

Ethics of International Action on Climate Change: How Would Mahatma Gandhi Have Looked at it?

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1 Moral Irony of Climate Change

There is a broad scientific consensus in the world about Earth warming due to climate change and even on its diagnosis that this has been mostly due to increase in the concentration of man-made Green House Gases (GHGs) in the Earth's atmosphere. There is an equally strong consensus that continued emission of GHGs, including CO₂ at the present rate, will only accelerate climate change and its impacts more than in the past. These impacts include increased frequency and intensity of floods and droughts, mounting uncertainties in agriculture, a long term tendency of rising scarcity of drinking water, desertification and land degradation, a rise in the sea level possibly leading to submergence of coastal areas and small island nations, massive migration, heightened incidence of diseases, and so on.¹ All this will make the task of economic development harder still for developing countries. In India, the implications of the melting of Himalayan glaciers are extremely dismal for future prospects of development and even for day to day living, and the present rates of economic growth would then be hardly sustainable. It would, therefore, be ironical to say (and act on it) that we need to give priority to economic development over controlling climate change. Equally ironical would be to take a stand that we continue to focus on economic growth on a (almost) business-as-usual basis on the ground that we need economic growth to reduce poverty and unemployment. While the distributional impacts of economic growth on the basis of business-as-usual policy are dubious for the poor, with some percolation or fringe benefits for them, if at all, the adverse impacts of climate change resulting from such growth will certainly be much harsher on the poor than

¹ Among several sources, see at least: Reports of the Intergovernmental Panel on Climate Change (IPCC) 2001 and 2007, Geneva: IPCC; International Scientific Steering Committee (2005); World Bank (2010).

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on others. Declining agricultural productivity, increasing uncertainties in agriculture, deforestation, floods and droughts, scarcity of drinking water, submergence of vast areas by rising levels of the sea—these are all consequences which directly hit the poor hardest. Deprivation and destitution that may increase with climate change reverse any gains from economic growth and can hardly be treated with complacency. Continuing a policy of focusing on economic growth on the basis of ... business-as-usual, in the name of reducing poverty and unemployment, would amount to disowning one's moral responsibility for the consequences of own acts (present or past), betraying blind audacity. Thus, it violates a basic ethical principle, irrespective of whether it is done by developed or developing countries. Ethical principles are for all. They bear no exceptions.

To characterize, however, any countries' stand on climate change as negative and obsessed only with economic growth to the neglect of consequences of climate change, would be misleading. It is worthwhile first discussing the stand taken by different groups of countries and their moral justification for it in the international conferences on climate change. India's stand receives special attention here. India has been fairly consistent, though not rigid, in its stand at various international conferences on climate change, in particular, and environment, in general, right from the Stockholm Conference on Environment and Development in 1972. Indira Gandhi, the then Prime Minister of India, made it clear that India would not sacrifice the goal of economic development for the sake of environment, since its priority was to remove poverty through development. She asserted that poverty was the worst form of pollution, to be attended to more urgently than industrial pollution. The essence of her stand was that environmental problems could not be looked at or treated in isolation from the development context of respective countries. Right to a greater share in development space is linked with the right to equitable share in ecological space, in the context of low levels of development associated strongly with low levels of per capita emissions. Inequitable appropriation of ecological space can constrain development space where it is most needed and imposes the burden of ecological costs on shoulders least able to bear them. The emphasis on equity, therefore, is crucial. In contrast, the developed countries looked obsessed with environment as the most urgent issue, at least as far as the action to be taken by developing countries is concerned, while trying jealously to safeguard their own development gains and also their admittedly vast share in ecological space. For them the urgency of action on the environment front was more important than the issue of equity. Though Mrs. Gandhi sounded rhetorical, she deserves the credit for ushering in several measures with all seriousness, soon after returning from Stockholm, both in terms of legislations and institution building to prevent and control industrial pollution of both air and water. The 1970s were conspicuous for initiating an organized, institutionalized and comprehensive tackling of environmental problems in India, including starting the Ministry of Environment, combing it with that of Forests. Indira Gandhi set a role model for other developing countries in this regard.

By 1985, with the popular acceptance of Brundtland Commission (World Commission on Environment and Development) Report, *Our Common Future*, the

perception regarding a conflict between environment and development changed to a philosophy of Sustainable Development, seeking to reconcile the two, without adverse impacts on reducing poverty. The popularity of this philosophy was no less in developing countries than in the developed. The UN Conference on Environment and Development at Rio de Janeiro in 1992 affirmed this principle of sustainable development in its Declaration, and the UN Framework Convention on Climate Change was adopted. The principle of common but differential responsibilities was accepted. Also, at the Rio Summit, while India showed its openness and willingness to adopt measures for mitigating climate change and its effects, it insisted at the same time that such measures voluntarily taken should not be made legally binding for developing countries. In the bargain, measures that found acceptance at the Rio Summit were not legally binding for any, including Agenda 21 which prescribed concrete guidelines at the local and national levels to meet global concerns (Damodaran 2010: 135, 285). However, participant countries committed themselves to have appropriate legislations and implement them, and this commitment had a great moral force.

In the meanwhile, in 1987, the Montreal Protocol on Ozone Depleting Substances was adopted. Under this, developed countries were expected to phase out CFCs that depleted ozone by January 1, 1996 and the developing countries by 2006. However, India, China and Brazil signed the protocol only in 1990 after provisions were made for a multilateral fund to assist developing countries to change over to safer alternatives to CFCs, as they involved higher costs. Interestingly, this meant the acceptance of the universally honoured 'Polluter Pays Principle' by implication. The developed countries had, by using CFCs, caused significant damage to ozone layer already, making it urgent for all countries to give up CFCs. It would not have been fair to ask developing countries now to share this moral responsibility without assistance. Besides, developed countries already had developed alternatives to CFCs, while developing countries were still dependent on them (Gupta 2000: 256–8). The moral strength of the stand taken up by the developing countries, thus, became obvious to developed countries.

Regarding climate change, also, the same moral issue was involved from India's standpoint, as also that of other developing countries like Brazil and China. The issue was who created the problem in the first place and how to allocate moral responsibility of mitigating it along with costs of doing so. In India's view, this was a major issue of equity and the logic required the application of Polluter Pays Principle. This issue was brought up conspicuously by the Centre for Science and Environment, New Delhi, and its founder—Anil Agarwal and his colleague, Sunita Narain, as early as around 1990. Their views greatly influenced the Government's stand too at the international forums on climate change. They argued that the problem of climate change was created in the first instance by the developed countries. They enjoyed the benefits of high economic growth without paying for its ecological costs. On the other hand, the developing countries needed ecological space to grow and develop. It would, therefore, be unfair to impose mitigation responsibilities equally on both types of countries. Pointing out at much higher per capita emission rates in developed countries, these two eminent environmental

thinkers-cum-activists argued the case for assigning carbon emission rights on the basis of population size of different countries as on a historical date (so that there is no incentive to increase population size) and carbon trading between countries with a deficit of such rights and countries with a surplus. This would provide an incentive to save on carbon emission on both types of countries and contribute to creating a greener world. They insisted that carbon rights allotments should be based on equity and human rights, and not on the present level of carbon space appropriated without paying its costs (Agarwal and Narain 1991, 1992). Carbon trading can make developed countries, which are expected to have a deficit, to pay for their carbon emissions, satisfying to an extent the Polluter Pays Principle. Carbon trading also could generate revenues from the sale of surplus rights for developing countries, which could help them to adopt cleaner technologies and less carbon (and GHG)-intensive development. Carbon trading, however, is not without problems, including moral problems, as we shall be discussing later.

The Rio Summit, it may be recalled, had urged developed countries to reduce their emission levels to the level in 1990 by the year 2000, and also to help developing countries financially and technically in achieving the common goal of containing global emission levels. This induced some developed countries to take up 'joint implementation' with developing countries, under which the former claimed credit for reducing emissions, though it was actually achieved in developing countries. Developing countries, including India, protested against this as 'fraudulent and dishonest', involving export of sacrifices of developing countries to the developed. It actually led to increased emissions in the developed countries, instead of reducing them (Gupta 2000). It was felt that there ought to be legally clear and binding commitments, so as to make GHG emission cuts more effective.

2 Kyoto 1997 and After

The Kyoto Protocol of 1997 tried to achieve this to some extent, but did not go far enough. Under this Protocol, the Annexure-1 countries (developed countries) had the legally binding responsibility for mitigating GHG emissions, such that the average reduction of 5.2 % from the 1990 levels by the year 2012 would be achieved on the whole. The other countries (developing countries) were under no such obligation. The developed countries had varying targets. For example, Germany agreed to cuts by 21 %, and Great Britain by up to 12.5 % over 1990 levels. Russia and Ukraine agreed only to stabilize. USA refused to any cuts or any binding commitments, and did not sign the Protocol. It was opposed to the very principle of differential responsibility in achieving a common goal, and declined to accept any guilt for the historical emissions. The Protocol devised a flexible mechanism to meet the commitments made. To avoid controversies about Joint Implementation, a multilateral Clean Development Fund was set up under the Protocol to enable investment in developing countries in return for emission credits. Joint Implementation was allowed between developed countries, and so

also trading emission reduction allowances amongst them. But the allocation of emission allowances was based on 'grand-fathering' rather than on the principle of equity; that is, allowances were derived from their current levels of emissions. This was not what India and other developing countries were arguing and struggling for. Moreover, allowing carbon trading among developed countries only meant allotting property rights on environment only to these countries, and not developing countries. This again grossly defied the principle of equity. Further, in the Clean Development Mechanism, India did not want to be seen only as a follower of or dependent on technologies of developed countries, but wanted to innovate on its own and be given the freedom of choice. Any aid under CDM tied to technology import from developed countries was resented, though financial and technical help needed by India through its own choice had to be facilitated under Clean Development Fund. The USA's not signing the Kyoto Protocol also upset India and other developing countries. USA was seen as a game-spoiler, and its moral image was seriously dented, at least among developing countries.

What little progress was achieved in Kyoto in 1997 was put in reverse gear in the Copenhagen Accord of 2009. The basic tension between developing countries, which saw the problem of climate change as one of equitably sharing the ecological and development space, and the developed countries, which insisted on grandfathering the rights over this space and on the principle of comparability of action, became more acute instead of being resolved. Both parties felt confident about the moral justification of their respective stands. The differences were so irreconcilable that the so-called Accord, which was one of the smallest of UN documents, could not even be 'adopted', but was only 'taken note of'. It did not even mention indicative targets for emission reduction to be adopted after 2012, though there is a consensus among scientists that unless Annex 1 countries reduce by 2020, their carbon emissions to 40 % lower than their 1990 levels, the planet will not be able to contain global warming to less than 2 °C over pre-industrial revolution levels, and that this failure could make climate change irreversible with calamitous consequences. Though the Kyoto Protocol was modest in its emission reduction targets, even this was dumped by the developed countries. Any hope of developing countries to have another binding treaty like Kyoto, after it lapses in 2012, was thus frustrated. India, on its part, tried to impress on the World forum that it was quite serious in its domestic policies to contain climate change. The then Environment Minister, Jairam Ramesh, announced particularly India's own voluntary resolve to decrease emission intensity of GDP by 20–25 % by 2020 on 2005 level, (though he was silent on emission levels in absolute terms). He outlined several measures, including constant monitoring to achieve this end. However, he also made it clear that India would not accept any legally binding commitment, nor any external monitoring, inspection or verification, which turned out to be what ultimately transpired for *all* countries. This was a dubious success for India's stand in the context of the collapse of Copenhagen negotiations. If USA was seen as a spoiler, India and other such countries in the BASIC group came to be seen as deal breakers. It was a defeat for all, symbolizing the unwillingness of the countries of the world to take up their due moral responsibility even in the face

of a looming crisis. The blame heaped on developing countries, however, needs to be tempered by the fact that developed countries showed no evidence of any plan of accepting any binding commitments during the post-2012 second phase of Kyoto Protocol in any case, with or without developing countries joining in. What they were prepared to do (even without legal commitment) fell far short of what was required to deal with the crisis of climate change. There was neither any attempt towards convergence in per capita emissions, which the developing countries wanted, nor was there any alternative credible plan in sight to avert the crisis.

Such a global failure could not have continued unattended for long, and, thus, came the next UN Meeting on Climate Change at Cancun, Mexico, in December 2010. However, its major achievement was only that the Copenhagen Accord, which had only been ‘noted’ and not adopted, was now formally adopted, with some modifications and additions.² At the Conference, the group of countries led by Japan, Russia, Canada and Australia insisted on withdrawing from the second phase of the Kyoto Protocol. They wanted every country, rich or poor, to pledge voluntary actions on mitigation as per the Copenhagen Accord. On the other hand, the Group 77 of developing countries did not want the World Community to move away from the Kyoto Protocol. Ultimately, the developing countries had to give in. The compromise, which was at the cost of developing countries, meant writing off the historical debt of developed countries. India’s then Environment Minister, Jairam Ramesh, proposed that *all countries* must take on ‘binding commitments under appropriate legal forms’. It was insisted that this phrase was not just a word play for ‘legally binding’. While for developed countries it would mean third-party verification of targets making them binding, for developed countries like India, it meant commitment to her own Parliament under relevant legislation (Pande 2011). It was agreed that pledges of developed countries would be measured, reported and verified (MRV system), but with no penalty for failure to honour the pledges; and that for developing countries, pledges would be put through an apparently softer procedure of international consultation and analysis (ICA system). It is estimated, however, that even if the pledges are implemented in good faith, it could ‘bring down emissions to around 49 Gt (giga-tons—billion tons) of CO₂ equivalent by 2020, against business-as-usual emissions of 56 Gt. This would leave an emission gap of around 5 Gt of CO₂ equivalent between where nations might be in 2020 against where the science indicates they need to be. In the worst case, the global emissions could be as high as 53 Gt in 2020’ (Dutta and Ghosh 2011). The reason for this lies in weak pledges by developed countries. For example, USA and Canada pledged (pending legislation) to cut emissions only 17 % below 2005 levels, which would mean only 3 % below 1990 levels, as against the required 40 % cut below 1990 levels. The Accord put greater burden on the developing countries than on the developed, which is clearly unfair and regressive. It was

² The following is a summary of what transpired at Cancun is based on Dutta and Ghosh (2011:26–34).

estimated that ‘while they [the latter] cut 0.8–1.8 Gt by 2020, developing countries pledge to cut their emissions by 2.8 Gt’. The overall result of this is expected to a rise in global temperatures by 3.5–4 °C, as against the requirement to keep it below 2 °C. Key decisions about continuation of the second phase of the Kyoto Protocol commitments were deferred till the Durban summit next. On the part of developed countries, it was agreed to generate a \$100 billion long term fund, with \$30 billion in 2010–2012 to facilitate technology transfer and economic aid to developing countries in implementing their pledges.

3 Outcome of Action

After wading through the treacherous waves of these international agreements where short term national interests prevailed over the long term and global interests, cleverness and wile of the rich dominated over honesty of purpose, and sheer money power overwhelmed human numbers, it is worth seeing what the outcome of action on the climate front was in practice. The data providing this picture also help us to appreciate the inequity in the ecological or carbon space enjoyed by the rich as compared with the poor countries.

The relevant data are presented in three Tables. Table 1 presents a picture of CO₂ emissions, while Table 2 presents Non-CO₂ emissions. Table 1 starts with shares of selected countries in world population, as also those of High Income Countries (HICs), Middle Income Countries (MICs) and Low Income Countries (LICs), for comparison with shares in CO₂ and Non-CO₂ emissions of respective countries or types of countries. Table 3 shows who contributed and how much to the *increase* in both types of emissions between 1990 and 2005. We may briefly note a few points that emerge from Tables 1, 2 and 3.

1. Inequity in the sharing of carbon space comes out clearly from the shares of respective country types in historically accumulated emissions as compared with their shares in population. Developing countries are not a homogeneous block. LICs show a pattern distinct from MICs, the former facing much more inequity than the latter.
2. Annual total CO₂ emissions *increased* between 1990 and 2005 in HICs, MICs and understandably in LICs. This increase was in evidence in most of the countries with a few honourable exceptions like Germany. China and USA showed a substantial increase in absolute terms.
3. Annual total Non-CO₂ emissions increased between 1990 and 2005 in MICs and LICs, but declined slightly in HICs and significantly in Germany.
4. There has been no sign of convergence in per capita CO₂ emissions, which have increased both in HICs and MICs. Contrary to what might be expected, per capita emissions *declined* in LICs, though slightly. This is ironical when contrasted with the *increase* in per capita emissions among HICs, including USA, between 1990 and 2005, though they were the ones expected to record a decline.

Table 1 Shares in carbon dioxide emissions and world population

	India	China	USA	Germany	HICs	MICs	LICs	World
1 Share (%) in world population (2008)	17.0	19.8	4.6	1.2	16.0	69.5	14.5	100
2 Share (%) in cumulative emissions (1850–2005)	2.4	8.1	27.8	10.1	64.2	33.8	2.0	100
3 Annual total in carbon emissions (million metric tons)								
1990	597	2,211	4,874	968	10,999	9,150	549	20,693
2005	1,149	5,060	5,841	814	13,207	12,631	707	26,544
4 Share (%) in (3.)								
1990	2.8	10.7	23.5	4.7	53.1	44.3	2.6	100
2005	4.3	19.1	22.1	3.1	49.7	47.6	2.7	100
5 Per capita CO ₂ emissions (metric tons)								
1980	0.5	1.5	20.4	na	12.2	3.4	0.9	3.8
1990	0.7	1.9	19.5	12.2	11.8	2.6	0.7	4.0
2005	1.1	3.9	19.7	9.9	12.7	3.0	0.6	4.2
6 Carbon intensity—metric tons of CO ₂ per thousand \$ of GDP								
1990	0.58	1.77	0.61	0.49	0.47	0.80	0.46	0.57
2005	0.47	0.95	0.47	0.32	0.39	0.61	0.38	0.47

Source World bank's *World Development Report 2010*, p. 362; and UNDP's *Human Development Report 2004*, pp. 208–210 (for per capita emission in 1980)

Note HICs High Income Countries, MICs Middle Income Countries, LICs Low income countries, na data not available

Table 2 Non-CO₂ emissions (CH₄, N₂O)

	India	China	USA	Germany	HICs	MICs	LICs	World
1. Annual total—metric tons of CO ₂ equivalent (millions)								
1990	53	193	299	48	577	1,168	116	1,861
2005	89	219	243	29	557	1,279	256	2,092 ^a
2. Share (%) in 1								
1990	2.8	10.4	16.1	2.7	29.9	62.8	7.3	100
2005	4.3	10.5	11.6	1.4	26.6	61.1	12.2	10

Source World Bank—*World Development Report 2010*, p. 362

Note Shares (%) in World Population are given in row 1 of Table 1 for comparison

^a This is total of HIC, MIC and LIC emissions, which differs from the WDR figure given as 1979 million metric tons

Table 3 Absolute increase in emissions between 1990 and 2005 and percent shares therein

	India	China	USA	Germany	HICs	MICs	LICs	World
CO ₂								
Million metric tons	552	2849	967	–154	2208	3481	158	5851
Per cent shares	9.5	48.7	16.5	–2.6	37.7	59.5	2.7	100
Non-CO ₂ :								
Million metric tons	36	26	–56	–19	–20	111	140	231
Percent shares	15.6	11.3	–24.2	–8.2	–8.7	48.1	60.6	100

Source Derived from Tables 1 and 2

5. The shares of HICs in world CO₂ emissions have remained much higher than their respective shares in world population, though they have shown a tendency to decline slowly. Shares of both India and China have significantly increased, though they have remained lower than their respective shares in population. However, in China's case, the shares in world population and CO₂ emissions are fast converging, and under a business-as-usual situation, the latter share is now poised to exceed the former as in HICs.
6. While the shares of HICs and MICs in non-CO₂ emissions have slightly declined between 1990 and 2005, the share of LICs has significantly increased, though still below their share in population.
7. Of the absolute *increase* in annual total CO₂ emissions between 1990 and 2005, the MICs contributed nearly 59 %, followed by HICs contributing nearly 38 %, and LICs a mere less than 3 %. China alone contributed nearly 49 %. And this is what bothers HICs the most. More than the present shares of MICs in CO₂ emissions, it is the trends in their shares which worry the HICs more.
8. Of the total increase in Non-CO₂ emissions, MICs contributed 48 %, and LICs as much as 61 %. In contrast, HICs achieved a decline, thus offsetting some of the increase in MICs and LICs. India contributed more than China to the increase in these emissions, while both USA and Germany showed a decline. However the size of Non-CO₂ emissions is much smaller than that of CO₂ emissions. For example, in 2005, the annual world total CO₂ emissions were 26.5 billion tons, while that of Non-CO₂ emissions was only 2.1 billion tons.
9. With a decrease in 2008 and a 5 % surge in 2010, the past decade saw an average annual increase of 2.7 %. The top 5 emitters are China (share 29 %), the United States (16 %), the European Union (EU27) (11 %), India (6 %) and the Russian Federation (5 %), followed by Japan (4 %) (Olivier et al., 2012 p 6).

4 An Ethical Assessment

Let us now make an ethical assessment of policy and action taken on Climate Change, particularly from the view point of how Mahatma Gandhi would have looked at it. Ethical principles are universal and apply to all countries. Gandhi emphasized moral responsibility of each agent—persons as well as institutions—for actions taken and consequences flowing from them. It is a fundamental principle of ethics. Moral responsibility for mitigating climate change has to be accepted by both the developed and developing countries. But this responsibility is clearly in proportion to the carbon space appropriated by different countries, in the past as well as the present. The developed countries did not pay for their historical accumulation of carbon emissions, but this does not mean that they don't have to pay for it now. They should gracefully accept their moral responsibility and pay for it now by contributing adequately and expeditiously to funds for developing countries to adopt clean technologies and in other ways. Polluter Pays Principle

follows directly from the principle of moral responsibility. It is a moral principle, besides making economic sense.

The principle of equity has been much emphasized, and rightly so, at the international meets on climate change. This would have sounded very convincing and honest, if the same equity, which has been insisted upon between countries, had been followed within countries too. This is what Mahatma Gandhi would have insisted. If India is among the lowest per capita emitters of carbon emissions, it is mainly because of poverty of the masses, which have little access to proper energy use, and not because of the virtue of simple living among all Indians. The role of the poor, as lowest per capita emitters, in creating carbon space for appropriation by the rich, is hardly appreciated in policy making, both within and between countries. In pushing for greater share in carbon space, the rich in the developing countries seem to exploit the deprivation of the poor in the same carbon space. India's elite are several times more energy-intensive in consumption and styles of living than its poor, though not perhaps as much as the rich in rich countries (Parikh et al., 2009). The HICs have much lower proportions of poor people who hold back abundant energy use. Unfortunately, the benefits of higher economic growth in India have not gone much to the poor, whose numbers have only increased instead of declining, though the proportion of the poor may have shown some decline. This shows that ecological and development space within India also has been subjected to the same inequity about which India is so bitter in the international context. Inequity within the country does not of course justify inequity between countries, but if India were an exemplar, it would have really boosted its moral prestige and persuasiveness. Secondly, while equity means comparability in emission rights for developing countries, for the developed countries it means comparability of action in mitigating carbon emissions. There is a need to appreciate both these aspects of equity.

Gandhi would have expected India to be an exemplar, not only in mitigating emissions, but also in the development path chosen as the two are closely linked. Gandhi did not believe in a path of development which merely means multiplication of wants. It is this multiplication of wants which is at the root of the ecological crisis. He preferred giving utmost priority to needs. Instead of simply taking to the Western model in an ape-like fashion, Gandhi would have liked India to take to its own employment-promoting and energy-saving path of development, shunning consumerism and economism.³ It is not just a question of finding new energy-saving technologies, but also one of changing our lifestyles. A cardiologist does not tell a heart patient to have any lifestyle she or he pleases on the ground that the doctor has the right technology, including surgery to correct any heart problem. The cardiologist instead emphasizes changing the lifestyle of the patient, including right food and exercise, the role of the cardiologists' technical expertise notwithstanding. It is good that both India and China have committed themselves to reducing carbon intensities of their economic growth and they have shown some

³ I have discussed this issue at greater length in Nadkarni (2011) especially in Chapters 3 and 4.

success in this already (see Item 6 in Table 1). But this evidently is not enough in Gandhian expectations. Gandhi had warned against blind imitation of the Western model as early as in 1928. He wrote then, ‘God forbid that India should ever take to industrialization after the manner of the West. The economic imperialism of a single tiny island kingdom [England] is today keeping the world in chains. If an entire nation of 300 million [India’s population at the time] took to similar economic exploitation, it would strip the world bare like locusts.’⁴ His conception of *swaraj* was not confined to ending foreign political rule, but in achieving self-rule in science and technology and in development strategy (KICS 2011). It was not economic or material development alone that concerned him, but also moral and human development. He certainly did not approve the Western concept of growth or development that depended on endless multiplication of wants as its motive force. He strove for an alternative concept.

An anecdote from the early life of Gandhi illustrates his strong moral fibre and independence of approach which he was to preach later to the world. When he was barely 10 years old, he was beaten up by another boy. Mohandas complained to the boy’s father, who only reprimanded him lightly. Putlibai, mother of Mohandas, asked him why he did not hit back. The young Gandhi asked in return, ‘why should I be like him?’⁵ Yes, why shouldn’t we create our own path of sustainable eco-friendly development, instead of taking up the resource-and-energy intensive historical Western path?

But he was not an anti-Western bigot. Just as self-rule in polity did not mean for him political isolation, self-rule in economy, science and technology did not mean isolation in these spheres from foreign influences. What is crucial to self-rule is its rejection of helpless dependence, and assertion of one’s own command. Though this does not mean totally shunning foreign technologies or learning from them, we need to develop our own technologies for clean development. While scientists and technologists would normally be expected to lead in this, the role of learning from traditional knowledge and technology systems, and promoting them further, should also receive due emphasis. Journals like *Down to Earth* and *Honey Bee* in India have been documenting knowledge and technology from below, at the level of common farmers and artisans, who are found to be more creative than what normally the formally educated elite would care to admit. While we are keen to update ourselves on science and technology emanating from the West, we tend to be oblivious to the need for tapping our own indigenous knowledge systems and promoting them.

To encourage a simpler, less energy-intensive and sustainable living, there is need to provide for an incentivizing mechanism. From this point of view a proposal put forward by the German Advisory Board of Global Change (WBGU), contained in a paper by (Kaechele et al. 2011) merits due attention. It is really nice of Germany to have recognized the ethical justification for an equal per capita basis for allotment

⁴ Quoted in Guha (2000: 22). Parentheses added by Guha.

⁵ As narrated in TOI Team (2011: 2).

of carbon rights. Germany has been in the forefront in reducing GHGs (as can be seen from the three Tables 1, 2, 3), and if it preaches, it has also been practicing what it preaches. It is fitting that an interesting and practical proposal has emerged from such a country. Anil Agarwal and Sunita Narain had made a similar proposal (referred above) in 1991. The WBGU proposal allocates national emission allowances on per capita basis, arguing for a per capita distribution of a carbon budget and universal participation of all nations. For the period 2010–2050, it proposes an average annual emission allowance of 2.7 t per capita per year for the whole world, which is expected to meet the 2 °C guard rail. Scientists are agreed that allowing the world average climate to rise above this could have serious consequences. The proposal then argues for carbon trade among countries of the world, enabling countries having current emission rates above 2.7 t per capita to trade carbon rights with countries whose emission rates are below this level. Provided that the carbon rights are appropriately priced, such a trade would give incentives to both buyers and sellers to economize on carbon emissions. If on the other hand, their prices are pushed lower by buying countries which are richer and more powerful than selling countries, with the former acting like a monopsonistic cartel, the whole game would be defeated and may break down.

The proposal, thus, needs to face some ethical issues. Will the revenues from the sale of carbon rights be allowed to be appropriated at the government level only, or will the benefits of this be equitably shared with the people who, in the first instance, economized on emissions and followed a low-energy lifestyle. This is not only a question of ethics, but is also a practical one of giving incentive to energy saving by individuals, households and organizations. A second issue, already referred to in the preceding paragraph, is the question of the right price. Will the markets for carbon rights be fair? What is the criterion for fairness or just price here? What would be the type of competition for carbon rights? Thirdly, can there be a transparent mechanism for counting carbon rights and credits? In other words, can we assure fair trade practices in this, and how? A fourth issue is one of denying any incentive for increasing population size. Though emission rights can be allotted on the basis of a historical benchmark and not on the basis of current population size, countries would know that the allotments would be periodically revised and more populous countries would gain. A complicating issue is that population in a country can increase not only due to natural factors like birth rate, but also due to immigration. It would not be desirable to create further deterrents to immigration, by rigidly adhering to a historical benchmark of population. These issues are raised not to resist the proposal, but to make it fair and workable to the satisfaction of all and, above all, to really achieve the target of keeping temperature rise below 2 °C, keeping climate change within bearable limits, and ensuring sustainable living across the globe for all. It would help if each country follows Gandhi's principle 'to serve the country in a way that would not be inimical to universal interests.'⁶

⁶ Cited in Foreword by Narayanbhai Desai in TOI Team (2011).

There is, however, a further dilemma. What if the worst case scenario held out by IPCC scientists and many others, consisting of catastrophic consequences of climate change, is exaggerated significantly? *The Hindu* dated October 15, 2011 (Bangalore Edition: 24) reported the findings of a Swedish scientist, Prof Niels-Axel Morner, who claimed that the sea levels were not rising as feared and island nations like the Maldives do not show evidence of being in danger. Should we then take climate change seriously, knowing well the costs of mitigating it? Would not forgoing the gains of development then mean an unnecessary sacrifice which the world can ill afford?

Morner, at least as reported in the press, spoke only of sea level rise and not of all the adverse consequences expected from climate change. Further, his findings are yet to be verified and accepted by a majority of scientists. It hardly amounts to a consensus at this stage. It is then prudent to compare the two maximum costs in alternative scenarios—one, where the optimists like Morner are right and the costs of a clean and cautious development strategy turn out to be a ‘waste’, particularly for the profit-minded rich; the second, where the pessimists are right and the costs of pursuing a business-as-usual policy turns out to be excruciatingly huge, particularly impacting the poor. If between these two costs, our reasoned guess suggests that the latter is going to be much higher and socially more unbearable, then prudence demands erring on the side of caution rather than follow the seemingly rosy path of business-as-usual. Particularly so when the majority view of scientists favours caution. This is nothing but the minimax strategy of economists faced with such situations, duly taking note of distributions considerations too. We have to avoid the greater and more unbearable of the two costs.

References

- Agarwal A, Narain S (1991) Global warming in an unequal world: a case of environmental colonialism. Centre for Science and Environment (CSE), New Delhi
- Agarwal A, Narain S (1992) Towards a green world—should global environmental management be built on legal conventions or human rights?. CSE, New Delhi
- Damodaran A (2010) Encircling the seamless: India, climate change and the global commons. Oxford University Press, New Delhi
- Dutta AP, Ghosh A (2011) Cover story COP16 Cancun 2010, in which poor countries gave. Down to earth, 1–15:26–34
- Guha R (2000) Environmentalism: a global history. OUP, New Delhi
- Gupta J (2000) Global environmental issues: impact on India. In: Chary SN, Vyasulu V (eds) Environmental management: an Indian perspective. Macmillan, Delhi, pp 253–81
- International Scientific Steering Committee (2005) Avoiding dangerous climate change: international. Symposium on the stabilization of greenhouse gas concentrations. Hadley Centre Met Office, Exeter
- Kaechele H, Amjat-Babu TS, Cutter T, Specht K, Nautiyal S, Muller K, Raju KV (2011) Confronting the climate change challenge: discussing the role of rural india under cumulative emission budget approach. *Environ Sci Policy* 14:1103–1112
- KICS (2011) Knowledge Swaraj: an Indian manifesto on science and technology. Knowledge in Civil Society, Secunderabad

- Nadkarni MV (2011) *Ethics for our times—essays in gandhian perspective*. Oxford University press, New Delhi
- Olivier JGJ, Janssens-Maenhout G, Peters JAHW (2012) Trends in global CO₂ emissions. 2012 report. PBL Netherlands environmental assessment agency, The Hague. Joint Research Centre, Ispra
- Pande V (2011) India at Cancun: emergence of a confident dealmaker. *Economic and Political Weekly* 46(4):14–15
- Parikh J, Pande M, Ganesh Kumar A, Singh V (2009) CO₂ emissions structure of Indian economy. *Energy* 34:1024–1031
- TOI (Times of India) Team (2011) *Gandhi's Ahmedabad*, New Delhi: Times Group Books
- World Bank (2010) *World Development Report 2010*: Washington DC: The World Bank

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