

IRP INPUT PARAMETERS

S4: Renewable Energy - IRP 2010 Input Parameter

Parameter	Renewable Energy																		
Parameter Value	For the base case, the costs of renewable energy are included in the Generation Life Cycle Costs Input parameters. No additional limits or targets are modelled in the base case. The scenarios will speak to specific issues regarding renewable energy.																		
Rationale	<p>A review of the Renewable Energy White Paper is currently under way. In the absence of this finalised review, no targets are modelled in the base case.</p> <p>Sensitivities around the costs inputs for technologies will be tested using screen curves as an input to the final decision on these values.</p>																		
Responses to Public Inputs	<p>Ranges of capacity and energy output have been submitted – this pre-empts the output of the IRP and is not an input per se. If government policy requires a minimum capacity contribution from specific technologies – and these are not met by the IRP outputs – adjustments will be made to the final IRP to accommodate this.</p> <table border="1"> <thead> <tr> <th>Summary of specific comments</th><th>Response</th></tr> </thead> <tbody> <tr> <td>Generalisations regarding renewable energy is not logical, given the huge variety in options with different cost structures, capacities, etc. (90x2030, SASOL)</td><td>Noted. Each option is treated independently in the IRP model.</td></tr> <tr> <td>The IRP should not imply that renewable energy would be the sole domain of private generators. (90x2030)</td><td>Noted. 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	The parameter sheet is devoid of values, leaving stakeholders little opportunity to comment. (CIC) Without the finalisation of the REFIT framework, near-term scope for renewable energy playing any significant role in the supply mix seems limited. (CIC)	Noted.
	Renewable and nuclear energy are not mutually exclusive and both have a role to play in reducing the carbon footprint (Coega Development Corporation)	Noted.
	Smart grids should cope better with the variable nature of certain renewable (Coega Development Corporation)	Noted.
	A national audit on wind, wave, CSP, PV in terms of potential and location is required. (Coega Development Corporation)	Noted. A wind atlas is being developed but will not be ready in time for this IRP. Assumptions on potential and location will have to be made.
	Every reasonable endeavour should be made to meet or exceed the targets of LTMS by including the greatest possible percentage of renewable capacity in the IRP generation mix. (CSP Developers)	Noted.
	The positive effect of greater amounts of renewable energy as opposed to fossil fuels or nuclear in reducing exposure to fuel price fluctuations is an extremely important consideration. (CSP Developers, Energy Caucus)	Noted. This should be considered as part of the risk analysis in the criteria assessment.
	In principle, having purchased renewable energy at the REFIT tariff, any such carbon tax credits accrued are owned by SA and cannot be onward traded. (DoE TTT)	Noted.
	Subsidisation of renewable energy is extensively considered via the REFIT tariff but not considered in the IRP. (Energy Caucus)	Noted. The targets established for renewable energy and costs associated will indicate the level of subsidisation required.
	Wind can be reliable if wind farms are interconnected across a large number of locations. Thus for wind to be a reliable source of electricity it needs to be rolled out on a large scale. (Energy Caucus)	Noted.
	Of all technologies renewable energy provides the most jobs and nuclear energy the least. (Energy Caucus)	Noted. This will be included in the criteria assessment for each scenario.
	Technology learning should be included for renewable energy technologies (Energy Caucus, SASOL)	Maturity or learning curves will be included for all technologies based on the latest assessments.
	The target should not be treated as a cap, and should be limited only by affordability and technical issues. (IES)	Noted.
	Industrial waste (especially forest and sugar) continue to be ignored. Co-generation should be added to the mix. (IES)	Noted. The co-generation sheet (S6) provides additional information on this.
	Wind energy is variable not intermittent. System operators can and do develop systems and methodologies to predict the resource. (MainstRenPower, SAWEA, Windlab Developments SA)	Noted.
	Estimated increase in short term reserve requirements (from IEA review of case studies) indicate 1-15% of installed wind capacity at 10% penetration and 4-18% at 20% penetration. This increase does not necessarily mean additional investment. (MainstRenPower, SAWEA)	Noted. This may not increase the investment costs, but could have an impact on operation and fuel costs relating to possible reduced efficiency at other plant to provide the reserves.
	Power generation should follow a distributed power model where communities own and operate the power generation facilities that supply them. This plant must be emission free and not dependent on a finite fuel source. (Mbani Wesizwe)	Noted.
	International concerns regarding the exposure to wind suggests that the IRP should be evaluating the downside of wind generation, in particular the variability of wind, the need for back-up, the cost of imported equipment, limited improvement in SA employment, amongst others. (Private-BM)	Noted.
	Targets could be unrealistic due to shortcomings with implementing renewable energy as a result of legislative and regulatory impediments, including uncertainty regarding the REFIT process (Private-WB)	Noted.
	The grid can accommodate a low penetration of intermittent energy without substantially reinforcing it, but a higher percentage requires a massive investment in developing a smart grid (NIASA)	Noted.



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	Hydro power from central Africa is feasible but not within the current planning horizon. (NIASA)	Noted. See S8 for projects being considered in the IRP.
	Biomass production uses large areas of watered, arable land and competes with food production. Priority should be given to ethanol production for transportation fuel. (NIASA)	Noted.
	The erection of numerous wind turbine towers makes far heavier demands on natural resources than do conventional power stations, particularly in respect of the quantities of steel and concrete required (University of Stuttgart research). (NIASA)	Noted.
	Installation time must be considered. For example, it has been reported that there are in South Africa only two cranes capable of lifting wind-turbines high enough and that there are in the world only two maritime cranes large enough. (NIASA)	Noted. Assumptions regarding rollout potential for wind have been included.
	PV technologies provide the most ideal electricity generation source for augmenting the current grid in South Africa (SanVal Energy)	Noted. PV is included along with other options in the IRP.
	Solar irradiation profiles in the prime areas of SA fit very well with power consumption profiles, and can easily be extended to overlap peak demand periods via thermal storage. Hybridisation with gas could extent this even further. (SASOL)	Noted. Solar with storage is being modelled, but not with hybridisation with gas.
	The cost of nuclear or gas generated power should include a risk element regarding future fuel costs (SASOL)	Noted. This will be included in the portfolio risk assessment.
	Affordability of renewable energy should take into account social and economic benefits such as balance of payments benefits, stimulation of economy, energy security, amongst others (SASOL)	Noted. Much of this will be included in the portfolio risk or economic analysis as part of the criteria assessment between the scenarios.
	The proposed target is 25% penetration by 2025 and 30% by 2030. (SAWEA)	Noted.
	With geographically dispersed generation a 30000MW national wind capacity can provide minimum power output of 7000MW, displacing equivalent oil, coal and nuclear baseload (SAWEA)	Noted.
	Include the parameter of "time-to-completion" in the model with accurate representation of typical times to complete renewable projects. (Windlab Developments SA)	Lead times for all technologies are included in the model.