

## **Exalted Economic Development Needs Expeditious Exigence on Climatic Changes**

**Dr. G. Indira PriyaDarsini<sup>1</sup>**

<sup>1</sup> (*Academic Consultant, Dept of Law, Sri Padmavathi Mahila Viswavidyalayam(women's University), Tirupati, Andhra Pradesh, India*)

### **I. Introduction:**

*"We can't continue to think that we can wake up from this crisis and hope that the world will be the same old brown economy of past,"*

***Dr Norman***

Environmental protection is now perceived as an essential part of the process of socio-economic development and an integral feature of international law. International environmental law, in particular, has elaborated various rules and principles for promoting sustainable development. These norms are codified in conventions, guidelines, and declarative texts. Use of the term sustainable development in these instruments has enriched legal and policy dialogue and in some respects, has modified responsibilities and behavior.<sup>1</sup>

Paragraph 6 of the 1995 Copenhagen Declaration on Social Development expresses these interconnections. It states:

We are deeply convinced that economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development, which is the framework for our efforts to achieve a higher quality of life for all people. . . .<sup>2</sup>

Despite the Copenhagen Declaration's advance in defining the term, sustainable development frequently means different things to different people. One of the most oft-quoted definitions is from Our Common Future (also known as the Brundtland Report), which defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."<sup>3</sup>

In addition to policy integration and concern for future generations, the Brundtland Report's vision of sustainable development contains within it two other key concepts: "the concept of "needs," in particular, the essential needs of the world's poor to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."<sup>4</sup> Some argue that sustainable development should also include the following components:

- efficient resource allocation to meet basic human needs;
- equitable and just allocation of resources and benefits arising from their use;
- ecological sustainability – maintaining the long-term viability of supporting ecosystems;
- social sustainability – fulfilling people's cultural, material, and spiritual needs in equitable ways;
- increased accountability in institutions of governance;
- increased and meaningful public participation;
- strengthening of local democracy;
- focus on environmental rights;
- economic viability; and finally,
- greater sensitivity to conditions in the Global South.<sup>5</sup>

The concept of sustainable development described in the proceedings of a 1999 Seminar of the Organisation for Economic Co-operation and Development (OECD) on Social and

Environmental Interfaces focuses on the quality of human life now and in the future. The report stressed:

If the primary goals of environmentally sustainable development are freedom from poverty, secure livelihoods, good health and quality of life, then socially responsible development has to deal with such needs as food, basic housing, access to good water, health care (especially for children and older members of society), sanitation, education, energy in the form of fuel, transport, etc.<sup>6</sup>

According to the World Conservation Union, sustainable development means achieving a quality of life (or standard of living) that can be maintained for many generations because it is:

- socially desirable, fulfilling people's cultural, material, and spiritual needs in equitable ways;

- economically viable, paying for itself, with costs not exceeding income; and
- ecologically sustainable, maintaining the long-term viability of supporting ecosystems.<sup>7</sup>

### **Economics of Climate Change:**

Climate change is a serious threat to development in developing countries around the world. The direct effects of changes in the climate are already seen as, flooding, extreme and unpredictable weather. These effects are devastating for poor and vulnerable communities who lack the capacities and abilities to cope and adapt to new circumstances. However, developing countries are affected by climate change in yet another way, through limitations in their possibilities for future development and economic growth. Traditional development is linked to industrialization, which urgently needs to be transformed to a climate friendly and sustainable development.

### **Effects of climatic changes**

- A rise in sea level of about 50 cm by 2100.
- A progressive increase in temperature: an increased occurrence of very hot days, and a decrease in very cold days
- An intensification of the global hydrological cycle, with altered global pattern of floods and droughts
- Direct effects of climatic change are relatively easy to assess.
- Sea-level rise, with population displacement and damage to infrastructure
- Altered frequency of extreme events (deaths, injuries and psychological disorders)
- Exposure to thermal extremes (altered rates of heat and cold-related illness and death)
- Indirect effects of climatic change are more difficult to assess, but expected to predominate
- Altered local ecology of water-borne and food-borne infective agents
- Altered food production due to change in the local climate
- Effects on the range and activity of vectors and infective parasites
- Social, economic and demographic dislocations due to adverse climatic change impacts on economy, infrastructure, and resources

The Pew Center's research found that the ultimate achievement related to climate is a game-changing strategy that allows a company to jump ahead of competitors by creating new markets or reshaping the rules of existing markets in their favor – for climate this means reshaping policy. And such strategies are beginning to emerge. GE and BP are working together to develop up to 15 clean-burning fossil-fuel based power plants that will separate and burn hydrogen while capturing and piping the resulting carbon dioxide into either deep geologic formations or existing oil wells to boost petroleum production. At the same time, BP is also partnering with DuPont to produce biobutanol, a biologically-derived, lower carbon transportation fuel that could replace ethanol for a wide-range of applications in the economy for significant market segments.

The consequences of climate change policy will be most severe for those who do nothing to prepare for it today. By engaging in the policy debate now, firms will help shape the carbon-constrained future in which they will operate. And while there is undoubtedly risk from climate regulation, there is also a great opportunity for the U.S. manufacturing sector to lead the world in producing new climate-friendly products and technologies, thereby helping not only the climate, but also the top and bottom lines.<sup>8</sup>

The Stockholm conference on “Climate change, trade and standardisation – in a development perspective” showed, that international standards, used in a proper way, can contribute in the fight against climate change, have a potential to foster trade with climate-friendly technology and could be an engine for economic growth in developing countries. However, there are many challenges for developing countries, their standard setters and stakeholders turning international standards to become a global tool for climate and development objectives.<sup>9</sup>

Free markets place little value on Earth's atmosphere and thereby place little value on efforts to decrease greenhouse gas emissions. Governmental policies that would raise the price of greenhouse gas emissions, such as an emissions tax or a cap-and-trade system would stimulate technological change in this area. The United States and most of the world, however, have delayed implementing such policies. Thus, policy-induced technology change has been slower than is socially desirable.<sup>10</sup> Fortunately, governments—even those that balk at implementing climate change policies—have found it politically expedient to fund climate-related research and development and to push adoption of energy-efficient technologies. This includes research grants or contracts to public institutions and general tax credits or matching funds to firms who undertake research in this area or who adopt these technologies. The U.S. National Science Foundation, for example, currently allocates over \$1 billion to study global climate change. The U.S. National Academy of Sciences conducted a cost-benefit analysis of the research funded by the U.S. Department of Energy in the areas of fossil energy and energy efficiency (National Research Council 2001). This research played an important role in many important

technological innovations from 1978 to 2000 (Table 10.6). In the area of fossil energy, innovations such as advances in atmospheric fluidized bed combustion and nitrogen oxide controls to decrease air pollution required research expenditures totaling \$10.5 billion, but realized economic benefits of \$10.8 billion and environmental benefits of \$60 billion (in year 1999 U.S. Dollars). In the energy efficiency area, innovations such as advances in compressors for refrigerators and freezers, energy-efficient electronic ballasts for fluorescent lighting, and better-insulating window glass spent \$7 billion for research, but realized \$30 billion in economic benefits. The pace of technological innovation can be breathtaking. For example, light output from a single light emitting diode (LED) lamp doubles every 2 years, cost per light output halves every 3 years, and luminous efficacy doubles every 6 years. Energy efficiency of refrigerators doubles every 15 years. Fuel efficiencies of vehicles per unit weight and coal-fired power plants improve steadily. Nonetheless, slow turnover of equipment or facilities tempers the overall rate of technological change and highlight some of the uncertainties about the rate of technological change that confound cost-benefit analyses of environmental projects.<sup>11</sup>

The 2007 Stern Review on the Economics of Climate Change, written by Lord Nicholas Stern for the use of the British government, is arguably one of the most cited reports on the economic risks of climate change. In fact, Great Britain's then-Prime Minister Tony Blair boldly lauded the Stern Review as "the most important report on the future ever published by this government."<sup>12</sup> However, the research is vehemently disputed by numerous economists, including Richard Tol, the lead writer for the Intergovernmental Panel on Climate Change, who claims Stern vastly overstated the economic risks of global warming.<sup>13</sup> Stern's research concludes that without a response to climate change, global warming would cost nearly 5 percent of global GDP per year. Tol argues that Stern's empirical analysis was fraught with elementary economic mistakes and receives support from Robert Mendelson, a celebrated economist from Yale University who argues that not only did Stern overestimate the cost of global warming but he also underestimates the costs of implementing an emissions reduction strategy.<sup>14</sup> Certainly, Stern's work is not without its supporters: many Nobel Prize-winning economists have expressed their backing for Lord Stern's findings including, Joseph Stiglitz, Robert Solow, and Amartya Sen,<sup>15</sup> however, despite economic luminaries on both sides, the lack of consensus on the economic risks of climate change has produced a striking range in cost estimates. Economists Warwick McKibbin and Peter Wilcoxon highlighted the momentous uncertainty best: "The most comprehensive study to date is [the] IPCC [2001], which surveyed the literature and reached several conclusions that are most notable for their uncertainty. The...impact of a small increase in global temperatures could be 'plus or minus a few percent of world GDP.' To put that in context, the IPCC's estimate of world [GDP] in 2050 is \$USD 59 to 187 trillion, so if a 'a few percent' might mean 3 percent, the global damages from climate could be plus or minus \$5.6 trillion, or about the entire GDP of the United States in 1990."<sup>16</sup> Similarly, international institutions have produced an array of estimates for both mitigation and adaptation strategies. For instance, regarding mitigation, the Conference of Parties (COP), developed under the United Nations Framework Convention on Climate Change (UNFCCC), estimates costs for mitigation at between \$200-\$210 billion/year while the International Energy Agency (IEA) predicts costs between \$400 and \$1,100 billion/year; the OECD's Environmental Outlook to 2030 estimates costs between \$350 and \$3,000 billion/year; and the IPCC's most recent assessment in November of 2007 ranges between a 5.5 percent loss to a 1 percent gain in global GDP<sup>17</sup> (equaling between a \$3.3 trillion loss to a \$600 billion gain per year, by the World Bank's 2007 estimates).<sup>18</sup> Estimated costs of adaptation range similarly, albeit on a smaller scale: the UNFCCC estimates adaptation costs between \$28-67 billion in 2030, while the UNDP predicts a cost of \$86 billion by 2016.<sup>19</sup> Such uncertainty and staggering discrepancies in estimates without further research inhibits the capacity of policy makers to make effective decisions, resulting in policies that are inadequate or, more likely, highly expensive and wasteful.

### **Developing Nations Economy and Climate Changes:**

Not lost in the debate over effective climate change mitigation are the disproportionate risks facing the poorest nations, particularly in Africa, parts of Latin America and the Caribbean, portions of Southeast Asia, and the Pacific island nations. Threats include the melting of ice caps and glaciers, leading to rising water levels and increased floods, more violent hurricanes, typhoons, and tsunamis, and increasing inconsistencies in natural weather patterns causing irregular rainfall variation, droughts, fires, and heat waves. Africa will experience significant impacts from climate change. Indeed, its size, population and poverty may make it the "ground zero in a warming world."<sup>20</sup> In Africa, agricultural yields may decline by as much as 50 percent by 2020. One quarter of Africa's population is under high-water stress and this number is projected to grow to between 75 and 250 million people by 2020. Low-lying coastal areas are in direct risk of flooding from rising sea levels.<sup>21</sup> Similarly, in poverty ravaged Bangladesh, cyclone Sidr in 2007, recently Lila in India, forced millions of people into food and water insecurity and malnutrition, not accounting for the thousands who perished during the super-storm.<sup>22</sup> The plight of sparsely populated low-lying Pacific and Caribbean nations is rarely heard; however, the island nations are critically vulnerable to rising sea-levels, storm surges, flooding and tsunamis. The danger is such that leaders from Pacific nations are already arranging migration agreements with developed neighbors Australia and

New Zealand.<sup>23</sup> The inconspicuous injustice of global warming is that most nations critically at risk from climate change effects have contributed very little in harmful emissions. In fact, most efforts in such nations focus on rudimentary development and not industrialization; therefore, climate change mitigation for nations like Nicaragua, Togo, and Samoa will have little global impact, and any endeavors should concentrate on adaptation strategies while maintaining development efforts and poverty-reduction endeavors. Alas, until recently, international climate change policies seldom stress adaptation strategies<sup>24</sup> and focus mostly on mitigation.<sup>25</sup> Although embracing adaptation technologies requires the admission that global warming is, in fact, a very real danger (perhaps part of the reason adaptation strategies have not been appropriately elaborated), technology transfer for adaptation measures are feasible and cost effective; Oxfam International, an organization concerned with alleviating millions from poverty, predicts that immediate-priority adaptation measures will cost between \$8 and \$33 billion.<sup>26</sup> By recognizing the danger while simultaneously ignoring adaptation measures, policy makers threaten global security. Jones et al. overtly contend that “a warmer world will be a more violent one” as displacement and climate change related migration “[exacerbate] the hardship and suffering that can breed despair and chaos.”<sup>27</sup> Adaptation efforts like reforestation, water management, and coastal management are all inexpensive and feasible strategies that can reduce future social, economic and political turmoil. Furthermore, the authors assert that although climate change adaptation strategies are imperative to LDC and poor developing countries, forcing climate change mitigation upon them to the detriment of economic development is presumptuous, disadvantageous and counterproductive.

## **II. Conclusion:**

Living within a challenging climate change boundary can often seem overwhelmingly difficult. There is no single treaty or technological “silver bullet” that will quickly and painlessly transform contemporary society. A transformation to a society living within the climate change boundary will take time and will require commitment from all levels and members of society. As a starting point, long-term targets for emission reductions are essential if society wishes to reduce the risk of dangerous climate change to acceptable levels. Trajectories provide guideposts along the way to meeting the targets, but there are many possible pathways that humanity could follow which would allow it to remain within the overall climate change boundary. Thus, in 2009 society cannot precisely determine the “right” or the “best” pathway all the way to 2050 and beyond. There will be technological, societal and value changes in the future that will cause the trajectory to change. There should be no penalty for not getting it absolutely right the first time. The most important task is to start the journey now. The first steps are to generate a broad dialogue at all levels of society and to build a consensus on the need to act. Quite probably, when it comes to responding to human-made climate change, the “only action that is inexcusable is to take no action at all”.<sup>28</sup>

Referring to the growing debate on climate change, at the inaugural function of the 94th session of the Indian Science Congress Prime Minister Manmohan Singh reiterated that developed countries must bear more responsibility in meeting the challenges of climate change and promoting sustainable development by altering their consumption patterns. The “developing world cannot accept a freeze on global inequity.” The measures the global community took to protect the environment and deal with climate change should be equitable in their impact on the development prospect of the developing countries.

The year 2007 witnessed unprecedented momentum on the issue of climate change. The publication of the “Stern Review on the Economics of Climate Change” in late 2006 attracted wide attention in early 2007 by policymakers in both developed and developing countries, as the review concluded that costs of inaction in addressing climate change would be several times higher than the costs of action (Stern 2007).<sup>29</sup>

The climatic change challenges can be met by both developing and developed countries with commitment. Global environment if not protected timely with care and conscience leads to haphazard climatic changes inturn lead to disasters. Disasters dismantle economic development especially the developing economy. For example: Indian economy (specifically latest disasters in the state of Andhra Pradesh in India). Thus exalted economic development needs expeditious exigence on climatic changes.

---

## **References:**

- [1]. Gregory Maggio and Owen J. Lynch. Human Rights, Environment, and Economic Development: Existing and Emerging Standards in International Law and Global Society, report prepared for the Earth Council, Costa Rica and the World Resources Institute (1996), available at [http://www.omced.org/wri/om\\_wri.htm](http://www.omced.org/wri/om_wri.htm).
- [2]. Copenhagen Declaration, World Summit on Social Development, 1995, Copenhagen, Denmark, U.N. Doc A/CONF.166/7/Annex (1995), available at <http://www.un.org/esa/socdev/wssd/>.
- [3]. World Commission on Environment and Development (WCED), Our Common Future, 3 (Oxford University Press, 1987).
- [4]. Id. 3.
- [5]. For more information, see: <http://www.sd-commission.gov.uk/events/apr01/unpack/>.
- [6]. OECD Seminar Social and Environmental Interface Proceedings, ENV/EPOC/GEP (99) 13, (September 22-24, 1999), available at [http://www.oilis.oecd.org/olis/1999doc.nsf/LinkTo/env-epoc-gep\(99\)13](http://www.oilis.oecd.org/olis/1999doc.nsf/LinkTo/env-epoc-gep(99)13) [hereinafter OECD Seminar].

- [7]. IUCN-World Conservation Union, Guide to Preparing and Implementing National Sustainable Development Strategies and Other Multi-sectoral Environment and Development Strategies, prepared by the IUCN's Commission on Environmental Strategies Working Group on Strategies for Sustainability, the IUCN Secretariat and the Environmental Planning Group of the International Institute for Environment and Development, pre-publication draft, 1993.
- [8]. A Climate Of Change Vol:10 | Issue:4 **PEW CENTER ON GLOBAL CLIMATE CHANGE** visit [www.pewclimate.org](http://www.pewclimate.org)
- [9]. Fredric Stany, SIS and Anna Sabelström Report: Stockholm conference on "Climate Change, Trade and Standardisation – in a development perspective" (CCTS), National Board of Trade 23-25 November, 2009
- [10]. Newell, R. G., A. B. Jaffe, and R. N. Stavins (2006) The effects of economic and policy incentives on carbon mitigation technologies. *Energy Economics* 28:563-578 doi:10.1016/j.eneco.2006.07.004.
- [11]. Arnold J Bloom (Lead Author);David Hassenzahl PhD (Topic Editor) "Technological Change in Economic Models". In: Encyclopedia of Earth. Eds. Cutler J. Cleveland (Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment). [First published in the Encyclopedia of Earth December 18, 2010; Last revised Date January 6, 2011; Retrieved January 23, 2011 <[http://www.eoearth.org/article/Technological\\_Change\\_in\\_Economic\\_Models?topic=54261](http://www.eoearth.org/article/Technological_Change_in_Economic_Models?topic=54261)>, Dr. Charles Ebinger, Govinda Avasarala, Energy Security Initiative at BROOKINGS, TRANSFERRING ENVIRONMENTALLY SOUND TECHNOLOGIES IN AN INTELLECTUAL PROPERTYFRIENDLYFRAMEWORK, NOVEMBER 2009 Policy Brief 09-07
- [12]. 4 Simon Cox and Richard Vardon. "Running the Rule over Stern's Numbers." BBC News. <<http://news.bbc.co.uk/2/hi/science/nature/6295021.stm>>.
- [13]. Ibid.
- [14]. Ibid.
- [15]. HM Treasury, *Responses to the Stern Review by Leading Economists*.<[http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/d/20061028\\_Quotes-7.pdf](http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/d/20061028_Quotes-7.pdf)>.
- [16]. Warwick J. McKibbin and Peter J. Wilcoxon, *Climate Change Policy after Kyoto: Blueprint for a Realistic Approach* (Washington D.C.:Brookings Institution Press, 2002), p.42.
- [17]. The World Bank Group. "Development and Climate Change: A Strategic Framework for the World Bank Group." 2008. <<http://siteresources.worldbank.org/EXTCC/Resources/FullFrameworkDocument1212008Book.pdf>>.
- [18]. World Bank, "World Bank Development Indicators," July 1, 2009.
- [19]. The World Bank Group. "Development and Climate Change: A Strategic Framework for the World Bank Group." 2008. <<http://siteresources.worldbank.org/EXTCC/Resources/FullFrameworkDocument1212008Book.pdf>>.
- [20]. Abigail Jones, Vinca LaFleur, and Nigel Purvis. "Double Jeopardy: What the Climate Crisis Means for the Poor," in *Climate Change and Global Poverty: A Billion Lives in the Balance?* eds. Lael Brainard, Abigail Jones, and Nigel Purvis (Washington D.C.: Brookings Institution Press, 2009), p.13.
- [21]. Ibid.
- [22]. Atiq Rahman. "Integrating Climate Change into Development: Multiple Benefits of Mitigation and Adaptation," *Climate Change and Global Poverty: A Billion Lives in the Balance?* eds. Lael Brainard, Abigail Jones, and Nigel Purvis (Washington D.C.: Brookings Institution Press, 2009), p.113.
- [23]. Stephen de Tarczynski, "Climate Change Refugees Look to Australia, N.Z.," *Inter-Press Service News Agency*, September 1, 2008. <<http://ipsnews.net/news.asp?idnews=43743>>.
- [24]. Elliot Diring. "Toward a New International Climate Change Agreement," *Climate Change and Global Poverty: A Billion Lives in the Balance?*eds. Lael Brainard, Abigail Jones, and Nigel Purvis (Washington D.C.: Brookings Institution Press, 2009), p.73.
- [25]. The UNFCCC has begun allocating appropriate attention to adaptation needs. UNFCCC, 2009. Ad-hoc Working Group on Long-term Cooperative Action Under the Convention, September 17, 2009. *Ideas and proposals on the elements contained in the paragraph 1 of the Bali Action Plan: Submissions from Parties*, U.N. Doc FCCC/AWGLCA/2009/MISC.6. United Nations, New York.
- [26]. The World Bank Group. "Development and Climate Change: A Strategic Framework for the World Bank Group." 2008.
- [27]. Even if Oxfam's predictions may be underestimating adaptation costs, all cost predictions for adaptation measures are less expensive than mitigation costs. The previous section on cost uncertainties detailed adaptations costs as well as mitigation costs, and in each case adaptation costs are less expensive.
- [28]. Lynch, A., 2009: Plenary presentation at the International Scientific Congress on Climate Change 2009. Available online at: <http://climatecongress.ku.dk/presentations/congresspresentations/>
- [29]. Stern, N. 2007. The economics of climate change: The Stern Review. London: Cabinet Office, HM Treasury, 2007.
- [30]. WI (Worldwatch Institute). 2007. Vital Signs 2007-2008. Washington DC: WI.