Public Consultation
20 year Integrated Resource Plan (Electricity)

November 2010

THE TEAM

African Alternative Technologies

Is a group of committed social entrepreneurs with collective experience in excess of 30 years in the field of renewables and social entrepreneurship.

DIRECTORS:

- THOMAS MUNN
- HALALISANI GUMEDE
- ERIC MAIR
- NEO MOLOI
- BRADLEY PORTER

THE REQUIRED FUNDAMENTAL PARADIGM SHIFT

The **IRP2010** is a 21st century Integrated Resource Plan not a 19th or 20th century one, so it needs to be executed as such.

Mostly what is required is a shift in thinking, we can't take our cue from the past because of the mistakes that have been made and **intention** needs to be shaped around the new dynamics of our current world.

Our big question is - why are we even talking about out of date toxic technologies and not focusing on **Clean Renewables???**

- In a crisis such as a war, major, unprecedented changes in direction have been achieved, and this mind-set is what is required to address the current global and local energy crisis.

Economic “Solutionaries” - Championing Sustainability

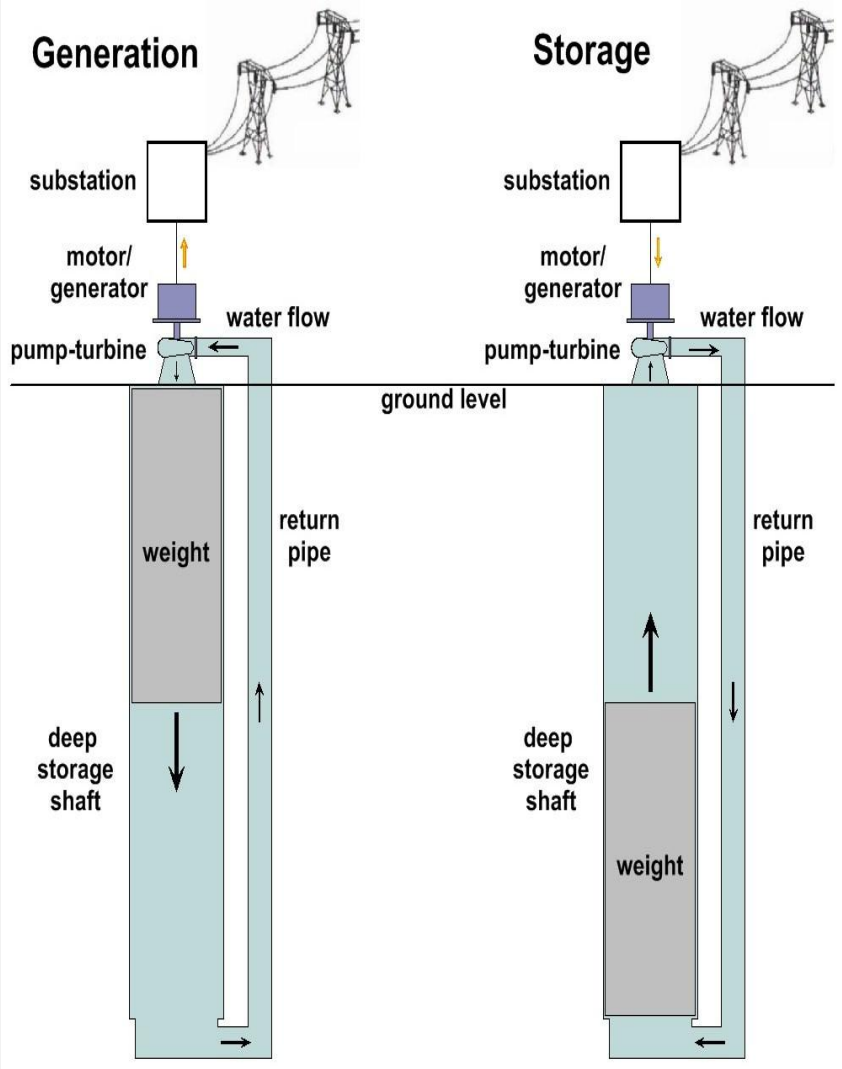
- Proponents of traditional power generating technologies say that renewables are not yet capable of sufficient capacity and/or power delivery as required (dispatchability).
- **We emphatically disagree!** Renewables can deliver MW scale projects capable of dispatchable power within 12 months of the required permissions being granted, at any scale, with storage, making 24/7 renewable energy a reality.
- With the proposed decentralised power model, one is not locked into a specific technology. This is essential as technological development is moving fast and must be incorporated as it becomes viable.

PRIORITY 1: UTILTITY SCALE STORAGE

POWER STORAGE ON THE GRID

General Duties	Ancillary services	Transmission and Distribution
Energy Management	Frequency response	Voltage control
Load Levelling	Spinning reserve	Power quality
Peak Generation	Standby reserve	System reliability
Ramping/Load Following	Long term reserve	Incorporation of renewables
Storage of otherwise wasted power	Reactive power	Distributed storage
Increase generation utilisation	Allow unbundling of services from the generator	Increase system utilisation
Reduce total required Base Load generating capacity	Reduce cost of ancillary services	Defer investments

Gravity Power Modules



- Modular, underground pumped storage that works just like PSH
- High efficiency (75-80%)
- Ramps far faster than gas turbines (peaking plants)
- Low cost materials (cement, iron ore, steel)
- Environmentally benign (in some cases even positive)
- Flexible siting
- Fast permitting
- Rapid construction
- Scalable and Modular
- Short time to revenue
- Relatively inexpensive (ZAR2400/kW)

PRIORITY 2: CONCENTRATED SOLAR POWER

CONCENTRATED SOLAR POWER

- Concentrating solar (CSP) technology is MATURE.
- It has been delivering base load electricity for more than 20 years.
- Compact Linear Fresnel technology (CLFR) has now developed to the point where it can supply high pressure,high temperature steam to conventional power blocks - AT AMOST THE SAME PRICE AS COAL – R42m/MW (based on current cost of Kusile)
- CSP can facilitate the electrification of rural communities beyond the reach of the existing grid.
- CFLR can be implemented very quickly once permitting has been completed and is very inexpensive to operate and maintain.
- Thermal Storage technology now enables the supply of solar power 24/7 in many cases.
- The question is not “can we afford to implement this technology?” but

“CAN WE AFFORD NOT TO?”

Compact Linear Fresnel Technology

- Low cost dispatchable electricity
- Integrated thermal battery
- 80% (by cost) Local manufacture
- Competitive pricing
- Modular and scalable
- No fossil fuel requirement at all
- Very low maintenance costs

WIND ENERGY

WIND ENERGY

South Africa's wind energy potential is around 70GW

(http://www.iea.org/work/2007/neet/oelsner.pdf)

- Wind is a "variable" resource which requires a wide distribution network to mitigate for local resource variability.
- Alternatively, an appropriate storage solution is required to facilitate dispatchability from wind farms.
- Wind is a mature technology which is currently proving its worth in many places, both on-shore and off-shore.
- Apart from the dispatchability issue, horizontal axis wind turbines are costly and difficult to maintain.
- The draft IRP2010 places an in appropriate emphasis on wind technology in the South African context.

THE WAY FORWARD ...

- Historically vested interests (being traditional, established monopolies) are blocking real progress in transformative technologies, because of their own capital inertia.
- What is required is a complete paradigm shift in thinking on energy generation and the financing models.

The Time for that change is NOW!

Tomorrow May Be Too Late!

The universal implementation of renewable energy power production is essential to realise South Africa's vision of leading sustainable development for the rest of Africa. Immediate high-level strategic intervention is absolutely necessary to achieve this.

THE WAY FORWARD …

"So, we have a choice to make. . . We can remain a major user of foreign oil and other fossil fuels and one of the world's worst emitters of greenhouse gasses, or we can make the investments that would allow us to become one of the world's leading innovators and exporters of renewable energy and associated technology.

We can let the jobs of tomorrow be created abroad or we can create those jobs here in South Africa and lay a solid foundation for lasting prosperity for all of Africa and the world"

Adapted from President Obama's speech to America

For further information please contact:

Commercial

Thomas Munn
tommy@aae.co.za
Ph +27 (0) 84 941 3993

Technical

Eric Mair
eric@aatec.co.za
Ph +27 (0) 82 49 60 113

Thank you