energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

D2: Gross Domestic Product (GDP) - IRP 2010 Input Parameter

Parameter

Gross Domestic Product (GDP)

Parameter Value

GDP - growth rate assumptions

Year	Moderate	High	Low	Year	Moderate	High	Low
2008	3.68	3.68	3.68	2022	4.90	5.90	3.90
2009	-1.70	-1.70	-1.70	2023	4.80	5.80	3.80
2010	2.50	3.50	1.50	2024	4.80	5.80	3.80
2011	3.70	4.70	2.70	2025	4.80	5.80	3.80
2012	4.00	5.00	3.00	2026	4.70	5.70	3.70
2013	4.00	5.00	3.00	2027	4.70	5.70	3.70
2014	4.00	5.00	3.00	2028	4.70	5.70	3.70
2015	4.50	5.50	3.50	2029	4.60	5.60	3.60
2016	5.00	6.00	4.00	2030	4.60	5.60	3.60
2017	5.00	6.00	4.00	2031	4.50	5.50	3.50
2018	5.00	6.00	4.00	2032	4.50	5.50	3.50
2019	5.00	6.00	4.00	2033	4.40	5.40	3.40
2020	5.00	6.00	4.00	2034	4.40	5.40	3.40
2021	4.90	5.90	3.90	2035	4.30	5.30	3.30

Rationale

The rationale for GDP growth is discussed in the System Operator forecast report (SO_IRP 2010 Energy Forecast Final Report.pdf).

The CSIR forecast report (CSIR_Model_IRPForecasts2010_Final_v2.pdf) provides the assumptions for the relevant sectors.

Responses to Public Inputs

Summary of specific comments	Response
GDP is a poor index of human development as it hides inequalities. Need to consider the Human Development Index (HDI), the GINI coefficient or the achievement of Millenium Development Goals. (90X2030, Energy Caucus, SusActMov)	Noted. The chief consideration here is how well GDP serves as an indicator of electricity demand. Research into the explanatory power of the HDI or the other indicators to electricity demand would be useful and could be incorporated in future IRP iterations.
GDP forecast up to date? (90X2030)	The forecast reflects the latest information as at Q1 2010.
Different sector production and/or income growth impacts differently on electricity demand (90X2030, CJN!-WC)	Agreed. The SO and CSIR forecasts both consider economic drivers from a sector basis – more detail is available in the adjoining reports.
"Suppressed demand" (90X2030, CJN!-WC)	The impact of "suppressed demand" has partially been included in the demand forecast assumptions with increased grid access to households, but this is unlikely to be to the full extent possible with rising income levels.
GDP expectations seem to be optimistic (CEF)	A cone of uncertainty is provided to deal with this.
Concept of surplus energy or Energy Return on Energy Invested (EROEI) should be taken into consideration (CEF)	Noted. This is important but has not been included in the discussions for IRP. Green-fields options are considered at historic EROEI.
Supply constraints in the short term may impact economic growth (CIC, Kuhumelala, Private - WB)	Noted. Supply constraints are important, but the method adopted for IRP was to assess demand without constraints in order to indicate where these constraints exist, and potential remedies. This would include the impact of electricity supply constraints on GDP.
National Planning Commission / Presidency should give input to the expected or targeted GDP growth over next 25 years; should be the parameter owner (DoE)	Noted. This is still outstanding.

IRP INPUT PARAMETERS

	Assuming stable temperature is a heroic assumption – climate change is likely to impact on future weather patterns. Should re-evaluate in line with rising temperatures (ELA)	Noted. Further analysis on climate impacts on the long term demand for electricity should be included in future iterations of the IRP.
	Natural gas as an alternative to electricity needs to be considered (ELA, Private – WB)	Noted. This will be raised with the integrated energy plan process underway.
	The extraction costs of minerals needs to adequately expressed, including but not limited to the costs of infrastructural expansion to extract those minerals. (ELA)	This seems to be more relevant to the generation life cycle costs (S9), and has limited impact on the GDP assumptions.
	Is the expected growth rate achievable and reasonable? (Private – AR)	The IRP should indicate whether this growth rate can be achieved from a capacity perspective. Other economic structural considerations or constraints are not considered.
	Other considerations need to be included, e.g. electricity prices, input costs of coal (Private – WB, SAWEA)	The issue of electricity prices is discussed in D5. The input costs of coal are covered under S9.
	Long term avg GDP growth should be 3% for moderate, with 2% and 4% for low and high (SAWEA)	Noted as an input, however recent history would suggest long term growth can exceed 3% consistently, given other constraints being removed. The low growth scenario above is consistent with this approach and would indicate the possible supply options required to meet the lower growth.