Comment on: REVISED PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT FOR ESKOM'S PROPOSED NUCLEAR-1 -2 AND -3 - REVISION MAY 2009 with particular reference to the economic impact.
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Portions of Draft - June 2009

The plan of study for an EIA starts out from the assumption that that a nuclear power station is going to be built in a pre-determined place or places and the purpose of the EIA is to identify and mitigate the negative effects. This may be the purpose but it is not the question. The question should be: is nuclear power the best solution for electricity generation in South Africa out of a range of viable alternatives, going into the future? It is not logical or correct to assume this question has been answered. The plan of study however explicitly precludes this question from being included in the EIA. Under 'Alternatives assessed' (5.3 page 37) the following assertion is made: *"Identified renewable forms of energy are inadequately developed to provide large scale power generation facilities that can supply a reliable base load and easily integrate into the existing power network in South Africa"*. This assertion is packed with assumptions and follows a threat that in the event that a no-go alternative is adopted "*Eskom would in all likelihood apply to develop more coal fired power stations."* Thus the EIA study takes up the Eskom proposition that the key issues are decided beyond doubt and do not need to to be assessed in the environmental impact assessment, which becomes site-specific. There is an explicit threat that if the no-go option is taken, Eskom will build new coal-fired power stations. This means that without any public debate, specialist study or peer review, South Africa's energy future is being charted along the nuclear road, with all that follows from that. It could be that an environmental impact assessment is too limited in scope to address the strategic issues involved and that the appropriate type of assessment for energy and especially for nuclear power is a strategic environmental assessment. Nevertheless, the assessment must be done. This comment will elaborate somewhat on that.

A decision about power generation and energy use is a decision affecting the whole country, and the future energy path of South Africa and the resulting shape and form of our economy. An informed debate on this topic is vital. The EIA study's assertion that "renewable forms of energy are inadequately developed" is not true except in so far as Eskom has not adequately developed them. It is not true in actuality. UCT's Energy Research Centre's October 2008 study "Costing a 2020 Target of 15% Renewable Electricity for South Africa" has found that "There are grounds to take renewable energy seriously. The modelling indicates that by itself, such a programme would have less of an impact than this year's price increase. The alternatives to electricity supply from coal in South Africa are renewable energy and nuclear. This study suggests that the renewables option is not more expensive than nuclear." In fact, together with 'partnership programmes' of research and development, infrastructure development, industrial strategy and energy efficiency measures "...the overall cost of renewables will be lower than business-as usual." The renewable electricity generation options that were evaluated in the study are wind and solar thermal and it was found that they could provide 15% of South Africa's electricity needs by 2020. The construction time is in the order of 2-3 years for each project. It would be privately funded. There is also the potential of clean energy from the run-of-river Inga III hydro electric power station with its capacity of 5 000MW (at a cost of about R11 million per MW) for steadying of base-load by 2020. Another source of renewable energy is the savings or 'negawatts' of energy efficiency measures that displace electricity use,
Much more could be done in the field of energy efficiency and electricity displacement.

One 4 000MW nuclear power station like 'Nuclear-1' has a capital cost of about R120 billion (or R30 million per MW). With an availability factor of 70% it would be available by 2018 at the earliest. One nuclear power station alone is not reliable, however. In the event of a shut-down, all 4 000MW capacity is shut down. The unplanned unavailability factor (% of lifetime capacity) at Koeberg is 7.6% up to 2007. This means an additional reactor is required, planned by Eskom for 2020. Eskom's plans are for 3, at a combined cost of at least R360 billion in today's nominal money terms. This is massive expenditure of public funds on a single technology that is not fail-safe. The capital cost is assumed because Eskom has not revealed the true cost, if they know it at all.

Further, decommissioning costs and impacts and the technology of long-term waste management are, according to the study, "too far into the future...and therefore cannot be assessed at present" (4.4.2. Impact

identification and assessment. Page15). It is strange indeed to preclude renewable forms of energy from Eskom's planning and the EIA itself because they are assumed to be "inadequately developed" and yet absolve the EIA from assessing impacts of the decommissioning phase of nuclear power. It is to be hoped that the specialist consultants evaluate all aspects of nuclear power against the viable alternatives at the outset and also do not pull a cover over future costs and impacts of decommissioning.

The specialist consultants are asked to provide a description of the affected environment. In the case of energy and electricity generation, the affected environment is the entire future shape of South African economy and the type of work and of industry that will prevail.To do justice to this, none of the impacts mentioned in the EIA study's terms of reference for the economic assessment (4.5.13 Economic. Pg. 25) can be assessed without an assessment of the alternatives. The following, not included in the EIA study, needs to be addressed:

- The make and type of nuclear plants proposed
- The cost
- Decommissioning and waste management impacts can not be excluded from assessment, as proposed in the present study, nor the costs.
- In the case of Duynefontien, the sterilisation of surrounding land for urban development and the opportunity cost of that must be evaluated.
- A comparative evaluation with renewable energy alternatives and alternative efficiency strategies.
- The opportunity cost of investing R320 billion and more into nuclear power plants and the resulting opportunity cost of associated nuclear-related industry, mining and servicing, security and public liability insurance and waivers and potential nuclear proliferation.

The specialist consultants must not be influenced by Eskom's threat to 'develop more coal-fired power stations' in the event of a no-go option.