi Afrika.

Eyona njongo iphambili yophuhliso oluzinzileyo kukugcina nokwandisa izinto ezikhoyo (ezandalo, ezenziwe ngabantu okanye ezasekuhlaleni) ezifumanekayo kwisizukulwana sangoku nesizayo, ngeli xa lunciphisa ukusetyenziswa kwezinto zemveliso eziphelayo nokungadluli kwimilinganiselo yezinto eziphilayo nokuzingqongileyo.

Ukusetyenziswa kwamandla enyukliya kwandisa ukusetyenziswa kwezivelisi zendalo ezisetyenziselwa amandla ombane, ingakumbi ukuveliswa kombane, kwandisa izakhono zoluntu, ze xa kuthe kwaphathwa ngendlela eyiyo, kube nempembelelo engephi kwindalo. Amandla enyukliya avelisa i-sulphur dioxide, izinto ezenziwa zizicwibi ezahlukeneyo ingakumbi ungcoliseko ngumoya, i-nitrogen oxides, imbumba yezinto eziphilayo nezitsha msinya (ii-VOC ngamafutshane kwisiNgesi) okanye iigesi ze-greenhouse (ii-GHG ngamafutshane kwisiNgesi). Kubomi obupheleleyo – ukusuka ekugrunjweni kweyurenyam, intsimbi ekrwada kunye nezinye iiminerali, ukwenziwa kwamalungu nokwakhiwa kwesitishi samandla ombane, ukusetyenziswa nokugcinwa kwesitishi samandla ombane sisebenza ukuya kutsho ekuyekisweni kokusebenza kwesitishi samandla ombane, nokulawulwa kwanokulahla kwenkuma – amandla enyukliya akhupha ngaphantsi kwe-11 gram zekhabhoni elinganayo nge-kilowatt nganye ngeyure (gC_{eq}/kWh)⁴. Le yindlela efanayo yobukhulu nomoya namandla elanga kuquka ulwakhiwo nokuveliswa kwendawo ethile, kwaneendlela ezimbini zobukhulu ezilapha ngezantsi (o.k.u isinye sayo ekhulwini) umyinge wamalahle, ioyile, negesi yemveli. Ngoko ke amandla enyukliya anakho ukuncedisa ngamandla kuphuhliso oluzinzileyo ekwanakho ukuxhasa ekunciphiseni ukukhutshwa kwegesi ye-greenhouse yoMzantsi Afrika. Ngenxa yokutyeba kwezinto zokuvelisa iyurenyam eMzantsi Afrika, bubulumko ukuba uEskom asebenzise ezi zivelisi zamandla.

Ngoko ke iBhodi kaEskom ivumele uphando lomyinge ofikelela kuma-20,000 MW enyukliya kwisithuba seminyaka engama-20 ezayo. Isigaba sokuqala solu phando siza kugxila kwisitishi senyukliya esinye esimalunga ne-4,000 MW, nesibekelwe ukwanda kwexa elizayo, xa ithuba lianelekile, nokuba oko kuyenzeka kusini na.

⁴ Ukukhutshwa kwegesi ye-Greenhouse kwiinkqubo zamandla ombane: Uthelekiso nesiswankathelo sikaDones nabanye (Dones et al ngo-2003)