Eroding Environmental Justice: Can Carbon Emission Trading Stimulate Green Technological Innovation?

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Abstract—Development of eco-friendly goods and services, of late, has been perceived as a fundamental principle for sustaining demand-driven industrialization. The global economy is steadily moving towards the next generation of industrialization courtesy green technological innovation. However, Carbon Emission Trading (CET) has been a major threat to the global march towards green economy. This study offers a case-based analysis of CET in terms of its genesis, evolution, and current practices to expose the limitations of such extreme free market environmentalism and its negative impact on the emerging green technological eco-system. CET has strengthened corporate control over environment and is a violator of environmental justice and, in turn, has come out as a nemesis of the ambitious green technological innovation. The major socio-economic actors who are supposed to push the green growth discourse, strategy, and action will be trapped in the new nihilistic competition unleashed by CET and the brown economy will continue to prevail upon the global technological innovation.

Index Terms—Environmental Justice, Carbon Emission Trading, Green Technology, Eco-innovation, Politics, Hegemony, Commodification of environment.

1 INTRODUCTION
Development of eco-friendly goods and services, of late, has been perceived as a fundamental principle for sustaining demand-driven industrialization. The global economy is steadily moving towards the next generation of industrialization courtesy green technological innovation. The shifting paradigm envisions an inclusive system of governance interlinking: 1) Building innovation ecosystems for green growth, 2) International cooperation, 3) Policy and intellectual property instruments to support innovation, 4) international technology-focused green growth initiatives, and 5) Bridging the gaps in green growth (Hultman et al., 2016). Three major influential factors to make such visions possible are: development of green growth infrastructure, green growth policy framework, and international consensus and collaboration. Eco-innovation, in terms of policy, technology, and finance, has been evolving steadily as the guiding principle of production at national and international level across public, private, and partnership models. For example, an IT outsourcing company established in Bangalore, Wipro Ltd. believes in embedding sustainability across its operations for environmental improvement, risk management and development of new opportunities. The corporate sustainability strategy is focused on decreasing carbon and water footprints and waste production and pursuing green development opportunities; and developing goals relating to water, waste, biodiversity, carbon emissions, supply chain management, workplace diversity, education and community engagement. So far, 22 per cent of energy consumption of the company is derived from renewable sources, and 32 per cent of water use is from recycled sources (WIPRO, n.d.). Wipro Ltd. has been recognized as a global sustainability leader (one of the World’s Most Ethical (WME) Companies, topping the Carbon Disclosure Leadership Index, and as a member of the Dow Jones Sustainability Index and the Morgan Stanley Capital International Global Sustainability Index).

Another example of private sector environmental stewardship is ISA TanTech. Established in 1995, the company is a manufacturer of high-performance, eco-friendly leather and leather accessories for the footwear, automotive and apparel industries. Its production system in China, Vietnam and the United States of America use a Low Impact to Environment (LITETM) technology and a patented resource and energy-efficient manufacturing system. LITE classification allows downstream customers to register carbon and water footprints into their leather products, and product labels provide resource conservation and sustainable production information directly to the end-of-line consumers. In 2010, the Malaysian Government launched the incentive-based Green Technology Financing Scheme (GTFS). By partnering with financial institutions, the scheme offers loan based financing to Malaysian owned and operated companies that supply and use green technology. The aim is to promote development and proliferation of zero and low carbon emissions technology and renewable resources, energy and resource conservation, and environmental sustainability. Four key green economy areas are targeted: energy, water and waste management, buildings, and transport. The government guarantees 60 per cent of the total approved loan and subsidizes 2 per cent of the total interest rate charged, as well as offering training to improve applicant knowledge of green technology. As of September 2014, 333 project certificates have been issued to companies across the energy, transport, building, water, and waste management sectors. Of these projects, 148 have received a total of RM 1.94 billion (around $542.7 million) in financing from 23 participating finance institutions, and have created over 2,000 green jobs (Asia LEDS Partnership, 2014). Likewise, many small nations are also working hard to integrate green technologies and policies into their economic growth. The outcome document of the United Nations Conference on Sustainable Development (Rio +20) places people at the centre of sustainable development. It is
committed to sustained and inclusive economic growth, universal social development and environmental protection (UNESCAP, 2012a). This same outcome document launched an intergovernmental and multi-stakeholder process that has defined the United Nations 2030 Agenda for Sustainable Development – a set of internationally agreed development goals that will deliver on the unfinished agenda of the Millennium Development Goals (MDGs) all the while expanding the scope of development priorities to incorporate the rich tapestry of interconnected social, economic and environmental sustainability concerns. Further, the Agenda calls on “all countries and all stakeholders, acting in collaborative partnership” to implement the plan (UNESCAP, 2012b).

Such ambitious actions and imaginaries notwithstanding, Carbon Emission Trading (CET) as a policy framework has been a major threat to the global march towards green economy. This study offers a case-based analysis of CET in terms of its genesis, evolution, and current practices to expose the limitations of such extreme free market environmentalism imposed on the people worldwide and its negative impact on the emerging green technological eco-system.

2 Carbon Emission Trading

2.1 Statement of problem

Within its limited vision of sustainability, the ambivalence of the market-driven economy is evident from its efforts to control the emission of greenhouse gases. Recently CET has come out as an alternative to the traditional command and control (technology-based or performance based) method of checking the emission of greenhouse gases. Founded upon Article 17 of Kyoto Protocol, CET is an internationally recognized scheme where polluting industries can buy or sell their ‘carbon rights’ depending upon their share of greenhouse gases which is calculated in tons of carbon dioxide equivalent (or tCO2e). This allows trading as a common method that countries can utilize to meet their specific obligations to reduce the emission of carbon particle and gases into the atmosphere so as to mitigate the issue of climate change. According to the Kyoto Protocol, emission reduction projects would be set up in terms of Joint Implementation mechanisms through which Annex 1 countries can earn “emission reduction units” from developing countries. The Clean Development Mechanism (CDM) of the UN pushes it further assuming that, by selling earned carbon credits, the developing countries would feel incentivized or empowered to take necessary steps towards carbon reduction by investing on green or clean energy. Built upon the neo-liberal market premises (i.e., marketisation of carbon emissions), CET is a regressive response to world environmental crises, meddled with alluringly progressive and technocratic jargons such as ‘carbon pricing’, ‘carbon taxes’, ‘cap-and-trade’, ‘clean energy standards’, and ‘emission reduction credit systems’. According to Laing et al. (2013), this experiment never stood up to expectations, exemplified by the dismal experience of the European emissions trading system introduced in 2005. ‘Cap and trade’ is a scheme by which governments or intergovernmental bodies like the European Commission release ‘carbon permits’ (a free market euphemism for ‘right to pollute’) to major polluting industries. The polluter, accordingly, may or may not clean up its act: one polluter can then trade these permits with another who might arrange cheaper adjustments to cut down emissions. The industries, who can maintain surplus balance in their carbon account by cutting down their emissions, can sell their share to the deficit industries. Capping means setting a legal limit on the levels of permissible pollution within a given time line. The capping theory assumes that the number of carbon permits will gradually be reduced, enforcing scarcity, so that the market value of permits remain alive. Eulogized as ‘flexible mechanisms’, the free market environmentalism called ‘trading’, instead of real-time reduction of emissions, offers companies an wider space to perpetuate the emissions problem. The ‘polluting’ companies save money and the ‘less-polluting’ companies gain windfall profits. Free from all controls, the businesses continue as usual. What is seen as cheap and profitable in the short term is far from being environmentally and socially just.

2.2 Corporate control over environment

A market-based instrument, CET came into the picture because of the policy concessions made by the world environmental leaders to get an otherwise obstinate United States on board in the Kyoto agreement. The instrument gained further grounds citing the limitations of the conventional environmental policy approaches, such as uniform technology and performance standards in the face of “the ubiquity and diversity of emissions of greenhouse gases in most economies, as well as the variation in abatement costs among individual sources” (Aldy & Stavins, 2012, p.152).

The heavily polluting but unrepentant industrialized countries, who were not willing to reduce their domestic carbon emissions, were given a free hand to trade away their liabilities for the promise of emission reductions in other countries. In affirmative terms, the assumption was to achieve an overall global balance of emissions even though the polluting nations fail to meet their own targets. Quantitatively measured by financial numbers, this was recognized as the most cost-effective carbon reduction method. The industries have to spend more and more for purchasing the permits or they have to take necessary measures to keep the level of emission within the prescribed limits. However, this argument fails to stand in the face of the glaring historical evidence that the acute high price rise in the 1970s could not guide the industrial societies to move out of fossil fuel. In negative terms, the hidden hand of the market finally won the authority to buy-and-sell their green crimes as windfall profits, demonstrating the neoliberal commoditization of environment. On the top of this hidden agenda, in sheer acts of corporate-government collusion, highly polluting sectors such as international shipping and aviation were willfully kept away from emissions reduction targets (until 2012, when aviation was included in the EU ETS).

2.3 Violation of environmental justice

According to Gilbertson and Reyes (2009), some of the loopholes in the cap-and-trade scheme are: 1) The majority of carbon permits till date have been given for free (a practice known as ‘grandfathering’ as opposed to ‘auctioning’) in the EU ETS; 2) The number of permits awarded is calculated according to existing levels of pollution, so that those who have polluted most in the past are rewarded with the greatest subsidy, and 3) Such freebies to some of the worst industrial polluters means the CET turns around as one of the most scandalous projects encouraging a regressive distribution of
property rights in industrial history. Caney and Hepburn (2011) observe that CET violates distributive justice in two ways: 1) The ETS increases the unit price of commodities, the burden of which, in many ways, is passed on to consumers or, 2) the increased cost is compensated by governments by granting carbon permits for free. Thus, the EU ETS has facilitated a large scale transfer of wealth from consumers and taxpayers to firms and shareholders. As a consistent practice, CET highlights the “internal cost” of the carbon generated. On the contrary, it overlooks the “external costs” of carbon-induced climate change such as reduced food production, stress on tourism industry because of distortions in natural landscapes, and increased health hazards-- all of which cumulatively affect the welfare of the society at large. There is no fair and objective method to calculate the cost of such burdens and how to find the financial equivalence of these sacrifices based on which people will be compensated and industries will be made liable. After all, the gravity of such burden varies across nations and localities. Relentless industrial lobby ensures uncertainties in fairness in all three major phases of capping and trading, i.e., allocation of carbon permits; monitoring of the carbon market; and compliance by polluting industries. For example, the world’s largest carbon market, the EU ETS, has consistently failed to ‘cap’ emissions. A corollary to this ambitious but futile venture is the UN’s CDM that routinely favors many environmentally ineffective and socially unjust projects. Case studies by Gilbertson and Reyes (2009) support that CDM projects in Brazil, Indonesia, India, and Thailand have come out to be fraudulent, tainted with dispossession and human rights abuses, and abhorred by local communities.

2.4 Paradoxical outcomes and hypothetical estimates
Under the aegis of the UN Framework Convention on Climate Change, nations have developed alternate mechanisms for carbon off-set. However, it is difficult to ascertain a positive correlation between a nation’s capacity to buy cheap carbon credits and its commitment to climate change resistance. Subject to specific case and context, a nation may find it more convenient to sell its emission reductions rather than reaching carbon reduction targets. This is an amusing paradoxical predicament. One of the offset schemes of the UN is Reduced Emissions from Deforestation and Land Degradation (REDD+). Using this scheme, carbon credits can be estimated based on the conservation of forests resources in one part of the world, by counting the hypothetical carbon emissions caused by deforestations in some other part of the world. One glaring paradox is the issuance of credits for the avoidance of deforestation over a period of time. 100 years is referred to as the ideal time line worth of being considered for credits. However, it is practically difficult to predict if a forest can be preserved over a century. Above all, issue of carbon credits for avoidance of deforestation is ethically contentious. Globalized carbon trading has become another platform for neoliberal economists to redirect and stimulate the global capital flow. It will unleash a new mode of capital accumulation wherein nature and natural resources will be interpreted by the logic of the market (Lohmann, 2010). Nature and market system will be considered as equivalent entities, entrenched in a system of risk and profit.

2.5 THE RISK OF GREEN TECHNOLOGY CONCENTRATION
Access to advanced pro-environmental technologies is one of the toughest challenges for the underdeveloped as well as the developing nations for complete switch-over to green production. It is expected that the international bodies and national governments should initiate dialogues and negotiations for global transfer of green technologies and related knowledge capital through international collaborations. However, CET is bound to promote a heavy concentration and ownership of green technology as no company would like to share its knowledge with rest of the world as each technology becomes a crucial factor for earning carbon credit points. On the one hand, it will definitely trigger green technological innovation by the powerful oligarchies; on the other hand, it will throw away smaller enterprises from the competition, leading to eventual marginalization.

2.6 Politics, hegemony, and innovative commodification of environment
The carbon markets are constructed with a set of self-evident ethical imperatives whereby the virtual carbon is construed as a virtuous commodity (Paterson & Stripple, 2012). Global resistance to carbon trading is neutralized by an invented framework where the virtual carbon is converted into measurable units of quantities and, then, is proliferated into auction-able and tradable assets with a differentiated binary of Boutique carbon and Walmart carbon. The commodification of the atmosphere, thus, is achieved through innovative discourses with a set of rationalities selectively positioning that emissions reduction is actually taking place; that it is contributing to human development and local empowerment through the eradication of poverty; that it is strengthening the relationships between buyer and seller globally; that information about pixillated carbon is transparent. The corporate-government lobby converts these rationalities into such a powerful controlling block that even the European Union, the strongest champion of environmental causes, falls into the trap and further perpetuates the league of power and hegemony into ever-expanding controlling blocks by actively trading the commodified carbons. There are several problems with the implementation of the EU ETS. Major flaws such as windfall profits and over-allocation notwithstanding, the hegemonic carbon trading blocs continue to manage such a blatant commodification of nature into an economics of scale with ever-renewed rationalities. Eventually, the core issue from which CET emerged, i.e. mitigation of the anthropogenic climate change, is pushed into the margins, and the constructed rationalities tend to serve as the anesthesia to cast aside all ethical questions, apprehensions, and dilemmas.

3. Conclusion: The mission gone astray
A recent invention by business and political elites, CET undermines existing environmental legislation and is a tailor-made distraction from the much sought out transition to a post-oil economy which is inevitable. The simple alternative to CET would have been a carbon tax that industrial pressure groups have resisted to the core (Barnes & Barnes, 1999). Revenues in the form of carbon tax could have helped the governments to support renewable technologies and energy conservation. The cap-and-trade scheme, on the other hand, has created the scope for massive manipulation and hide-and-seek in the name of optimum management of carbon permits.
that never results in curbing out the overall carbon emissions. This show business will continue for over another half a century. The carbon market is a huge trap, a sheer wastage of entrepreneurial energy, and therefore, a major barrier to the green social economy. The economic slowdown of 2007–2011 has created a new soul searching for the global economic elites and the gaze has shifted from supply-driven economy to a new, robust, demand-driven economy. The consumer has to be empowered in terms of employment, per capita income, and abundance of choices. The dysfunctional global capital seems to have found new modes of investment. The discourse of Global New Green Deal has come into force out of such desires, amounting to investment in renewable energy, eco-friendly transport systems, green machinery, organic farming, agro-forestry, etc. Environmental protection has come into the fore as a potential agent to transform investments into opportunities. However, CET and the Global Green New Deal, at best, seem to be two parallel lines, not complementing each other. Emulating the sustainable development ideas of Rio 1992, green economy can be harnessed as a strategic element in the global political discourse. The Sustainable Development Goals (SDGs) of the UN propagate green growth as the indispensable factor of modern economic system, global environment and resource management, and ecological modernization. However, such grand desires remain enmeshed in profit mongering and the new commoditization of nature— as in case of CET. The major socio-economic actors who are supposed to push the green growth discourse, strategy, and action will be trapped in the new nihilistic competition unleashed by CET and the brown economy will continue to prevail upon the global technological innovation at least for a few decades.

REFERENCES