Abstract. A simplistic aggregate model of global economic activity supports a 50-year visioning exercise with targets defined in terms of aggregate measures of global equity (convergence) and sustainability (contraction). Some ambitious combinations of these targets turn out to be infeasible even under the most favorable modeling assumptions. No contraction target (no reduction in fossil fuel consumption relative to the present) was possible, for example, if international capital transfers pushed per capita incomes in low-income countries above 33% of levels achieved in high-income countries. Lower prices for renewable alternatives to exhaustible resources generally made sustainability targets easier to achieve, but lower prices for renewable resources also made equity targets more difficult to achieve. Improved substitution between capital and labor made equity targets easier to achieve in relative terms, but improved substitution between capital and labor could make any given sustainability target more or less difficult to achieve. All the results suggest that it is possible to overstake the purported conflict between achieving sustainability and equity targets. The very transfers of international capital that would promote relative equity between high-income and low-income countries could also work to spread the incidence of achieving any sustainability target more evenly across their boundaries.

Key words: economic scenarios, equity, SRES scenarios, sustainability, visioning.

Authors contributing to the Third Assessment Report (TAR) of the Intergovernmental Panel on Climate Change (IPCC, 2001a,b) identified development, equity, and sustainability (DES) as key issues that would rise to the fore in an evolving debate over climate change and prospective climate policy. Indeed, the IPCC convened two expert meeting on the linkages between climate change and DES in Colombo, Sri Lanka (April 1999) and Havana, Cuba (February 2000) to explore the ramifications of a ‘cross-cutting’ paper authored by Munasinghe (2000). Now that the TAR has been published and planning has begun for the fourth assessment, however, it cannot be said that the integration of DES into the assessment process has been completed. Debate across disciplinary boundaries, across national and regional boundaries, and among scholars within the same disciplines continued throughout the entire TAR process, and they persist today. Issues of development, sustainability, and equity are never far from the surface of any substantive discussion within the IPCC, and this tension alone makes it clear that bringing them into the climate change landscape was the correct thing to do. Only if research communities
confront these issues directly and honestly will their assessments contribute policy relevant insight about DES to the climate negotiators.

The climate change literature is replete with studies that offer portraits of how the globe might evolve over the next century or two as a function of various alternative development scenarios. One need only consult the reports of Working Groups II and III in the TAR (IPCC, 2001a,b) or the companion Special Report on Emissions Scenarios (SRES; IPCC, 2000) to catch a glimpse of this literature and to find careful assessments of its component studies. In most cases, however, researchers have approached issues of equity and sustainability off-line after they have designed their models and formulated their scenarios. It is not difficult to apply standard analytic tools from disciplines like economics in an ‘after the fact’ examination of the international or intranational equity implications of their results; see, for example, Yohe et al. (2000). Nor is it difficult to apply similarly standard tools to track the underlying sustainability of any projected future; see, for example, Goodland and Daly (1996). But are these efforts enough? Will employing ex post paradigms allow us to learn enough to achieve, in the words of Malone (1997), a future that will be “environmentally sustainable, economically prosperous and equitable”?

Munasinghe’s cross-cutting paper was, among other things, a comprehensive critique of this ex post approach. He argued persuasively that “after-the-fact” approaches are insufficient to handle issues as fundamental as equity and sustainability, particularly when it is impossible to ascertain probabilities and confidence intervals for critical driving variables, when the underlying paradigms focus on marginal changes, and especially when both issues are confronted simultaneously. In his view, equity and sustainability are such important components of future life on the planet that they should be goals in and of themselves. Malone (1997) makes this point, as well, by asking that we envision a future in which “all of the basic human needs and an equitable share of human wants” be met in a sustainable future. If we cannot envision such a future, then we cannot work with any degree of confidence toward a future that will be “socially stable”.

Munasinghe (2000, p. 13) argued that much of the mainstream development literature has barely mentioned the environment despite the obvious point that “ignoring ecological limits will increase the risk of undermining long-run prospects for economic growth”. He cites survey articles by Stern (1989) and Temple (1999) to provide evidence of this point. Indeed, Temple’s conclusions speak to many sources of difficulty in trying to understand why international convergence has been so slow (or even non-existent); but none of his reasons relate to issues of the environment or to issues of environmental policy designed to achieve long-term sustainability vis-a-vis an exhaustible resource. Solow (1991), Constanza (1999), and many others have contributed to a parallel literature on sustainable development, of course; but debates in that literature center on identifying the type of (natural) capital to be maintained and on defining the standards with which to measure that maintenance and not on the equity implications of achieving long-term sustainability. Even contributions like Thompson and Rayner (1998) wherein equity and sustainability were