water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

BIO-ENERGY CLUSTER COMMITTEE WORKSHOP

20 February 2013

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Water is an integral part of the ecosystem, a natural resource and a social and economic good, whose quantity and quality determine the nature of its utilisation. Water is a limiting resource for development in Southern Africa and a change in water supply could have major implications in most sectors of the economy, especially in the agriculture sector. Factors that contribute to vulnerability in water systems in Southern Africa include seasonal and inter-annual variations in rainfall, which are amplified by high run-off production and evaporation rates.

Groundwater also has an important role to play in rural water supplies, but few major groundwater aquifers exist that can be utilised on a large scale due to high salinity in most parts of the country.

Divided into 19 Water Management Areas

Damned if we do or don't

You have reported on a "Call for urgent rethink on Skuifraam" (November 21), and how some organisations and individuals have questioned the decision to proceed with the construction of a major dam on the Berg River.

Ronnie Kasrils: plan carefully assessed

'Water crisis? What crisis?' – officials

Water curbs likely for province

Hot summer and low rainfall blamed

A decision on whether to impose summer water restrictions in the Western Cape will be taken only at the beginning of October – but the probability of some form of curb is "pretty high" at this stage.

Emerging farmer Augustinus Hendricks said God was forcing nations to their knees all over the world. "The emerging farmers are suffering. It is heart-breaking to see your animals suffering, but there's nothing you can do but pray," he said.

Andries Theron, a commercial farmer, said: "I avoid going into town because I might bump into the bank manager.

"What do you tell the farmworker who says his child needs a school uniform?"

Food crisis looms for SA

Five residents fined R1 000 for water restrictions abuse

Our water battle's won

20% savings target hit

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South Africa is fundamentally a semi-arid and water scarce country with a mean annual rainfall of 490mm, which is half the world average;

Rainfall is skewly distributed and evaporation is high;

Allocation of available water resources needs to be done wisely;

South Africa has limited agricultural land and water resources. Only 14% is arable and about 10% of this land is under irrigation;

60% of the currently available water is used for irrigation of high value crops and crops for food security;

Population and economic growth places increasing pressure on our limited resources;

Shift from irrigation use to municipal(domestic) and industrial use is inevitable;

This will in turn necessitate an ever-increasing efficiency in the use of water for food production;

Climate change is likely to exacerbate South Africa's water problems.

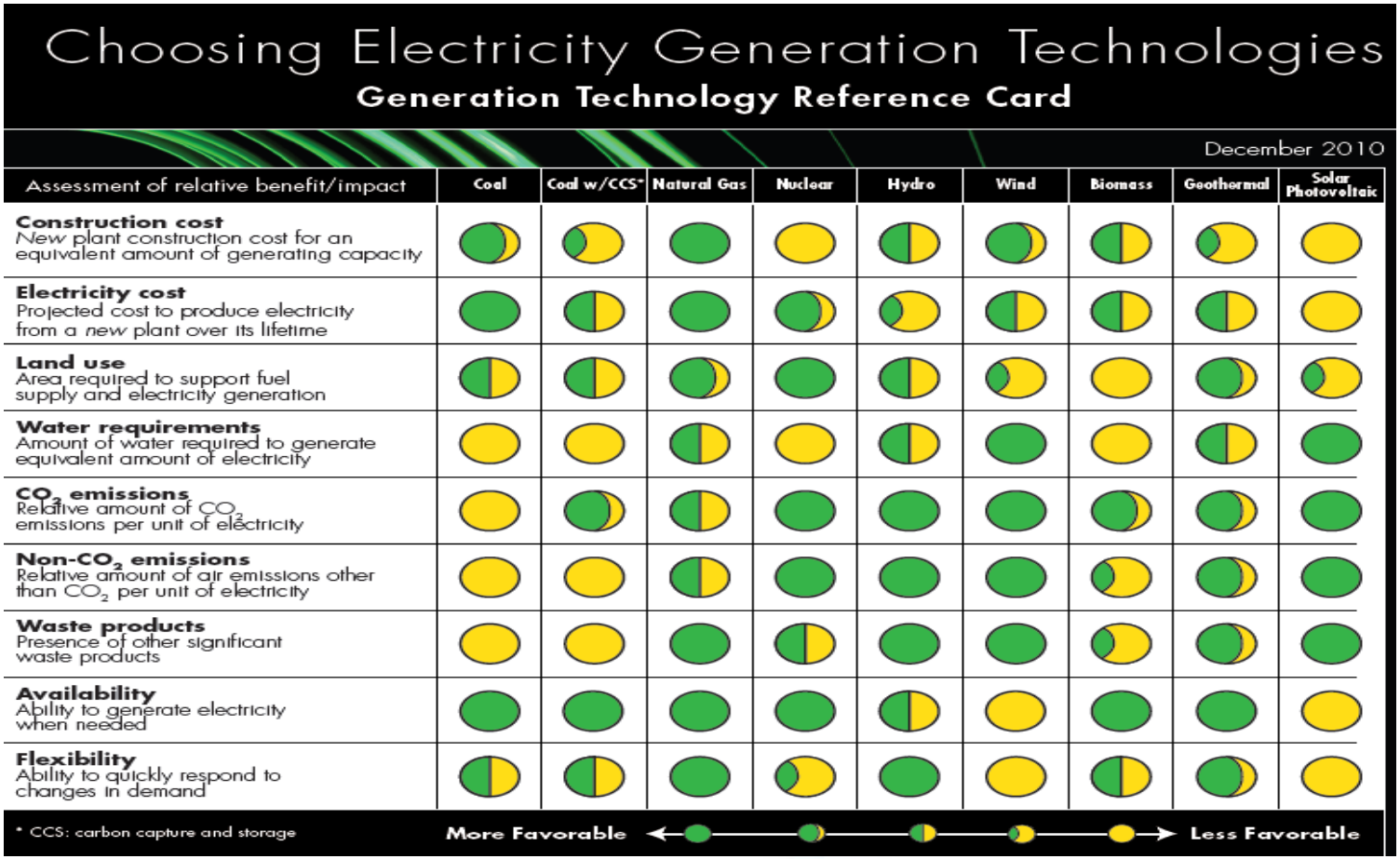
WATER RESOURCES VS BIO-ENERGY

Technology	Cooling or Agricultural Efficiency	m^3/MWh
Coal / Nuclear	Once - Through	87 - 102
	Recirculating (wet cooling)	1.5 - 2.8
	Air Cooling (dry cooling)	0.19 - 0.25
Natural Gas	Recirculating (wet cooling)	0.76
Solar Power Tower	Recirculating (wet cooling)	1.9 - 2.8
	Combination Hybrid Parallel	0.34 - 0.95
	Air Cooling (dry cooling)	0.34
Solar Parabolic Trough	Recirculating (wet cooling)	3
	Combination Hybrid Parallel	0.38 - 1.7
	Air Cooling (dry cooling)	0.3
Solar Fresnel	Recirculating (wet cooling)	3.8
Bio-Ethanol	Low water, very good yield (best case)	89.04
	Expected input and yield (Uppington area)	623.26
	High water, poor yield (worst case)	934.89

Table 1. Comparison of Water requirements per unit of electrical energy for various power generation technologies.

To generate a MWh of electricity the Biofuel route will require about 30 times more water than a wet-cooled power plant and 300 times more than a dry-cooled power plant.

WATER RESOURCES VS BIO ENERGY



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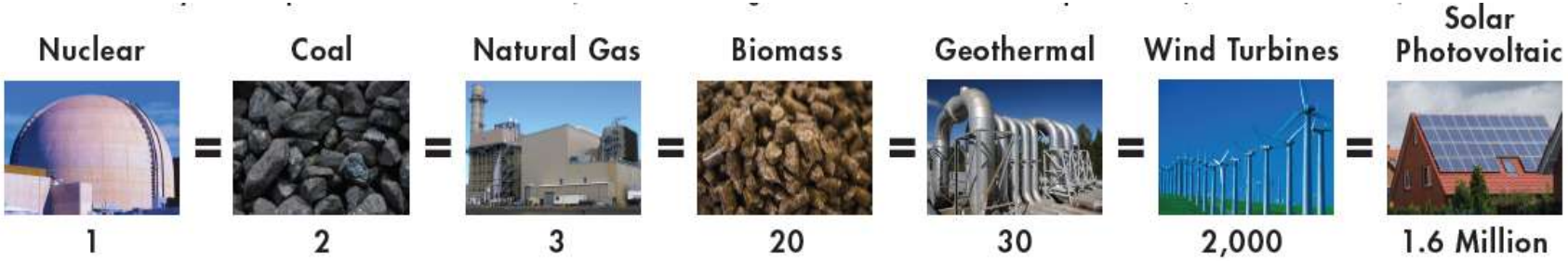
WATER RESOURCES VS BIO-ENERGY

HOW MANY PLANTS DOES IT TAKE TO POWER A CITY?



WATER RESOURCES VS BIO-ENERGY

Few opportunities for further irrigation development in the country due water scarcity and over allocations in most catchments;

Important to note that the cost of irrigation water is to a large extent subsidised by the state;

No biofuel plant can be approved if it should rely, even partially, on feedstock produced under irrigation;

WATER RESOURCES VS BIO-ENERGY

If existing irrigation allocation is used:

- reduction of allocation due to compulsory licencing must be taken cognisance of;
- water use will be changed from agricultural to industrial, and will result in a 30% reduction to allocation;
- Appropriate industrial water tariff will be imposed on the irrigation water use, which will be much more than the subsidised agricultural tariff.

CONCLUSION

There are no new water allocations that will be authorised therefore the bio-energy industry can look into:

- Using drought tolerant crops;
- DWA has raised the concern with Department of Energy that DWA will not give water use authorisations linked to the bio-energy production (Policy matter);
- DWA has also requested Department of Agriculture to support DWA's position that no water should be allocated to bio-energy production (Policy matter considering the threat to food security)

Heading for a non-sustainable future!

THANK YOU