

**DEPARTMENT OF WATER AND SANITATION
NOTICE 436 OF 2016**

DRAFT POLICY ON SUSTAINABLE HYDROPOWER GENERATION

I, Nomvula Paula Mokonyane, in my capacity as Minister of Water and Sanitation, and duly authorized by the National Water Act (Act No. 36 of 1998) hereby give notice of intention, to publish a draft Sustainable Hydropower Generation Policy as contained in the scheduled hereto, for the purposes of comment and consultation with interested and affected parties.

Members of the public are invited to submit to the Minister, within 60 (sixty) days after the publication of the notice in the gazette, written comments or inputs to the following addresses:

By Post to:
The Director-General
Department of Water and Sanitation
Private Bag X313
Pretoria
0001

Or hand delivered to:
Department of Water and Sanitation
185 Francis Baard Street,
Sedibeng Building, Room 914
Pretoria
0001

Marked for the attention: MR ANIL SINGH: DDG: WATER SECTOR REGULATION

By email: SinghA3@dws.gov.za or by fax to: (086 561 4745) or
Alternative email: BrisleyM@dws.gov.za or by fax to: (086 216 9765)

All enquiries in connection with the draft Sustainable Hydropower Generation Policy can be directed to Mr A.B Singh at (012 336 7360) or Ms M.E Brisley at (012 336 8768)

Comments received after the closing date may not be considered.



Nomvula Mokonyane
Minister of Water and Sanitation
Date: 28.05.16



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

DRAFT SUSTAINABLE HYDROPOWER GENERATION

POLICY

Gazetted for Public Consultation

July 2015

Table of Contents	page numbers
1. Introduction and Background	3
2. Purpose	3
3. Scope of the Policy	3
4. Key Policy Considerations	4
5. Relevant Legislative framework	4
5.1 DWS Mandate.....	4
5.2 Planning Framework: The National Development Plan Vision 2030	5
5.3 Energy Policies and Legislation	6
6. Hydropower Guiding Principles	8
6.1 Water Support for Integrated and Sustainable Power Generation	8
6.2 Differentiated authorisation process	9
6.3 Integrated Hydropower Authorisation and Licensing process	10
6.4 Ensuring Real Hydro Power Investment and Partnerships.....	10
6.5 Compulsory compliance with dam safety standards and other necessary safety requirements	11
6.6 Use and promotion of appropriate sustainable technology.....	11
6.7 Utilisation of International Sustainable Hydropower generation protocol	12
7 Types of Utilisation on DWS water resources and owned infrastructure	12
Table 1: Types of Approved utilisation on DWS water resources and owned infrastructure	13
8 Exclusions	13
9 Conclusion	13
10 Approval	14

1. Introduction and Background

The global shift towards renewable energy and the ongoing South African energy crisis have created an environment where renewable energy projects including hydropower projects, such as those which are retrofitted to existing dams, are both environmentally and financially attractive due to existing suitable infrastructure.

With South Africa experiencing serious electricity shortages currently, the National Development Plan sets a target of 20 000MW of new-build generation capacity from renewable sources by 2030. This is half of the overall new-build capacity target. The Green Energy Strategic Infrastructure Project aims to deliver a third of this (6.9GW) through independent power producers by 31 March 2019. These renewable technologies include on shore wind, solar photovoltaic, concentrated solar power, biogas, biomass, landfill gas, and **hydropower**. Furthermore the President of the Republic of South Africa, in his State of the Nation address made a commitment that the state will invest and look into the development of hydropower as one of the sustainable renewable energy generation methods. Different forms of hydropower including reservoir, pumped storage and run-of-river systems of various sizes are available and can be used for different forms of electricity.

South Africa has a potential to develop hydropower at existing DWS infrastructure such as dams, canals, pipelines as well as making use of the water resources in SA including the shared river basins. Instead of dams being constructed for the purpose of hydropower, existing reservoirs that are used for other purposes can be fitted with hydropower plants in order to augment electricity supply towards meeting peak electricity demands. This is in line with multiple-use approach enshrined in the 2013 National Water Policy Review. Hydropower is a renewable economic, none polluting and environmentally friendly source of energy.

In order to ensure optimisation of the water resource use, a policy is required. This has prompted Department of Water and Sanitation (DWS) to develop this Policy for the sustainable development of hydropower technologies in the South African water and sanitation **sector**. Irrespective of the type of any prospective installation, hydropower development in South Africa will require authorization in terms of the National Water Act, 1998 (Act No. 36 of 1998) and amendments.

Hydropower generation can contribute not only to the Strategic Infrastructure Projects but also to the Department of Energy's universal electrification and energy efficiency strategy.

2. Purpose

The purpose of this document is to provide Policy position for the Department of Water and Sanitation on the establishment and development of hydropower on existing DWS infrastructure as well as within the water resources of South Africa as part of long term interventions by the Department to support sustainable power supply in South Africa.

3. Scope of the Policy

The policy provisions will be applicable to prospective and existing hydropower generators in relation to describing the DWS authorisation process for hydropower development on DWS owned infrastructure utilisation and water resources optimisation with regards to water transfer schemes

which include dams, barrages; rivers, irrigation systems (canals and conduits) as well as run-off-river schemes.

It encourages energy efficiency initiatives in the water and sanitation sector which includes but not limited to: Conduit hydropower in development opportunity within Water and Sanitation services infrastructures *and water distribution networks*.

This Policy will address all issues ranging from very small-scale run-off-river projects to the large-scale retrofitted dams. The Department does not foresee dams being constructed for the sole purpose of hydropower however the feasibility of potential hydropower generation at newly planned dams will be required.

The scope of this Policy excludes tidal lagoons, harbours and wave energy systems but further investigations of suitable hydropower in these systems is encouraged.

4. Key Policy Considerations

The key consideration of the policy is to:

- a) Ensure that Hydropower development and its operation is in accordance with the principles of National Water Act no 36 of 1998 i.e. Sustainability, Equity and Efficiency (SEE).
- b) Ensure that hydropower and its operation is in accordance with the DWS sustainable hydropower generation policy.
- c) To contribute towards development of clean energy in order to mitigate green house gas emissions.
- d) DWS application and approval process, and requirements for authorization.
- e) Consider and support the existing national energy legislation, policies, strategies and plans

5. Relevant Legislative framework

5.1 DWS Mandate

The Department of Water and Sanitation (DWS) is the custodian of South Africa's water resources. It is primarily responsible for the formulation and implementation of policy governing the development and management of the water and sanitation sector. It also has a responsibility to regulate and support provision for water services provided by local government.

The National Water Act (NWA) (Act 36 of 1998) provides a framework for the protection, use, development, conservation, management and control of water resources for the country as a whole.

Integrated water resource management (IWRM) is described in the Act as the means to effect the aim of the NWA, and is operationalised through the **National Water Resource Strategy (NWRS)**, which inter alia:

- determines how much water is- to be "reserved", allocated for international commitments, and available in each water management area;
- provides for the establishment of water resource management institutions such as Catchment Management Agencies (CMAs);

- sets principles for water conservation, **water use** and water quality.

The **National Water Resource Strategy** provides the overall framework for water resource management in the country.

Box 1: Hydropower in the NWRS

The 2013 NWRS includes provisions for hydropower generation at DWS owned infrastructure facilities, and specifically DWS owned dams. Key excerpts from the NWRS are reproduced here for ease of reference.

An objective of the NWRS is to “*promote the optimal development of hydro-electricity generation at all sites in South Africa where this is economically viable and can make a useful contribution to electricity generation.*”

“*...The installation of small-scale hydro-electric plants to take advantage of the head available and flow from existing dams is being considered in cooperation with the Department of Environmental Affairs (DEA), National Treasury, Eskom, the Central Energy Fund and private sector partners.*”

“*...The Department of Energy (DoE), together with the DWS and the National Treasury (NT), commissioned an investigation of the prospects for retrofitting hydroelectric generation equipment at existing DWA dams with hydroelectric power potential. The DOE has shortlisted 14 sites for further detailed evaluation.*

The services of Independent Power Producers (IPP) will be procured to construct and operate the hydroelectric power stations that are the most favourable and viable. The IPPs will be required to enter into agreements with the DOE and Eskom for the sale into the national electricity grid of the electricity to be produced.”

5.2 Planning Framework: The National Development Plan Vision 2030

The 2015-2019 Medium Term Strategic Framework (MTSF) encapsulates the intermediate electricity infrastructure milestones in the context of the NDP and **the Integrated Resource Plan (IRP) 2010** long-term planning framework. The main target for electricity infrastructure development is “*to increase the electricity generation reserve margin from 1% (2014) to 19% in 2019 to ensure the continued, uninterrupted supply of electricity in the country. The corresponding MTSF interim delivery targets for Outcome 6 (an efficient, competitive and responsive economic infrastructure network) therefore require the development of 10 000 MWs additional electricity capacity to be commissioned by 2019 against the 2010 baseline of 44 000 MWs – of which 5 000 MW should be from renewable energy sources.*” (IPPPP Unit 2015)

Box 2: The 2011 IRP 2010-2030 (IRP1)

The Integrated Resource Plan in the South African context is not the Energy Plan - it is a **National Electricity Plan**. It is a subset of the Integrated Energy Plan. The IRP is also not a short or medium-term operational plan but a plan that directs the expansion of the electricity supply over the given period, emphasizing the objectives for the development of renewable energy technologies (DoE, 2014).

The IRP, inter alia, defines the amount of electricity that is to be developed as new-build capacity for each technology type up to 2030.

5.3 Energy Policies and Legislation

The energy policies and interventions in the country, reflecting South Africa's transition to a green economy, include:

White Paper on the Energy Policy of the Republic of South Africa December (1998)

The *White Paper on Energy Policy* (DME, 1998) sets out Government's policy with regards to the supply and consumption of energy for the next decade. The policy strengthens existing energy systems in certain areas, calls for the development of underdeveloped systems and demonstrates a resolve to bring about extensive change in a number of areas. The policy addresses all elements of the energy sector.

White Paper on Renewable Energy November (2003)

The White Paper on Renewable Energy supplements the Government's overarching policy on energy as set out in its *White Paper on the Energy Policy of the Republic of South Africa* (DME, 1998), which pledges 'Government's support for the development, demonstration and implementation of renewable energy sources for both small and large-scale applications.'

The White Paper on Renewable Energy sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa; it proposes that Government include private energy producers into the electricity generation mix, and that the electricity generation mix should include renewable energy technologies.

It has the following two goals: *to inform the public and the international community of the Government's goals, and how the Government intends to achieve it, and; to inform Government agencies and Organs of State of these goals, and their roles in achieving it.*

The White Paper furthermore commits Government to a number of enabling actions to ensure that renewable energy becomes a significant part of its energy portfolio over the period of ten years and beyond. It supports the aim of the Government to set proper boundaries within which the renewable energy industry can operate and grow, thus contributing positively to the South African economy and to the global environment.

National Climate Change Response White Paper (NCCRP) (2011)

Government's National Climate Change Response Policy was approved and gazetted in October 2011.

The White Paper represents the culmination of an iterative and participatory policy development process that was started in October 2005 which involved ground-breaking modelling and research activities, national conferences, numerous workshops and conferences in every province, extensive bilateral and stakeholder engagements.

National Climate Change Response White Paper highlights that South Africa's response to climate change has two objectives:

- a) To effectively **manage the inevitable climate change impacts** through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity; and
- b) To **make a fair contribution to the global effort to stabilise greenhouse gas (GHG) concentrations** in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner.

Furthermore the National Climate Change Response White Paper committed key sectors, including **electricity, water**, health, bio-diversity and agriculture to compile climate change sector plans to identify and prioritise short and medium term sectoral adaptation initiatives. These sectoral plans should be developed in the context of sectoral legislation and strategies; in the case of the electricity sector, this will be, inter alia, the National Electricity Regulation Act, the National Energy Efficiency Strategy, the Integrated Resource Plan and the Integrated Energy Plan. (Department of Environmental Affairs 2011)

Two of the 8 near-term priority flagship programmes defined in the NCCRP, namely the "renewable energy flagship programme" and the "energy efficiency and energy demand management flagship programme" relate specifically to electricity sector specific objectives. It is argued that the Department of Energy's (DoE) **Renewable Energy Independent Power Producers Procurement Programme (REIPPPP)** can be considered to be the DoE's response to the energy objectives in the NCCRP, though originally initiated from the concepts of the **Renewable Energy White Paper of 2003**.

Electricity Regulation Act

The Electricity Regulation Act, Act 4 of 2006 and the Electricity Regulation Amendment Act, Act 28 of 2007 as amended (ERA), describes the responsibilities and powers of the National Energy Regulator specifically in regards to the processing and issuing of electricity generation, transmission and distribution licences. Inter alia, the Act requires that electricity generation licence applications must include evidence of compliance with **the Integrated Resource Plan (IRP)** of the time **or provide reasons for any deviation for the approval of the Minister**. (Department of Minerals and Energy 2006)

Chapter 4 of the Act introduces the powers and function of both the Minister and the Regulator with regards to New Generation Capacity, including the power to determine the type of energy mix that will make up the capacity need, the extent of participation of the private sector in the generation of the capacity, as well as the means through which this energy is to be procured and bought.

Box 3: REIPPPP

Section 34 of the Electricity Regulation Act 4 of 2006 (South Africa, 2006), as amended by the Electricity Amendment Act 28 of 2007 (South Africa, 2007), refers to "New Generation Capacity":

"(1) The Minister may, in consultation with the Regulator-

- a) *Determine that New Generation Capacity is needed to ensure the continued uninterrupted supply of electricity;*
- b) *Determine the types of energy sources from which electricity must be generated and the percentages of electricity that must be generated from such sources;*
- c) *Determine that electricity thus produced may only be sold to the persons or in the manner set out in such notice;*

- d) *Determine that electricity thus produced must be purchased by the persons set out in such notice;*
- e) *Require that New Generation Capacity must-*
 - *Be established through a tendering procedure which is fair, equitable, transparent, competitive and cost-effective;*
 - *Provide for private sector participation.”*

In August 2011, the Minister of Energy determined that 3 725MW of renewable energy was to be procured through an IPP Procurement Programme 2011, and bought by Eskom. This signified the operationalization of the Renewable Energy Independent Power Producer Procurement Programme, or REIPPPP; designed to contribute towards the target of 20 000MW of additional electricity capacity that is to be generated from renewable energy projects by 2030 as defined in the National Development Plan. A second determination of 3 200MW was made in January 2013, and a third determination of 6 300 MW was made in August 2015.

The programme aims to reduce the country's reliance on fossil fuels, stimulate an indigenous renewable energy industry and contribute to socio-economic development and environmentally sustainable growth, whilst also contributing to the broader national development objectives of job creation, social upliftment and broadening of economic ownership.

6. Hydropower Guiding Principles

The following policy principles will apply to all institutions (Private or Public) in the interest of balancing the sustainable water resource protection, water and sanitation provision and hydropower generation

6.1 Water Support for Integrated and Sustainable Power Generation

Problem Statement

As part of broader government initiative to stimulate energy mix as outlined by National Development Plan (NDP), Hydropower has not been explored to its full potential. There is vast potential of hydropower development in the specific areas within DWS water management catchments and water and sanitation infrastructure (DWS owned and Non DWS) between different government departments at the national, provincial and local levels. The existing delegation of powers between different government departments at the national, provincial and municipal levels on authorization is unclear. However the initiation and implementation of Hydropower generation may place additional responsibilities on DWS in terms of monitoring and management. Realisation and achievement of NWA principles remains a challenge and is ongoing. What is the guarantee? To ensure that Hydropower development and its operation is in accordance with the principles of National Water Act no 36 of 1998's principles i.e. **Sustainability**, Equity and Efficiency (SEE)

Policy Principle

DWS will support the development of hydropower as part of both social and economic development within the context of water scarcity and water infrastructure challenges without compromising sustainable protection of water resources and water and sanitation services

provisions. The roles and responsibilities relating to the full process should be defined at every stage of the generation process to ensure sustainable operation. This encompasses all stages from Planning, Construction/Development, Operation & Maintenance and Decommission stages satisfying all required activities.

6.2 Differentiated authorisation process

Problem statements

The current DWS authorisation/licensing process does not differentiate between Authorisation which will result in the Utilisation of DWS, Other Government institution, Private institution or partnership between Private and Government or Government to Government Institution. The hydropower projects results in generation of different capacity ranging from Pico (less than 25 kilo watts (kW) to Mega (more than 1000 Megawatts (MW) projects. In the view of the above challenges DWS needs proper classification of Authorisation and projects to afford clearing of its roles and level of involvement.

Policy Principle

The current authorisations as per National Water Act will be supplemented to differentiate utilization of DWS Infrastructure and the categorization of the projects. The Hydropower generation projects will follow the current application process as per NWA. On the projects classification DWS will authorize/license all the projects of all classes with capacity ranging from Pico (up to 20 kilo watts (kW) to Mega (more than 10 Megawatts (MW) projects. Furthermore, DWS shall develop conditions on the approval/ authorization of hydropower development applications, which will determine application process that will be followed by both private and public institutions.

The following table highlights the hydropower installation classification for purposes of this policy and will be adopted as outlined in the Department of Energy Hydropower implementation guide, in order to further guide the DWS hydropower development, regulation and all related process.

Hydropower Category	Capacity in Power output
Pico	Up to 20KW
Micro	20kW to 100 kW
Mini	100Kw to 1MW
Small	1MW TO 10 MW
All installations above 10 MW are classified as macro(Large) hydropower plants	>10 MW <i>The large hydropower development has also its history in South Africa and manifested over the years in installation of several significant hydroelectric plants developed together with the large dams. Two most significant large hydroelectric installations Gariep (360 MW) and Vanderkloof (240 MW) are situated on the Orange River in the Northern Cape Province. The smaller existing operational plants are all situated in the Eastern Cape Province namely the Mbashe (42 MW), First and Second Fall (6.4 and 11 MW) and Ncora (2.4 MW).</i>
<i>Adapted from: The sustainable energy resource handbook, volume 2 (Barta,2010)</i>	

6.3 Integrated Hydropower Authorisation and Licensing process

Problem statement

As outlined in the National Water Act, 1998 (Act no 36 of 1998), any hydroelectricity project require Water Authorisation. **Licensing:** National Energy Regulator of South Africa (NERSA) is the sole authority, to approve applications for the generation of electricity. Any person who generates, distributes, transmits, imports, exports or trades electricity can only do so with a licence granted by NERSA. Unaligned and non-integrated and un-catered for process for consideration of water use licences, relating to exploitation of hydropower generation activities.

This policy principle provides for the concurrence between the Ministers, the Minister responsible for Water Resources (DWS) and the Minister responsible for Energy (DoE) for consensus on process to be followed to integrate the process of approval. In further emphasising NWA requirements, a person may only use water relating to hydropower upon following the NWA authorisation process. In the interests of co-operative governance, DWS will activate (define) arrangements with Department of Energy (DoE) through their regulator, National Energy Regulator South Africa (NERSA), to combine their respective authorisation requirements.

6.4 Ensuring Real Hydro Power Investment and Partnerships

Problem statement

Given that this is a new endeavour and opportunity for the sector, further investigations need to be conducted to ascertain value for money attached to hydropower development. There is a need for enabling policy environment for the Department opening/encouragement of partnership for dual benefit. Terms regarding sharing of facilities, project ownership after concession, hydropower generation locations (servitudes) need to be stipulated. Furthermore, cost recovery measurers in the hydropower operation value chain need to be defined to ascertain sustainability of the hydropower operation and the DWS infrastructure.

Policy Principle

In order to enhance and encourage hydropower generation, DWS will support the following:

The Independent Power Producers (IPP) Procurement Programme: designed so as to contribute towards the target of 3 725 megawatts and towards socio-economic and environmentally sustainable growth, and to start and stimulate the renewable industry in South Africa. This will be achieved by maximising the existing opportunity of hydropower opportunities within DWS infrastructures.

Investment guaranteed as per National treasury guidelines: Preferential Procurement Process (PPP) etc,

Memorandum of Understanding on key issues: Ownership, Concession period, Leasing agreements, Risk plan, Liabilities, Insurance

Reflective cost recovery mechanisms: Operation cost, refurbishing cost or replacing obsolete and disposing infrastructure.

Water Charge/Tariff and related investment issues will be dealt with as per DWS pricing strategy in consultation with National Treasury and relevant institutions. Real Hydropower investment is a great way to afford DWS certainty on hydropower generation future sustainability and secure the investor's financial future. At the same time it ensures that DWS will not have to carry the cost if the infrastructure or resource is compromised as a result of hydropower generation by IPPs. This policy position further encourages exploration of different, sustainable and effective investment models.

6.5 Compulsory compliance with dam safety standards and other necessary safety requirements

Problem Statement

DWS has existing Dam safety standard requirements and a plan for monitoring dam construction and operation called the Dam Safety. This plan is underpinned by National Water Act which outlines dam's safety requirements. But there is no explicit direction on how to deal with Dams with Hydropower facilities.

Policy Principle

Compulsory compliance and Non-Negotiable adherence to all DWS dam safety standards requirements. The vigilant compulsory plan will include data collection on the operation vs. safety to afford proactive efforts to deal with any unforeseen circumstances that will compromise water security. The inspection process will amongst others look at instrumentation, equipment maintenance, reading frequency and procedures, action levels, procedures should a failure occur and how reports sent to DWS must be formatted. The reports include photographs, diagrams and data taken at the dam.

6.6 Use and promotion of appropriate sustainable technology

Problem statement

Based on international experience, the development of Hydropower has not been driven solely by concern for human progress and quality of life but is also frequently used to advance nationalist or ideological agendas. Challenges with Hydropower technology include: dependence on rainfall (no control over amount of water available); changes in stream regimens (can affect fish, plants, and wildlife by changing stream levels, flow patterns, and temperature); flooding of land and wildlife habitat (creation of reservoir). Maintaining minimum flows of water downstream of a hydropower installation is critical for the survival of riparian habitats.

Policy Principle

Hydropower can be considered technologically acceptable if the cost of refurbishing or replacing obsolete infrastructure is taken into account, e.g. replacing obsolete dam and disposing sediments, which may have accreted behind them. While this removing process may be technically and

economically viable to smaller projects, there are yet no indications that it will be for the greater majority of very large dams owned by DWS. It is against this background that DWS require promotion of appropriate technology in the continuous environmental risk appraisal linked to appropriate actions taken throughout the hydropower generation value chain and the appropriate technology should be supported by available skills. The authorisation process will vary according to varieties of technology proposed and the processing and decision will be handled on case by case basis.

6.7 Utilisation of International Sustainable Hydropower generation protocol

Problem Statement

Hydropower incidents are usually caused by three (3) main factors: poor planning, unpredictable natural events or equipment failure. Sometimes developers of new dams don't take all geological factors into account. Dam failure can be caused by unpredictable natural causes or due to increased rainfall. Can the disaster related to hydropower be predicted? It is hard to tell because sometimes severity of water rises over prediction. The accidents in this sector are rare but when something does go wrong then the consequences are usually fatal. Planners need to take a lot of geological and environmental issues into account when they plan building new hydroelectric plants although sometimes the events can't be predicted.

Policy Principle

All Hydropower Project utilizing DWS owned Infrastructure and its water Resources will be subjected to The Hydropower Sustainability Assessment Protocol. The Hydropower Sustainability Assessment Protocol is a tool for assessing projects across a range of social, environmental, technical and economic topics. It provides an international common language on how these considerations can be addressed at all stages of a project's lifecycle: planning, preparation, implementation and operation.

7 Types of utilisation on DWS water resources and owned infrastructure

Within the context of this policy, there are four types of utilisation against DWS water resources and owned infrastructure namely:

- a) Demand Management/Energy efficiency/Own use - Where the utilisation will result in the energy generated to be used in own operations e.g. DWS contract IPP to generate electricity to use in their operations. This type of own-use generation is generally considered as a load reduction intervention, in contrast to contributing to the electricity generation function.
- b) Islanded Use Where the utilisation will result in the energy generated to be used directly to households electrification e.g. Rural Electrification Programme

- c) Municipal Grid - Where the utilisation will result in the energy generated to be sold to Municipality for distribution to Municipal operations
- d) Eskom Grid - Where the utilisation will result in the energy generated to be sold to Eskom national grids to support national energy requirements. This can be done through either the REIPPPP or another electricity procurement programme determined by the Minister of Energy.

The four types of utilisation are depicted below in Table 1 below.

Table 1: Types of Approved utilisation on DWS water resources and owned infrastructure

Types of Utilisation	DWS Owned Infrastructures				Water Resources	
	Exploitation opportunity				Exploitation opportunity	
	Dams	Canals	Pipelines	Other	Run-of-River	Other (include international rivers basin)
	<i>Retrofit</i>	<i>Conduit</i>	<i>Conduit</i>	<i>other</i>	<i>Run-of-River</i>	<i>Other</i>
Demand Management/Energy Efficiency/Own Use	√	√	√	√	√	√
Islanded use	√	√	√	√	√	√
Municipal grid	√	√	√	√	√	√
Eskom Grid	√	√	√	√	√	√

8 Exclusions

The DWS may implement hydropower projects outside these policy principles through any other models as deemed necessary in order to achieve and support the strategic objectives of the country and for purpose of Research and Development (piloting).

9 Conclusion

South Africa has an extremely energy-intensive economy in relation to the rest of the world. The current energy challenges have opened up a window for investors to look into independent power production. There is a potential to move towards renewable forms of energy, with hydropower being a key focus.

There is significant and identified potential for the development of hydropower in South African Water Resources infrastructure which may include large dams and the perennial streams and within existing water supply (i.e. urban and agricultural scheme) and wastewater treatment infrastructure. This potential is not necessarily significant with regard to the contribution to the Eskom's national grid, but is significant with regard to the potential reduction in electricity demand on the overloaded national power generation capacity.

Beyond the licensing procedures, the DWS is also responsible for overall management of water resources and all its activities and other water resources management aspects of any riverside hydropower development. DWS have a duty to protect the water resources from any harm that can arise from hydropower development and to ensure sustainable provisions of water.

The DWS shall work closely with the Department of Energy to embrace and advance the development of Hydropower for greater contribution in the energy needs of the country. To provide enabling environments in hydropower generation development to promote sustainable power generation and maximize protection of water resources and its infrastructure against any possible risks that may arise during Power generation processes within DWS water resources infrastructure.

10 Approval

This policy position is approved by:

MRS N P MOKONYANE: MINISTER OF WATER AND SANITATION
DATE:

References:

Van Duren, S.J., Van Disk, M., Barta, B. and Loots, I. (2013) Conduit Hydropower Development Guide. WRC Project No. K5/2095. Water Research Commission, Pretoria, South Africa.

Department of Hydropower & Systems: Ministry of Economic Affairs (2008) Bhutan Sustainable Hydropower Development Policy. Royal Government of Bhutan, India.

Van Vuuren, S.J., Van Dijk, M., Barta, B. and Loots, I. (2013) Scoping study :Energy Generation Using Low Head Hydro Technologies. WRC Project No. K8/1017. Water Research Commission, Pretoria, South Africa.

Barta, B. (2002) *Baseline study – hydropower in South Africa*. Department of Minerals and Energy. Capacity Building in Energy Efficiency and Renewable Energy. DME Report No. COWI P54126/EE/RE/70. Department of Minerals and Energy, Pretoria, South Africa.

The British Hydropower Association (2005) A Guide to UK Mini-Hydro Developments, Version 1.2. January 2005

Eleftheria Kampa, Johanna von der Weppen and Thomas Dworak (2011) Water management, Water Framework Directive & Hydropower. *Common Implementation Strategy Workshop Brussels, 13-14 September 2011. Issue Paper (final version) November 2011.*

Department of Water Affairs and Forestry (2008) Strategy on dealing with the applications for water use in order to generate Hydropower by utilizing government waterworks and also private-owned infrastructure. Reference no 7/1/P

Government of India Ministry of Power (2008) Hydropower Policy, Government of India

Ramuedzisi T (2013) Overview of integrated energy planning approach. *Presentation.*

Department of Water Affairs Meetings including email correspondence with other Government and other stakeholders on discussion on Hydropower issues (2008 to date of DWS hydropower policy Development and Publication (2015))

CSIR 1994, Policies for Engineering Services and Amenities, Chapter 10- Water Supply

Department of Minerals and Energy (DME). 2003. *White Paper on the Renewable Energy Policy of the Republic of South Africa*. Vol 466. Pretoria.

Department of Minerals and Energy (DME). 2005. *Grid connected Renewable Energy Projects – Case Study: Bethlehem Hydro*, DME

Muller, J. 1999. *South African renewable energy resource database: Chapter 2 Modelling hydro power potential*, CSIR, Pretoria.

Department of Minerals and Energy (DME). (2003). *White Paper on the Renewable Energy Policy of the Republic of South Africa*.

Department of Water Affairs (DWA). (2013). *Proposed National Water Resource Strategy 2 (NWRS 2): Summary – Managing Water for an Equitable and Sustainable Future*. Department of Water Affairs, Pretoria, South Africa.

http://www.energy.gov.za/files/renewables_frame.html[accessed 20 May 2015]

SJ van Vuuren, CL Blersch and M van Dijk (2011) Modelling the feasibility of retrofitting hydropower to existing South African dams. Department of Civil Engineering, University of Pretoria, Pretoria, 0001, South Africa

<http://www.ipprenewables.co.za/#page/303>[accessed 20 May 2015]

Nepal Hydropower Development Policy, 2049

Government Technical Advisory Centre. (2014) IPPP TREASURY AND ENERGY Newsletter 2.October 2014.National Treasury.

DoE, (2010) Policy to support the Energy Efficiency and Demand Side Management Program for the Electricity Sector through the Standard Offer Incentive Scheme, May 2010

Hydropower policy in the United States (nd)

<http://www.engineeringnews.co.za/article/dbsa-provides-funding-for-reipp-projects-2012-11-14>[accessed 21 May 2015].

DEPARTMENT OF ENERGY, 2015. *Electricity Regulation Act, 2006: Draft Amendment of the Electricity Regulations on New Generation Capacity, 2011*. General Notice edn. Pretoria: South Africa.

DEPARTMENT OF ENERGY, 2011. *Electricity Regulation Second Amendment Bill*. Bill edn. Pretoria: South Africa.

DEPARTMENT OF ENVIRONMENTAL AFFAIRS, 2011. *National Climate Change Response White Paper*. White Paper edn. Pretoria: South Africa.

DEPARTMENT OF MINERALS AND ENERGY, 2006. *Electricity Regulation Act*. Pretoria: South Africa.

GCIS, 2013-last update, Implementation of the National Development Plan - Post SoNA media briefing by Ministers Trevor Manuel and Collins Chabane [Homepage of GCIS], [Online]. Available: <http://www.gov.za/implementation-national-development-plan-post-sona-media-briefing-ministers-trevor-manuel-and> [June 3, 2015].

IPPPP UNIT, 2015. *Independent Power Producers Procurement Programme: An Overview*. Pretoria: IPPPP Unit.

SOUTH AFRICA, 2014. *Medium Term Strategic Framework 2014-2019*. 1 edn. Pretoria, South Africa: South Africa.

IHA (2012) Hydropower Sustainability Assessment. Available on: Protocolhttp://www.hydrosustainability.org/IHAHydro4Life/media/PDFs/Protocol/hydropower-sustainability-assessment-protocol_web.pdf[accesses 15 September 2015].

DWS Hydropower Policy Stakeholders Consultations meeting held on the 09 September 2015. *Comments*.

LEGISLATIONS

Electricity Act 2006

Electricity Regulation Act (Act 4 of 2006)

Municipal Infrastructure Investment Framework, 2010

Municipal Systems Act (Act 32 of 2000)

National Climate Change Response White Paper (NCCRP) (2011)

National Energy Act, 2008

National Energy Regulator Act (Act 40 of 2004)

National Environmental Management Act (Act 108 of 1998)

National Water Act (Act 36 of 1998)

National Water Amendment Act (Act 1 of 1999)

Public Finance Management Act, 1999

Strategic Framework for Water Services, 2003

Water Services Act (Act 108 of 1997)

WARNING!!!

To all suppliers and potential suppliers of goods to the Government Printing Works

The Government Printing Works would like to warn members of the public against an organised syndicate(s) scamming unsuspecting members of the public and claiming to act on behalf of the Government Printing Works.

One of the ways in which the syndicate operates is by requesting quotations for various goods and services on a quotation form with the logo of the Government Printing Works. Once the official order is placed the syndicate requesting upfront payment before delivery will take place. Once the upfront payment is done the syndicate do not deliver the goods and service provider then expect payment from Government Printing Works.

Government Printing Works condemns such illegal activities and encourages service providers to confirm the legitimacy of purchase orders with GPW SCM, prior to processing and delivery of goods.

To confirm the legitimacy of purchase orders, please contact:

Renny Chetty (012) 748-6375 (Renny.Chetty@gpw.gov.za),

Anna-Marie du Toit (012) 748-6292 (Anna-Marie.DuToit@gpw.gov.za) and

Siraj Rizvi (012) 748-6380 (Siraj.Rizvi@gpw.gov.za)

