FIGHTING INDIA'S WAR ON CARBON WITH AN EMISSIONS TRADING PROGRAM

Shubham Janghu and Armin Rosencranz*

With the slow pace of reforms and measures, India's approach towards fighting climate change seems half-hearted and piecemeal. In order to implement a comprehensive approach and join the war on carbon, she must adopt an emissions trading scheme. It is a widely accepted market-based mechanism whereby a cap is set on the emitters and they are allowed to trade their carbon allowances. To effectively implement the scheme, an independent regulatory authority must be set up. We discuss the three roles that it must play — market maker, technical consultant and contingency planner. The decision regarding the inclusion of carbon-intensive industries must lie with the regulatory authority, and with respect to the other industries, the State Governments must be empowered to take the decision on the basis of specific emission profiles, financial position of the entities, and impact on the economy. The ETS must also obligate the emitters to design a 'compliance plan', setting out its own medium and long-term goals, with an explanation of how it would achieve them. As a high and unstable price can sound a death knell for the scheme, we have suggested three measures: safety valve trigger, price-based market stability reserve ('MSR'), and banking. With this skeletal framework, India can be part of the global mission to curb climate change.

I. Introduction

Climate change poses an imminent and grave challenge to humankind. The recent drought in South Africa, widespread wildfires in California, disastrous floods and cyclones across the world, changing agricultural patterns, and increased number of species going extinct, show that climate change is impacting all of our lives.

Anticipating the catastrophic impact of climate change, most countries signed the Paris Agreement in December 2015. As of today, 175 out of 195 signatories have ratified the Agreement.[1] The Agreement aims to keep the rise in global temperature 'well below' 2

* Shubham Janghu is a fourth-year law student at Jindal Global University, where Armin Rosencranz is a professor.

1 'Paris Agreement-Status of Ratification' (*United Nations Framework Convention on Climate*

degrees Celsius above pre-industrial levels and undertakes additional steps to try to limit the rise to 1.5 degrees Celsius above pre-industrial levels.[2] It mandates all the Parties to pool their best efforts through 'intended nationally determined contributions' ('INDCs').[3] India, in its INDC for 2021 to 2030, aims to 'adopt a climate-friendly and a cleaner path', 'reduce the emission intensity of its GDP between 33 to 35 percent by 2030 from its 2005 level', and 'achieve about 40 percent cumulative 'electric power installed capacity' from non-fossil fuel based energy resources by 2030'.[4]

The Indian Government also supports other measures to promote renewable energy such as aiming to achieve 20 gigawatts of solar capacity by 2022 (now increased to 100 gigawatts) under its 'National Solar Mission',[5] increasing the Renewable Portfolio Obligation to 8% by 2019 from 3% by 2022, increasing the coal tax of Rs. 400 per metric tonne of coal produced and imported, and obliging new coal power plants to install renewable energy capacity of at least 10% of the total capacity.

The Government has also introduced the Perform, Achieve and Trade ('PAT') Mechanism – a market-based mechanism aimed to incentivise the 478 energy intensive units to achieve better energy efficiency targets.[6] With respect to the transport industry, the Government has announced plans to leapfrog Bharat Stage V ('BS V') and adopt the more stringent Bharat Stage VI ('BS VI'), thus bringing motor vehicle regulation in alignment with European standards.[7]

The above measures are sector-specific and limited in their scope. The need of the hour is a comprehensive country-wide mechanism. The most cost-effective way to reduce emissions and avoid the worst consequences of climate change is a comprehensive market-based approach that puts a price on carbon.

An emissions trading system ('ETS') works on the 'cap-and-trade' principle. A cap is set on the covered emitters. At the end of the compliance period (typically one year), the emitters are required to surrender equivalent allowances to cover their emissions. If they

---

Change, 2018) <https://unfccc.int/process/the-paris-agreement/status-of-ratification> accessed 24 February 2018.

2 Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016) UN Doc FCCC/CP/2015/10/Add.1 (2015) art 2(1)(a).

3 ibid art 4.

4 'India's Intended Nationally Determined Contribution: Working Towards Climate Justice' (2016) <http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf> accessed 8 March 2018.

5 Cabinet, Government of India, 'Revision of cumulative targets under National Solar Mission from 20,000 MW by 2021-22 to 1,00,000 MW' (*Press Information Bureau*, 2015) <http://pib.nic.in/newsite/PrintRelease.aspx?relid=122566> accessed 1 April 2018.

6 'PAT' (*Bureau of Energy Efficiency*, 2018) <https://beeindia.gov.in/content/pat-3> accessed 24 February 2018.

7 International Council on Clean Transportation, 'Policy Update: India Bharat Stage VI Emission Standards' (*ICCT,* 2016) <https://www.theicct.org/sites/default/files/publications/India%20BS%20VI%20Policy%20Update%20vF.pdf> accessed 18 April 2018.

are successful in reducing their emissions, they can either 'bank' their allowances or sell them to other entities that are falling short of allowances. Many countries and sub-national governments have implemented their version of the ETS to reduce their carbon emissions.[8]

In this article, we aim to provide a framework for ETS in India and discuss aspects and provisions that could be incorporated in it. In Part II we discuss the different functions of a Regulatory Authority that would be set up to implement the ETS. In Part III we discuss how industries must be included under the ETS. In Part IV we discuss how allowances must be divided among all the states in India. In Part V we talk about how compliance plans that are generally used in 'technology forcing' laws can be imported into a carbon market to increase its efficiency. In Part VI we explore three mechanisms (safety valve triggers, price-based market stability reserve and banking) through which price volatility could be contained. In Part VII we show how a top-down approach with standard protocols can be used for carbon offset projects and how such an approach would ease determination of additionality requirements[9] while keeping the administrative and compliance costs low.

II. Regulatory Authority

The Regulatory Authority ('RA') is the most important player in the carbon market. The success or failure of an emissions scheme would depend on its role and performance substantially. An ideal model of an ETS where the regulatory authority adopts a 'hands off' and 'let the market work' approach is not feasible for every country.[10]

In India, where laws are not regularly enforced, decisions might be politically motivated and the information regarding legislations does not percolate down to the public, the RA needs to be independent and play an active role. Professor Lesley McAllister argues that the regulatory authority must play three roles – market maker, technical consultant, and contingency planner.[11] These roles would also complement and supplement the abovementioned proposed provisions of the scheme.

A. Market Maker

In a utopian emissions trading scheme, the market players would have perfect knowledge about all the regulations. But even in the Los Angeles Regional Clean Air

8 New Zealand, Australia, European Union, South Korea, China, Brazil, Japan (Saitama and Tokyo), United Arab Emirates, Kazakhstan, Vietnam, Mexico, Switzerland, California, Quebec, Alberta, Regional Greenhouse Gas Initiative (RGGI), Western Climate Initiative (WCI). See Anita Talberg, 'Emissions Trading Schemes around the World' (Department of Parliamentary Services 2013) 9 <http://parlinfo.aph.gov.au/parlInfo/download/library/prspub/2501441/upload_binary/2501441.pdf;fileType=application/pdf> accessed 18 April 2018.

9 Under the 'additionality' requirement, the question is whether the project would have happened anyway either by way of operation of law or 'business as usual'. For a detailed explanation, refer to Part VI of the paper.

10 Lesley K McAllister, 'Beyond Playing "Banker": The Role of the Regulatory Agency in Emissions Trading' (2007) 59 Admin L Rev 269.

11 ibid 273.

Incentive Market ('RECLAIM'), which was established to cap NO_x and SO_2 in the South Coast Air Basin in California, many of the emitters had raised issues regarding market performance and compliance options.

Similar issues were experienced in the European Union Emissions Trading Scheme ('EU ETS') where initially there was uncertainty, scepticism and lack of interest among the emitters.[12] They did not have sufficient data about the scheme and its consequences. Surveys indicated that many of the firms believed that the EU ETS would be inconsequential. Many firms also took precautionary steps and prepared, trained, and educated the management and the employees, developed strategies and assessed the impact of the EU ETS.[13]

Our proposed framework for the Indian ETS has many compliance options such as trading of allowances, offset projects and credits, and banking. The RA must take proactive steps to educate the covered entities about the scheme, its features and operations. By providing the information to the public, the RA could play a crucial role in decreasing the initial compliance costs on the scheme's emitters.

B. Technical Consultant

Professor Lesley McAllister noted that, ideally, in a market, the market players have more information about the market than the State. However, this might not be true in case of carbon markets.[14] She gives an example of the RECLAIM, where the regulatory agency, in its technical report on the installation costs of the pollution-reducing equipment, had found out that by use of existing reasonably cheap technology, the emitters could easily reduce their emissions.[15] It disseminated this information to the emitters by post.

The RA, in reviewing the individual compliance plans of the emitters (discussed below), could make suggestions to the emitters to cut their emissions.

C. Contingency Planner

If one looks at the history of all the ETSs across the world, one can see that they have all gone through a lot of changes. The Legislature, the Government and the Regulatory Authority have taken steps to counter the problems faced in the initial stages. Even in the EU ETS, the first phase could easily be described as a 'disaster' due to over-supply and low prices of the allowances. Over time, the authorities have amended the scheme and covered the loopholes. A regulatory authority, by playing an active role as a contingency planner, can respond to various contingencies such as sudden spikes in the prices and thus prevent market failures.

12 Thomas L Brewer, 'Business perspectives on the EU emissions trading scheme' (2005) 5 Climate Policy 137.
13 ibid.
14 McAllister (n 10).
15 ibid.

III. Inclusion of Industries

One of the initial questions while framing an ETS is what industries should be included. This decision must consider various factors such as the area-specific emission profile, the financial position of the entities and the impact on the economy. The ETSs of New Zealand and Tokyo show a careful consideration of these factors.

New Zealand has a unique emission profile where the majority of the GHG emissions are from the agriculture sector. The agriculture sector accounted for 47.9% of the total emissions in 2014-15.[16] In contrast to many other developed and developing countries, the transportation and energy sector in New Zealand accounts for only 18.3% and 10.1% of CO_2 emissions.[17] Factoring in this unique emissions profile, the New Zealand Government included the agricultural and forest sector under the ambit of the ETS.[18] Holders of allowances are required to surrender those allowances in case of deforestation.

Similarly, in Tokyo, commercial and residential buildings are accountable for 62.6% of the total CO_2 emissions of the entire city.[19] Tokyo's ETS took the unprecedented step of including those commercial and residential buildings that have a total consumption of fuels, heating and electricity of at least 1,500 kilolitres per year (crude oil equivalent).[20]

We propose that the RA should have the responsibility to include carbon-intensive industries (such as the power industry) within the ambit of the ETS. For the other industries, the State Governments must be empowered to add to the list of the covered entities, giving due regard to the emissions profile of the state, minimising the impact on key economic sectors of the economy, and addressing region-specific socio-economic concerns. For instance, in States such as Madhya Pradesh and Chhattisgarh where the forest density is high, forests must be included under the ETS to encourage increasing forest cover and discourage deforestation.

16 'New Zealand's Greenhouse Gas Inventory' (*Ministry for the Environment*, 2017) <http://www.mfe.govt.nz/climate-change/state-of-our-atmosphere-and-climate/new-zealands-greenhouse-gas-inventory> accessed 24 February 2018.

17 'Review of Climate Change Policies' (*Ministry for the Environment*, 2017) <http://www.mfe.govt.nz/publications/climate-change/review-climate-change-policies> accessed 24 February 2018.

18 The owners, leaseholders or other holders of rights to pre-1989 forest land can voluntarily opt in into NZETS and earn New Zealand Units ('NZUs') for any increase in their carbon stocks and pay NZUs if the forest area reduces. Persons holding rights in pre-1990 forestlands must join the ETS and must pay NZUs in case of decrease in forest cover. Persons emitting methane and nitrous oxide in pursuing agricultural activities are also covered under the ETS. See ibid.

19 Bureau of the Environment Tokyo Metropolitan Government, 'Tokyo Cap-and-Trade Program: Japan's First Mandatory Emissions Trading Scheme' (Tokyo Metropolitan Government, March 2010) 16 <http://www.kankyo.metro.tokyo.jp/en/climate/cap_and_trade/index.files/Tokyo-cap_and_trade_program-march_2010_T.pdf> accessed 18 April 2018.

20 ibid.

IV. Allocation of Allowances

Allocation of allowances involves a number of complex technical and economics-related questions, such as the number of allowances to be allocated to the states and all the sectors, sub-allocation of allowances within a particular industry, and the price at which the initial allowances must be auctioned or awarded.

Like the EU ETS,[21] the Indian ETS could allocate the majority of the allowances (88% in the EU) on the basis of historical emissions. A percentage of the allowances (10% in the EU) could be given to the less developed States in order to give them an opportunity to grow, and the remaining allowances (2% in the EU ETS) could be given to the States as awards for reflecting early efforts to achieve carbon reduction.

The States, in consultation with the RA, must be responsible for distributing allowances amongst the entities covered within its territory. This mechanism would promote cooperative federalism, take care of multiple factors such as historical emissions of every state, offer an opportunity for the less developed States to grow and set up an incentive mechanism for the States to encourage its residents to reduce emissions.

We believe that in the beginning, the allowances must be free of cost. This might serve multiple purposes. It would help in gaining acceptance from the industry and businesses. Due to increased cost of compliance with the new regulations, the businesses are bound to resist the entire plan initially. Giving free allowances would help placate their woes and discomfort. It would prevent the companies from shutting their operations in India and shifting them to other countries where there are no such ceilings and allowances. Global carbon emissions would still remain the same, as this would merely shift the emissions from India to another country while hurting the local economy. Moreover, energy-intensive industries would be protected from international competition.[22]

V. Combining Carbon Markets and 'Technology-Forcing' Laws

We believe that a policy mandating the big emitters to design a compliance plan (generally used in technology-forcing laws) and setting out their own medium and long-term goals with a schedule of installation of carbon-saving technology would increase the effectiveness of the ETS. This model was adopted in RECLAIM, where the regulatory authority, in the face of significant non-compliance, required the power producing entities to submit compliance plans specifying a schedule for installing the Best Available Retrofit Technology. The use of compliance plans was credited for a significant drop in emissions under RECLAIM.[23]

21 Council Directive 2009/29/EC of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community [2009] OJ L140/63 art 10(2).

22 European Commission, 'EU ETS Handbook' (2015) 42 <https://ec.europa.eu/clima/sites/clima/files/docs/ets_handbook_en.pdf > accessed 18 April 2018.

23 McAllister, 'The Overallocation Problem in Cap-and-Trade: Moving Toward Stringency' (2009)

Additionally, in the Indian ETS, the compliance plan must be made enforceable by the sanction of law. It would force the large emitters to get acquainted with the provisions of the ETS and plan their future course of action.

A. Exclusion in case of insignificant emissions

The RA must be empowered to exclude the small emitters, whose administration cost per unit of emissions is not proportionate and subject them to other cheaper carbon-saving measures. Even in the EU ETS, the Member States are permitted to exclude small installations and hospitals from the scope of the ETS, which are then made subject to alternative measures of carbon reductions.[24]

VI. Price Stability Measures

The demand for the allowances in the carbon market keeps on changing due to various reasons such as seasons and economic condition.[25] This can cause the price of the allowances to become volatile.[26] Failure to contain the price of the allowances within a specific desirable range can be fatal to the ETS. If the allowances are priced very high, it might force the emitters to flout the norms or force them to shut down, thereby hurting the economy.[27] Adequate and long-term stable prices encourage investment in low-carbon technologies.[28]

To contain price instability, three mechanisms are being experimented with, namely – safety valve triggers, market stability reserve and banking.

A. Safety Valve Triggers

Safety valve triggers is a mechanism whereby if the prices of the allowances increase above a certain level, certain predetermined actions take place which are expected to drive down the prices. The U.S. Regional Greenhouse Gas Initiative ('RGGI')[29] incorporates three 'safety valve triggers'. Under the *first* price trigger, if the average price of the allowances touches $10 after 14 months from the beginning of the program, the compliance period

43 Colum J Envtl L 395.

24 Council Directive 2003/87/EC of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC [2003] OJ L 275/32 art 27.

25 Susan Battles, Stefano Clò and Pietro Zoppoli, 'Policy Options to Support the Carbon Price within the European Emissions Trading System: Framework for a Comparative Analysis' (2013) Ministry of Economy and Finance Working Papers 3 <http://www.dt.tesoro.it/export/sites/sitodt/modules/documenti_en/analisi_progammazione/working_papers/WP_N_1-2013.pdf> accessed 19 March 2018.

26 ibid.

27 ibid.

28 OECD, *Effective Carbon Rates: Pricing CO2 through Taxes and Emissions Trading Systems* (OECD Publishing 2016).

29 'Elements of RGGI' (*The Regional Greenhouse Gas Initiative*, 2018) <www.rggi.org/program-overview-and-design/elements> accessed 24 February 2018.

can be increased up to three one-year periods, thus allowing emitters to average out their emissions over the extended period. In the *second* safety valve trigger, if after 14 months from the beginning of the program, the average price for allowances reaches $7 for a period of twelve months, the emitters are allowed to offset their allowances awarded from projects located anywhere in North America. The percentage of emissions with which a source may offset its cap would increase to 5% (an increase from 3.3%) of the reported emissions.[30] In the *third* safety valve trigger (if the first trigger occurs twice in two consecutive 12-month periods), the emitters are allowed to offset their emissions with offset credits from any international program. The percentage of emissions with which a source may offset its cap would increase to 10% of the reported emissions.[31]

B. Market Stability Reserve

In the EU ETS, a quantity-based Market Stability Reserve ('MSR') was introduced. If the allowances in the market fall below 400 million in number, then automatically 100 million allowances are released. This 'automatic' trigger is meant to instil confidence and predictability in the minds of the investors.[32]

MSR, as adopted in the EU ETS, has been rightly criticised for creating more price instability. Although back-loading might have a short-term impact on the prices of the allowances, there remains a risk of the price shooting up and increased volatility in the market.[33] To remedy the situation, various policy recommendations have been made. One of the crucial ones is that the auction of allowances from MSR, instead of being triggered by the *quantity* of allowances present in the market, must be initiated on the basis of *price* triggers. This would allow the process to become simpler, more transparent and predictable.[34]

C. Framework for India

We believe that the combined use of both safety valve triggers and price-based MSR could maintain ETS price stability. For an initial increase in prices, safety valve triggers could help reduce prices. Such safety triggers could include increasing the compliance period and/or increasing the limit of using offset credits to comply with the cap. If the price shoots up even further, a price-based MSR coupled with clearly defined rules could be

30 RGGI, 'Memorandum of Understanding on Regional Greenhouse Gas Initiative' (*Regional Greenhouse Gas Initiative*, 2005) <https://www.rggi.org/sites/default/files/Uploads/Design-Archive/MOU/MOU_12_20_05.pdf> accessed 24 February 2018.

31 ibid.

32 Gregor Erbach, *Reform of the EU Carbon Market from Backloading to the Market Stability Reserve* (European Parliament Research Service 2014) <http://www.europarl.europa.eu/RegData/etudes/BRIE/2014/538951/EPRS_BRI(2014)538951_REV1_EN.pdf> accessed 18 April 2018.

33 Jörn C Richstein, Émile JL Chappin and Laurens J de Vries, 'The Market (In-) stability Reserve for EU Carbon Emission Trading: Why it Might Fail and How to Improve it' (2015) 35 Utilities Policy 1, 18.

34 Battles (n 25).

helpful in controlling prices and reducing price instability. RGGI has put in place a similar mix of the two options.[35]

D. Banking

Banking is allowed in almost every emissions trading scheme.[36] It allows the emitters to save a part of their allowances for future use (especially in cases of high price rise). Banking can act as an immediate measure of relief for the emitters and protect them from price shocks.

While drafting the provisions allowing for banking, two factors must be kept in mind: (i) it must aim to maintain an incentive to invest in carbon emissions reduction, and (ii) to prevent any form of concentration of power and resultant market manipulation. With respect to the former, in the trading schemes where there is an oversupply of allowances, it can be reasonably expected that the emitters would bank their allowances for future use.[37] In these circumstances, it is important to ensure that banking is used only as a form of cushion rather than as a means to undermine the entire scheme.

35 Elements of RGGI (n 29).

36 Environment Commissioner of Ontario, *Introduction to Cap and Trade in Ontario*, Greenhouse Gas Progress Report 14 (2016) <https://media.assets.eco.on.ca/web/2016/11/Appendix-A-Introduction-to-Cap-and-Trade-in-Ontario.pdf> accessed 23 March 2018; ICAP, 'China - Beijing Pilot System' International Carbon Action Partnership 2 (2018) <https://icapcarbonaction.com/en/?option=com_etsmap&task=export&format=pdf&layout=list&systems[]=53> accessed 24 February 2018; ICAP, 'China - Chongqing Pilot System' International Carbon Action Partnership 2 (2018) <https://icapcarbonaction.com/en/?option=com_etsmap&task=export&format=pdf&layout=list&systems[]=56> accessed 24 February 2018; ICAP, 'China - Fujian pilot system' International Carbon Action Partnership 2 (2018) <https://icapcarbonaction.com/en/?option=com_etsmap&task=export&format=pdf&layout=list&systems%5B%5D=87> accessed 24 February 2018; European Commission, 'EU ETS Handbook' Climate Action 133, <https://ec.europa.eu/clima/sites/clima/files/docs/ets_handbook_en.pdf> accessed 24 February 2018; Urban Development and Resilience Unit, 'Tokyo's Emissions Trading System A Review of its Operation Since 2010' Directions in Urban Development (2013) <http://documents.worldbank.org/curated/en/607981468253741772/pdf/810580BRI0Toky00Box379819B00PUBLIC0.pdf> accessed 24 February 2018; ICAP, 'Japan - Saitama Target Setting Emissions Trading System' International Carbon Action Partnership 2 (2018) <https://icapcarbonaction.com/en/?option=com_etsmap&task=export&format=pdf&layout=list&systems[]=84> accessed 24 February 2018; IETA, 'Switzerland: The World's Carbon Markets: A Case Study Guide to Emissions Trading' Environmental Defense Fund (2013) <https://www.edf.org/sites/default/files/EDF_IETA_Switzerland_Case_Study_May_2013.pdf> accessed 24 February 2018; Seonghee Kim, 'Current Status and Issues of the Korean Emissions Trading Scheme' IEEJ 2 (2016) <https://eneken.ieej.or.jp/data/6661.pdf; California Cap and Trade https://www.c2es.org/content/california-cap-and-trade/> accessed 24 February 2018; Jonathan L Ramseur, 'The Regional Greenhouse Gas Initiative: Lessons Learned and Issues for Congress' CRS Report 3 (2017) <https://fas.org/sgp/crs/misc/R41836.pdf> accessed 24 February 2018.

37 Chris Busch 'Oversupply Grows in the Western Climate Initiative Carbon Market' (2017) 23 Energy Innovation <http://energyinnovation.org/wp-content/uploads/2017/12/Oversupply-Grows-In-The-WCI-Carbon-Market.pdf> accessed 24 February 2018.

The ETS should only allow banking between consecutive compliance periods.[38] For example, in the Saitama (Japan) Target Setting Emissions Trading System and the Tokyo Cap-and-Trade Program, an emitter would be allowed to bank his unused allowances from the first compliance period into the second compliance period, but the same banking cannot be used in the third compliance period. This would prevent the spill-over of over-supplied allowances onto the subsequent compliance periods.

Banking could also be made subject to a general holding limit. In California, all the emitters are allowed to bank their allowances. Such banked allowances do not expire; however, emitters are allowed to bank allowances only up to a prescribed limit.[39]

VII. Offset Projects

Offset projects add to the element of flexibility of an ETS.[40] They act as an alternative compliance mechanism for an entity to offset its emissions. The emitter can invest in cheaper carbon-saving and use the reduction in emissions achieved from such offset projects to comply with its cap. It offers an economically viable option to them by taking advantage of the other 'low-hanging fruits' in the carbon economy. For instance, a coal-power plant operator might wish to shift to a natural gas-based power plant (less carbon-intensive) in the future to comply with its cap. As this might require substantial investment, the emitter can, meanwhile, engage in carbon offset afforestation to make the project compliant with the cap. The offset allows the RA to divert resources to projects that face investment barriers. Further, offset projects help in engaging the community.

A. Eligibility for Carbon Offset Projects

Across the globe, the most commonly imposed eligibility criterion for offset projects is the 'additionality' requirement. Theoretically, the requirements seek to answer the basic question – 'would the activity have occurred, holding all else constant, if the activity were not implemented as an offset project?'[41] The emissions reduction has to be real, quantifiable and permanent. The additionality requirement ensures that the project developers do not get unjustly enriched and that the offset credits are legitimately used for the carbon-saving projects that require additional financial incentive.

38 ICAP, Japan - Saitama Target Setting Emissions Trading System, International Carbon Action Partnership 2 (2018) <https://icapcarbonaction.com/en/?option=com_etsmap&task=export&format=pdf&layout=list&systems[]=84> accessed 24 February 2018; Urban Development and Resilience Unit, Tokyo's Emissions Trading System A Review of its Operation Since 2010 Directions in Urban Development (2013) <http://documents.worldbank.org/curated/en/607981468253741772/pdf/810580BRI0Toky00Box379819B00PUBLIC0.pdf> accessed 24 February 2018;

39 'California Cap and Trade' (*Center for Climate and Energy Solutions*, 2018) <https://www.c2es.org/content/california-cap-and-trade/> accessed 24 February 2018.

40 Anja Kollmuss and others, *Handbook of Carbon Offset Programs Trading Systems, Funds, Protocols and Standards* (Routledge 2010) 6.

41 ibid 23.

The emissions schemes across the world provide for specific tests to satisfy the principle of additionality. For instance, the Kyoto Protocol's Clean Development Mechanism ('CDM') requires the project developers to satisfy a four-step analysis.[42] The first step is to identify alternatives to the proposed CDM project in consonance with the mandatory laws and regulations. Under the second step, 'investment analysis', the project developer must satisfy the regulatory authority that 'proposed project activity is economically or financially less attractive than at least one other alternative…without the revenue from the sale of [offset credits]'.[43] If the developer is able to satisfy the authorities regarding 'investment analysis,' he can skip to the fourth step. Under the third step, 'barrier analysis,' the project developer needs to identify barriers that might prevent the implementation of the project (such as technological barriers and ecological barriers) and how the offset credits would alleviate such barriers.

The fourth step involves 'common practice analysis', which acts as a credibility check and complements the investment or barrier analysis. This step involves assessing other similar activities in the region based on a similar technology and scale of operation. If similar activities are observed then the determination under the investment or the analysis test is contradicted. The 'common practice analysis' can be satisfied in similar activities if there are essential distinctions between the two set of activities and it can be explained why certain benefits given to the similar activities, which are not available to the proposed offset project render them attractive.[44]

These tests, either in whole or part, have been adopted in other ETSs[45] and voluntary standards for offset projects.[46] Other additionality requirements such as 'regulatory surplus test' (*i.e.*, 'an offset project must be surplus to all federal, provincial/territorial and regional legal requirements and other climate change incentives') have also been developed.[47]

---

42 CDM Executive Board, 'Tool for the demonstration and assessment of additionality (version 03)' UNFCCC <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v3.pdf> accessed 24 February 2018.

43 ibid.

44 ibid.

45 Chicago Climate Exchange, 'Renewable Energy Systems Offset Project Protocol' CCX (2009) <https://www.theice.com/publicdocs/ccx/protocols/CCX_Protocol_Renewable_Energy.pdf> accessed 24 February 2018; Greenhouse Gas Reduction Targets Act: Emission Offsets Regulation S.B.C. 2007, c. 42, <http://www.bclaws.ca/civix/document/id/loo96/loo96/393_2008> accessed 24 February 2018.

46 'Gold Standard for the Global Goals: Principles & Requirements' (Gold Standard, 2018) <https://www.goldstandard.org/project-developers/standard-documents> accessed 24 February 2018; Deborah Adams, Voluntary Carbon Standard 2007, IEA Greenhouse Gas R&D Programme (2008) <http://ieaghg.org/docs/general_publications/Carbon%20Offsetsweb.pdf> accessed 24 February 2018.

47 Kollmuss (n 40) 86, 90; Regional Greenhouse Gases Initiative, Offset Handbook for Regional Greenhouse Gas Initiative (RGGI) Model Rule Offset Subpart XX-10 and Model Offset Consistency Applications and Model Monitoring and Verification Reports (Version 1.1), RGGI 31 (2015) <https://www.rggi.org/sites/default/files/Uploads/Offsets/Revised_Offset_Handbook_2015_05_13.pdf> accessed 24 February 2018; Chicago Climate Exchange,

B. Framework for Offset Projects

There are two approaches to framing of regulations for offset project, namely the bottom-up approach and the top-down approach.

The former, bottom-up approach, was adopted in the CDM: The developers of a project would submit the proposal for the project to the regulatory authority, which would either approve or reject the project. It requires an individual assessment of the projects on the basis of one or more additionality tests. The latter, top-down approach, is where the certain specified types of projects were deemed to have qualified for the offset project. Such a model was adopted under the RGGI.

The Regulatory Authority, under the above approaches (bottom-up approach and top-down approach), can further analyse the projects either on a case-by-case basis or according to certain predetermined standards.[48] Under the former, the developer would employ its own specific methods and resources to satisfy the regulatory authority regarding the additionality requirements, calculation of carbon reduced and monitoring methodologies, among others requirements. Under the latter, the developer would have to adhere to the standard protocols prepared by the regulatory authority for the above-mentioned purposes.

We believe that to simplify the emissions scheme, provide stability, credibility and predictability, remove subjectivity and minimise the administrative costs, it is better to incorporate a top-down approach in the scheme with certain standardisation measures. California's ETS provides an interesting example: The California Air Resources Board ('CARB') has confined offset projects to forestry (including urban forestry), manure digesters, ozone-depleting substances projects, mine methane capture, and rice cultivation.[49] It has released offset protocols that standardise the entire procedure of setting baselines, ensuring compliance and ensuring adherence to the principle of additionality. The protocols are framed in consultation with the stakeholders.

Renewable Energy Systems Offset Project Protocol, CCX (2009) <https://www.theice.com/publicdocs/ccx/protocols/CCX_Protocol_Renewable_Energy.pdf> accessed 24 February 2018; Climate Action Reserve, Program Manual, CAR 31 (2015) <http://www.climateactionreserve.org/wp-content/uploads/2015/08/Climate_Action_Reserve_Program_Manual_090115.pdf> accessed 24 February 2018; Deborah Adams, Voluntary Carbon Standard 2007, IEA Greenhouse Gas R&D Programme (2008) <http://ieaghg.org/docs/general_publications/Carbon%20Offsetsweb.pdf> accessed 24 February 2018; Climate Community and Biodiversity Standard, CCB Standards: General Criteria, Rainforest Alliance 20 (2017) <https://www.rainforest-alliance.org/business/sites/default/files/site-documents/climate/documents/M2-ccbs-v2-ENG_general-criteria.pdf> accessed 24 February 2018.

48 Therefore, there are four possibilities for the framework– (i) bottom-up approach with the RA analysing the projects on case-by-case analysis, (ii) bottom-up approach with the RA analysing the projects on the basis of pre-determined standards, (iii) top-down approach with the RA analysing the projects on case-by-case analysis, and (iv) bottom-up approach with the RA analysing the projects on the basis of pre-determined standards.

49 'Compliance Offset Program' (*California Air Resources Board*, 2018) <www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm> accessed 24 February 2018.

This framework provides for an easy determination of additionality requirements. While determining which projects would be eligible for an offset project, the RA would take into consideration factors such as methods which have been technologically proven as effective, the presence of barriers to the project and other relevant factors under the additionality requirement. This largely removes the burden on the developer to individually prove additionality. This can be contrasted with a bottom-up approach and a case-by-case analysis. Although a bottom-up approach and a case-by-case analysis can broaden the spectrum of activities that can be covered, they put an enormous regulatory and financial burden on the Regulatory Authority and increase the chances of rejection of proposals, abuse of authority, and corruption.[50]

Under the CDM, the project reports submitted to the authorities were usually 40-60 pages long and in California's Cap-and-Trade Program, they are on an average six pages long.[51] The World Bank has also noted a shift towards the use of top-down and standardised approaches. Even the schemes that were initially designed to be bottom-up have started to adopt the top-down and standardised approaches.[52]

C. Carbon Offset Limits

One of the major criticisms of emissions trading schemes has been that they allow for the big emitters to keep postponing their emissions reduction by engaging in the trade of allowances and offset credits. To counter this criticism, an offset cap could be introduced. For instance, RGGI ordinarily allows the use of offsets up to 3.3% of the reported emissions only.[53]

D. Addressing Concerns regarding Carbon Leakage and Permanency

At this point, we must also note that all the offset project proposals are based on prediction and possibility. In a few cases, the projects might be based on new technology where the data is not adequately available and the calculation for reduction in GHG emissions might be highly speculative. To err on the side of caution, some ETSs mandate a 'discount factor' to be applied to the carbon emissions. For instance, RGGI prescribes a 10% discount on award of carbon allowances for potential reversals of sequestered carbon.

50 Partnership for Market Readiness, Overview of Carbon Offset Programs Similarities and Differences (Technical Note 6), World Bank 10 (2015) <https://www.thepmr.org/system/files/documents/PMR%20Technical%20Note%206_Offsets_0.pdf> accessed 24 February 2018; See also Derik Broekhoff. Expanding Global Emissions Trading: Prospects for Standardized Carbon Offset Crediting. International Emissions Trading Association (2007); Climate Action Reserve, Program Manual, CAR 31 (2015) <http://www.climateactionreserve.org/wpcontent/uploads/2015/08/Climate_Action_Reserve_Program_Manual_090115.pdf> accessed 24 February 2018.

51 ibid.

52 ibid.

53 Regional Greenhouse Gases Initiative, Model Rule Part XX CO2 Budget Trading Program RGGI (2013), <https://www.rggi.org/sites/default/files/Uploads/Design-Archive/Model-Rule/2012-Program-Review-Update/Model_Rule_12_23_13.pdf> accessed 24 February 2018.

This provision is not implemented if the project developer holds approved long-term insurance, guaranteeing replacement of the carbon not successfully sequestered.

Canada, in its Offset System Quantification Protocol, provides for sector-specific discount factors.[54] Similarly, Alberta has developed an 'assurance factor approach', whereby, once the offset credits are discounted, the government of Alberta takes on the liability from the project developer to ensure the permanence of the emissions reduction.[55] Use of discount factors can be helpful in offset projects where the regulatory authority believes that there is an enhanced risk of carbon leakage and doubt regarding the permanency of the carbon emissions reductions. This would promote new technology and not compromise the goal of carbon emission reduction.

VIII. Conclusion

ETS offers the perfect solution to the issue of tackling climate change. It offers flexibility to the emitters and is politically acceptable (in contrast to a carbon tax). It recognises that the cost of installation of new technology for certain entities can be expensive in the short-term and until then, other carbon-saving avenues can be taken advantage of to avert a climate disaster.

It is essential to keep the RA independent of the political branches. Since ETS is a relatively new concept and unknown among most people, it is necessary for the RA to play an active role and prevent market failure. The RA must be empowered to include a minimum number of carbon-intensive industries under the ETS.

To promote cooperative federalism and to factor in area-specific concerns, the State Government must be given the power to add other entities. The emitters must be required to submit compliance plans outlining their emissions reduction goals and means of achieving them. To maintain the price within the desired range, safety valve triggers and a price-based Market Stability Reserve can be employed.

Allowing the emitters to use their unused allowances in the next compliance period, in anticipation of increased prices, can be helpful in providing individualised relief to the emitters. Carbon offset projects, another commonly employed flexibility mechanism in an ETS, allow the emitters to postpone their emissions reduction by investing in other cheaper carbon-saving projects.

With the above framework, India can fulfil its commitments under the Paris Agreement and be a part of the global fight against climate change.

---

54 Environment Canada, Canada's Offset System for Greenhouse Gases Program Rules and Guidance for Project Proponents Minister of the Environment 43 (2009) <http://publications.gc.ca/collections/collection_2010/ec/En84-42-3-2009-eng.pdf> accessed 24 February 2018.

55 Alberta Environment, Offset Credit Project Guidance Document, Province of Alberta (version 1.2) 24 (2008) <http://www.assembly.ab.ca/lao/library/egovdocs/2008/alen/165331.pdf> accessed 23 April 2018.