

AVOIDING DANGEROUS CLIMATE CHANGE 1-3 FEBRUARY 2005

IMPACTS TABLES

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1. AIMS

To produce a reasonably comprehensive assessment of the impacts of climate change for different levels of temperature change with respect to preindustrial temperatures, beginning with the observed changes at a 0.6C temperature change, and including as high temperature changes as the literature on impacts permits. A similar effort was made to gauge the impacts of various sea level rises and the rate of sea level rise.

Impacts were categorised into those affecting human systems, those affecting ecosystems and those affecting the earth system as a whole.

The policy context is to allow assessment of the benefits of stabilisation of greenhouse gases at different levels in the atmosphere, since this will alter the probabilities of reaching different levels of temperature change listed in the tables. The tables allow these different potential temperature changes to be associated with their respective likely impacts.

2. METHODOLOGY

A collection was made of the literature covering the impacts of climate change on (i) the earth system (ii) human systems and (iii) ecosystems. References were scanned for specific information about climate scenarios or thresholds in temperature change or rates of temperature change above which adverse consequences could be expected. Both qualitative and quantitative statements were included.

In order to make a useful compilation of the resultant information, it was necessary to convert all the studies to the same reference point. Two pieces of information were used to convert all studies to a reference point of preindustrial temperatures:

- (a) Preindustrial temperature is approximately 0.6C below present day temperatures and (b) the mean 1961-1990 temperature is approximately 0.3C below present day temperatures.
- (b) The table below, showing the HadCM3 simulations of global mean temperature changes for different SRES scenarios.

Information related to the impacts of sea level rise on human systems and ecosystems were presented separately to temperature impacts, although there is intentionally some overlap in the information presented in sea level rise and temperature tables.

Taken from Table 7: Projected changes in global mean temperature relative to the 1961-1990 mean, in Arnell et al 2004.

Year	IS92a	A1F1	A2a	A2B	A2C	B1	B2a	B2b
2020s	1.1	0.99	0.86	0.93	0.88	0.84	0.91	0.91

2050s	2.06	2.26	1.92	1.89	1.85	1.4	1.56	1.66
2080s	3.00	3.97	3.21	3.28	3.32	2.06	2.35	2.40

Where possible, the GCM used by the literature studies is also listed, since this affects the precipitation changes which are modelled to be associated with the temperature changes.

Supplementary tables for Fast Track results

Mar = additional millions of people affected compared to a scenario in which there is no climate change, only population growth

	IS92a	A1	B1	A2	B2
2025	~8200	7926	7926	8714	8036
2050	~9800	8709	8709	11778	9541
2075	~15200	7914	7914	14220	10235

Sea level rise and temperature were related using the following table taken from Parry 1999:

Temperature rise (HadCM3) since pre-indus	Year	Sea Level rise (total) relative to 1961-1990
0.6	1990	2.7 cm
1.5	2020	12.1
2.4	2050	24.1
3.4	2080	39.8