

The Ethics of Shortchanging Present Generations Comment on the Stern Review, Part 1

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One of the devices used by the Stern Review (SR) to show that the costs of climate change might reach 20 percent of global GDP is its use of low or declining discount rates which it justifies, in part, on the notion of intergenerational equity (SR, p. 23).¹ However, even if for the sake of argument one accepts the Stern Review's claim that GDP (or GDP per capita) would be reduced by such an amount, the numbers provided in the Review and the analytical sources that it relies upon indicate that *despite any climate change, future generations of both the developing and industrialized countries will be far better off than the present generations inhabiting these areas.*

That this is the case is shown in Table 1. Specifically, this table shows that under the richest-but-warmest (A1FI) scenario, "net" annual GDP per capita in the "developing" world, after accounting for a 20 percent loss in welfare due to climate change, would be over \$53,000 in 2100 compared to \$875 in 1990 (the base year used in the IPCC scenarios).² Under the poorest-but-less-warm (A2) scenario, the net annual GDP per capita for developing countries in 2100 would be \$9,500.

The Stern Review also suggests that per capita GDP losses due to climate change could total 35.2 percent in 2200 if one accounts for the risk of catastrophe, and market and non-market losses (SR, pp. 156 and 158). I will, for the sake of calculating a lower bound for the GDP per capita under climate change in 2100, assume that the losses would equal 40 percent in that year, that is, double the losses shown in Table 1. Even under this extreme assumption, the net GDP per capita for developing countries in 2100, ranging from \$8,015 under the A2 scenario to \$39,900 under the A1FI scenario, would substantially exceed the 1990 level of \$875. Notably, under the A1FI scenario, the average inhabitant of the developing world would be better off in 2100 than the average person in the industrialized world was in 1990 even if climate change losses amount to 78 percent of GDP.

¹ The 20 percent estimate considers both market and non-market impacts of climate change. It also assumes that climate sensitivity to greenhouse gases is high, and it weighs climate change consequences for the poor more heavily.

² I use market exchange rates (MXR) only because the data are readily available in terms of the MXR rather than purchasing power parity (PPP). The differences between current and future GDP per capita might have been lower had PPP-based rates been used, although given the wide gaps in GDP per capita projected between 2100 and 1990, the basic results of this analysis are unlikely to change. The GDP per capita figures for 1990 are taken from the World Resources Institute's *EarthTrends*, online at <http://earthtrends.wri.org/>.

Where do the numbers shown in Table 1 come from?

The unadjusted GDP per capita in the absence of climate change in 2100 for each IPCC scenario shown in the table are obtained from the DEFRA-sponsored “Fast Track Assessment” (FTA) of the global impacts of climate change. The FTA provided much of the basis for the Stern Review’s impact estimates (see SR, Box 3.2, p. 61). These estimates were driven by emission trajectories consistent with four major “storylines” used to develop the IPCC’s SRES scenarios.

Table 1: Future GDP per capita (in 1990 U.S. \$ at market exchange rates) for developing and industrialized countries in 2100, adjusted for losses due to climate change per Stern Review.

Year	1990	2100			
Scenario	Actual	A1FI	A2	B2	B1
Temperature increase in 2085 [°C]	—	4.0	3.3	2.4	2.1
Developing countries					
GDP per capita, no climate change	\$875	\$66,500	\$11,000	\$18,000	\$40,200
Cost of climate change*	- 0	- \$13,300	- \$1,493	- \$1,288	- \$2,165
Net GDP per capita, with climate change	\$875	\$53,200	\$9,507	\$16,712	\$38,035
Industrialized countries					
GDP per capita, no climate change	\$14,500	\$107,300	\$46,200	\$54,400	\$72,800
Cost of climate change*	- 0	- \$21,460	- \$6,269	- \$3,894	- \$3,920
Net GDP per capita, with climate change	\$14,500	\$85,840	\$39,931	\$50,506	\$68,880

* Assuming (a) climate change will reduce GDP by 20% for A1FI in 2100, per the Stern Review’s upper estimate in its Executive Summary, (b) for each scenario the cost of climate change in 2100 increases as the square of the temperature increase in 2085, and (c) the cost of climate change in 1990 is zero.

Sources: Warren (2006b), Arnell et al. (2004), WRI (2006); Stern Review (2006).

In Table 1, to calculate net GDP per capita, I adjusted the GDP per capita in 2100 downward to account for welfare losses due to climate change, assuming that these losses would, per the Review's conclusions, be as high as 20 percent for the warmest (A1FI) scenario if both market and non-market impacts are included in the losses (see SR, Executive Summary, p. x). Adjustments for the other scenarios are based on the assumption that losses due to climate change would increase quadratically with the increase in global temperature (as of 2085), as they were estimated by the HadCM3 model used for the Fast Track Assessment (FTA). I have assumed that the cost of climate change in 1990 (the base year used in the FTA) is zero. Using a non-zero cost would only reinforce the conclusions arrived at here.

Thus, by using low or declining discount rates, the Stern Review would have today's poorer generations subsidize tomorrow's much wealthier generations to make them even richer. In addition, because of the combination of greater wealth and secular advances in technology, future generations would have greater access to more sophisticated technologies to improve their health and otherwise advance their well-being, which, moreover, would enhance their capacity to cope not only with climate change but all other forms of adversity, despite a 20 percent (or greater) loss in GDP due to climate change. Accordingly, a wealth transfer from current to future generations (and a low discount rate) does not serve intergenerational equity. One must question the ethics of using low discount rates that would encourage withholding resources from today's poorer and less technologically advanced societies who suffer from numerous real poverty-related problems such as hunger, disease, unsafe water and poor sanitation in order to solve the less certain problems that may — or may not be — faced by tomorrow's richer and more technologically advanced societies.

Table 1 also illustrates a second point, namely, even with climate change, human well-being would be higher in the richest-but-warmest world characterized by the A1FI scenario than it would be under other scenarios (see also Goklany, 2005a). Moreover, for three of the four scenarios, on average the developing world will be better off in 2100 than the industrialized world is today, even after accounting for climate change. The A2 world — the scenario with the slowest growth — is the exception. Accordingly, results of the Stern Review suggest that at this time greater priority should be placed on sustainable economic growth for present generations, rather than reducing greenhouse gas emissions to benefit future, wealthier generations.

As shown elsewhere, in a piece titled "Living with global warming", this doesn't mean that nothing need be done about climate change now. That paper notes that climate change doesn't create new problems as much as it exacerbates existing ones, e.g., malaria, water shortage,

hunger and flooding (see, also, Lawson 2006). Moreover, the results of the FTA and its precursors reveal that through the foreseeable future the contribution of climate change to these problems is generally small compared to other non-climate-change-related factors (Goklany 2005b). These two features suggest that over the next few decades the focus of climate policy should be to: (a) broadly advance sustainable development, (b) reduce vulnerabilities to climate-sensitive problems that are urgent today and might be exacerbated by future climate change, and (c) implement “no-regret” policies, such as eliminating subsidies for energy consumption, land conversion and agricultural overproduction in developed countries, while (d) striving to expand the universe of such measures through research and development of cleaner and more affordable technologies, and (e) closely monitoring climate change and its impacts so that rational mid-course corrections can be devised, but without the hysteria accompanying the Stern Review.

Such a policy would help solve urgent problems facing humanity today while increasing its ability to address future problems that might be caused or heightened by climate change. As shown explicitly in the references furnished above, over the foreseeable future such an approach would provide greater benefits more rapidly than even *eliminating* further climate change. The bonus is that it would cost far less than the 1 percent of global GDP that the Stern Review estimates would be the cost of stabilization at 550 ppm.

References

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