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Equity in Sustainability: Unravelling Financial Realities and Global South Perspective on Mitigating Carbon Emission

Równość w zrównoważonym rozwoju: realia finansowe i perspektywa globalnego południa w zakresie łagodzenia emisji gazów cieplarnianych

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Abstract

The economics of environmental sustainability is embedded in several tragic dilemmas, underscoring the inefficiency of contemporary socio-economic structure that has failed to provide prior consideration to the issues related to protecting the socially excluded and marginalized community. The study scrutinizes how corporate giants favour the commercial aspects of development, promoting a mercantile logic of meritocracy and capitalistic zeal of accumulating wealth, neglecting the social component of sustainability and subsistence. Emphasizing the symbiotic nature of environmental sustainability, the article advocates the significance of constructing a value system that transcends instrumental reasoning to support an intrinsic value of ecologism – focusing on the innate correlation between nature and human civilization, demanding not only the transformation of the financial and economic pattern of consumption but also coercing us to rethink our value system in favour of prioritizing the subsistence rights of poor and marginalized societies. Therefore, the primary objective of the article is to analyze the financial aspects of reducing carbon emissions along with evaluating the perspective of the global south in restoring the balance between sustainability and material inequality, adopting an interpretive approach to evolve a deep and nuanced understanding of the phenomenon of our discussion.

Key words: environment, mitigation, adaptation, sustainability, development

Streszczenie

Ekonomika zrównoważoności środowiskowej jest osadzona w kilku dylematach, podkreślających nieefektywność współczesnej struktury społeczno-gospodarczej, która nie uwzględniała wcześniej kwestii związanych z ochroną społeczności wykluczonej i marginalizowanej społecznie. W badaniu analizowano, w jaki sposób korporacyjni giganci faworyzują komercyjne aspekty rozwoju, promując kupiecką logikę merytokracji i kapitalistyczną gorliwość w gromadzeniu bogactwa, zaniedbując społeczne elementy zrównoważonego rozwoju. Podkreślając symbiotyczny charakter zrównoważenia środowiskowego, w artykule postuluje się znaczenie konstruowania systemu wartości, który wykracza poza rozumowanie instrumentalne, w celu wspierania wewnętrznej wartości ekologizmu – skupiając się na wrodzonej korelacji pomiędzy naturą a cywilizacją ludzką, wymagając nie tylko transformacji sytuacji finansowej i ekonomicznego modelu konsumpcji, ale także zmusza nas do ponownego przemyślenia naszego systemu wartości na rzecz priorytetowego traktowania praw do utrzymania biednych i marginalizowanych społeczeństw. Dlatego też zasadniczym celem artykułu jest analiza finansowych aspektów redukcji emisji gazów cieplarnianych wraz z oceną perspektywy globalnego Południa w przywracaniu równowagi pomiędzy zrównoważonym rozwojem a nierównościami materialnymi, przyjęcie podejścia interpretacyjnego w celu wypracowania zrozumienia problematyki naszej dyskusji.

Słowa kluczowe: środowisko, mitygacja, adaptacja, zrównoważony rozwój, rozwój

1. Introduction

The scarcity of economic resources plays an instrumental role in culminating the framework for designing policies for pricing carbon and mitigating excessive emissions. The political and economic implications of following the guidelines of international protocol related to reducing the dependency on conventional energy resources such as coal and fossil fuels can be extremely challenging, particularly for developing nations. The general narrative of a sustainable and green environment often conflicts with the state's developmental goals to accelerate the pace of financial growth following the dictums of focusing on GDP (Gross Domestic Product) and the domestic income of the nation. However, the extreme liberalization and privatization of the market cause detrimental harm to the climate policy of low-developed countries. The crony-capitalist approach undermines the inherent value of protecting the ethos of ecologism. It glorifies only economic success as the sole criterion to achieve the desired goal of inclusive development.

We often forget that; development is a multidimensional concept. The pressing need for inclusive and sustainable development on a global scale has obtained profound consideration with the establishment of UN Sustainable Development Goals (SDGs), which consists of numerous shared concerns related to socio-economic and environmental domain of progress (Ursavas & Apaydin, 2024; Kleespies & Wihelm, 2022). The comprehensive framework of the SDGs explicitly articulates the interconnected nexus between stabilising economic challenges and prioritising socio-ecological interest of the society. The article aims to discuss the praxis of sustainability, reflecting the concerns of the global south and underscoring the transformative relevance of SDGs. Subsequently, I would like to focus on wide range of SDGs, encompassing the realm of subsistence emphasising the alleviation of poverty, promotion of quality education, facilitation of access to food, water, shelter, as well as increasing affordability and accessibility to clean energy resources and clean environment to develop a holistic and collaborative perspective in navigating the complexities of global development.

Nevertheless, considering the economic dimension of sustainability is equally important. The climate deniers often criticise the formulation and implementation of environmental protection policies because of restricted financial capability of the state, especially in the least-developed nations. Some may even resist allocating resources for climate action, fearing it might hinder the prospects of the development process. Consequently, we must understand the significance of establishing a mutually beneficial relationship between state developmental objectives and the practical implementation of environmental sustainability.

Putting the finances in context, the idea of pursuing a market-based mitigation policy found its robust manifestation in the Kyoto Protocol. The consensual parties mutually decided that industrial countries (Annex 1 parties) should take collective actions and an upfront position in limiting the rate of emissions up to 5.2 percent below the 1990 level from 2008 to 2012. The agreement also stated the obligation of Annex 1 parties to assist non-Annex parties in moving forward with a sustainable account of development following the clean development mechanism (CDM) (Muller-Pelzer, 2008).

However, before elaborating on the economic jargon of environmental policies, we need to understand the relevance and the intrinsic and universal nature of ecological crises that presuppose a redressal strategy to resolve a collective bargaining problem to ensure equal and fair access to resources that we all inhabit from nature. It is intrinsic because ecological sustainability promotes the moral rationale of disengaging with the instrumental zeal of the consumerist pattern of acquiring more and more socio-economic resources and reinforces the collective obligation to prioritize the notion of subsistence rights of poor and marginalized societies. The socio-economic vulnerabilities and inadequate coping capacity of least-developed nations cause massive damage and hinder the prospects for enacting risk aversion strategies simply because they cannot bear the burden of policies that try to punish the individual for producing more carbon (Molisa & Wittneben, 2008).

Therefore, the universal canon of sustainability motivates us to implement the thesis of *common good*, which works on the ethical premises of protecting the mutual interests and values that can be beneficial for accelerating the process of human flourishment focusing on social values such as promotion and protection of subsistence rights that includes access to health, education, food, shelter, clean environment and any other relevant category that is necessary for the socio-economic well-being of human civilization. Subsistence Rights support the moral and legal significance of entitlements that every human needs to live with dignity.

Featuring the relevance of subsistence rights, Henry Shue argues that *People who lack protection against violation of their physical security can, if they are free, fight back against their attackers or flee, but people who lack essentials, such as food, because of forces beyond their control, often can do nothing and are on their own utterly helpless* (Shue, 1980, p. 25) Therefore, the protection and promotion of every right require adherence to correlative duties that include the responsibility to avoid deprivation by not creating impediments in the way of realizing human rights, the obligation to protect people from the deprived conditions with the help of creating an institutional structure that will identify the defector and dismantle the motives to violate, and the commitment to aid and provide ought to be fulfilled as a part of moral responsibility. It includes assistance to the burdened people facing social evils and natural calamities (Shue, 1980). Similarly, James Nickel has also advocated the virtue of human good, claiming that human rights are essential and universal, and it would be naïve to deny access to basic entitlements

such as water, food, shelter, and health facilities as these rights are the foundation to ensure human security (Jones C., 2013).

Subsequently, the universal capability approach recognizes the relevance of subsistence rights, featuring a pragmatic solution to invest in the functionings and capabilities of the individual, departing from the traditional approach of allocating resources and opportunity. Amartya Sen has provided an economic justification for implementing an action-oriented program via establishing a close link between income and capability. For instance, a low level of income can be a significant reason for illiteracy and ill health, and one can attain better prospects of life in terms of better education and better health facilities with the development of individual capability, which will lead to better income and subsequently enhance the standard of living and quality of life. For Amartya Sen, the goal of development can only be realized with the subsequent elimination of major unfreedoms such as constant check on tyrannical government, reformation of collapsed economic structure, intensification of social interaction to reduce increased stratification, and development of the political will to implement public-friendly programs to protect people from poverty, ill-health and environmental crisis (Sen, 1999). In the business of economics, the social and political axiom of subsistence rights seems redundant. However, the economic standpoint of environmental policies is premised on the assertion of finding syntheses that would procure the ethos of sustainability, i.e., to promote social goods for the marginalized without jeopardizing the financial health of the nations.

An extensive observation reveals that sustainability and subsistence are mutually intertwined and inclusive in nature. They might appear different from the external standpoint, yet they share common and overlapping interests pertaining to the welfare of society, such as the protection and promotion of human rights that are essential for human survival. Nevertheless, the existence of similarities must not be confused with the duplication. Subsistence is a categorical imperative that is necessary for the survival of an individual. On the other hand, sustainability is a broader concept, emphasizing the significance of actions needed to protect not only the survival of the present generation but are transcendental and transgenerational in nature. Sustainability is an ethical premise that attempts to unite the different criteria of structural improvements in such a manner that it produces a unifying strategy that has various components related to financial growth and its relationship with social, political, and ecological concerns to address the complex phenomena of causality, explaining the inclusive and interdependent nature of development (Seremesic et al. 2021).

In other words, sustainability refers to the notion of economic development that not only makes commitments to fulfil the current generation's needs but also prioritizes future generations' interests. Sustainability recognizes a system capable enough of reproducing goods and services continuously to avoid extreme sectoral imbalance, which can devastate agricultural and industrial production. The report of the Independent Commission for Sustainable Equality defines *sustainable development is not a fixed state of harmony, but rather a process of continuous change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future and present needs and requires the fulfilment of basic requirements of all to live a dignified life* (United Nations, 1987).

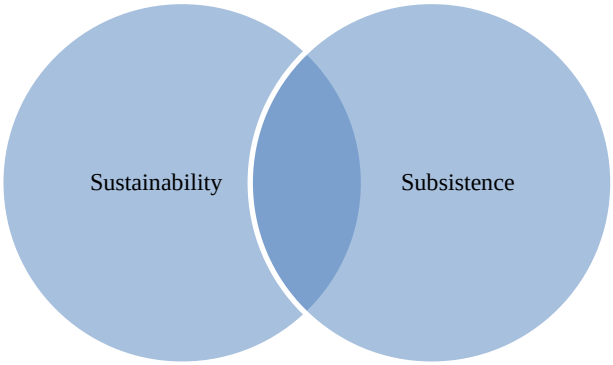

Figure 1. Venn Diagram Depicting the Shared Realm of Concerns between Sustainability and Subsistence, Author's Vision

In short, integrating subsistence rights into developmental planning promotes the ethical imperative of safeguarding the rights of minorities. Moreover, the discourse on sustainability and subsistence underscores the prevailing distributional gap in our society. Mercantile logic is usually perceived as an impediment to reducing the distributional gap; however, constructive thinking has developed innovative ideas to utilize market logic to resolve the environmental crisis. Therefore, the following section will try to understand the structural phenomenon of quantifying the mitigation or emission reduction and the role of the market in evolving strategies that may help to restore the balance between environmental justice and economic efficiency without thereby putting the burden on the shoulders of the state to mobilize funds for supporting the implementation of reduction and adaptation climate policy. We will start the discussion by elaborating on the theoretical significance of mitigation strategies to understand the nature of the problem and then dig deeper to critically analyze the practical implementation of the plan

from the subaltern perspective to propose a balanced approach that reconciles the phenomena of environmental justice and economic development.

2. The Praxis of Mitigation Strategies: Instrumentalising the Pricing Mechanism

The employment of mitigation policies could be an intricate process that requires a massive disbursement of financial investment in calculating or assessing the costs and benefits of damage caused during the natural calamity, such as surplus losses in agricultural production, loss of property in the wake of flood and storm surges and so on. According to William D. Nordhaus, Joseph Boyer, and Nicholas Stern, if the temperature of the earth rises around 6.0-7.4 degrees Celsius, then the result of such acute warming will be catastrophic. The aggregate estimation of damage might require an investment of 10.2% to 11.3% of the world's GDP to cope with the ill effects of climate change (Aldy, Krupnick, Newell, Parry, & Pizer, 2010). Such a vast amount seems unmanageable to capitalize on in stabilizing carbon emissions. Therefore, the fundamental responsibility is to further the realization that if we fail to alter the consumerist pattern of individual behaviour and continue on the path of excessive emission, it would be complicated for us to prohibit the future catastrophe of climate change.

Mitigating emissions could be the starting point for averting the upcoming risks to human security. As far as the question of fund mobilization is concerned, the reduction of negative externalities and positive imposition of energy taxes and emission trading could be increasingly productive in generating fiscal opportunities. The following section will explore the diverse forms of mitigation strategies and their practical implementation in the global south.

2.1. Reform in Fossil Fuel Subsidies

The proposal to reform fossil fuel subsidies is an instrumental market strategy to phase out excessive carbon emissions and rationalize the discourse on climate policy, curtailing the impact of negative externalities with the aim of shifting from a carbon-intensive to a resource-efficient economy. It is well-known that subsidizing fossil fuels will result in excessive combustion to fulfil the rising demand for carbon-intensive energy resources. Consequently, the exhaustion will pose a harmful threat not only to environmental security but also to the public health safety program. According to the data analysis by the International Energy Agency in 2015, it was reported that the subsidization program of governmental institutions was responsible for causing 13 percent of global carbon dioxide emissions in 2014 (Skovgaard & Asselt, 2019).

Governments across the globe heavily subsidize the manufacturing and utilization of energy resources such as coal, petroleum, and gasoline. The subsidization policies of the state protect the Business of fossil fuels from the speculated risks of the market, making it a profitable endeavour; promoting a negative tax on carbon emission without internalizing the consequences of doing so can be very devastating (Koplow, 2018). The idea of altering the fossil fuel subsidies was first articulated in the G-20 meeting in Pittsburgh in 2009, where the participating parties agreed that promoting and protecting fossil fuel subsidies are acting as an 'anti or negative' climate-sensitive discourse (Graaf & Blondeel, 2018). Later on, a similar agreement was also signed by the APEC (Asia-Pacific Economic Cooperation) countries, emphasizing developing mechanisms to phase out the national dependence on fossil fuels incrementally (Graaf & Blondeel, 2018).

The popular rationale to waive off the external and internal cost of fossil fuel below the price of production comes from the governmental accountability to expedite the access of low-income households to energy resources. The ecological perspective brings a straightforward narrative on cutting back on fossil fuel subsidies without considering how affordable it would be for marginalized communities in developing nations (Asselt, Merrill, & Kulovesi, 2018). The pro-poor approach of the welfarist state challenges the theoretical supposition of mercantile logic to cut back on subsidies to meet the international goal of keeping the increase in temperature below 2 degrees Celsius agreed at the Paris Climate Summit of 2015. It was argued that the reforms seem illogical and impractical for the people experiencing poverty, where the mobilization of resources for necessities such as food, water, health, education, and shelter is highly strenuous, and the removal of energy subsidies will expand the distributional gap and end up threatening the prospects of subsistence rights. Consequently, the reforms in fossil fuel subsidies faced significant political backlash, followed by mass movement and public resentment, disrupting the social and political stability of the state (Newell & Johnstone, 2018). The outbreak of public resentment delivered a robust message to the government institutions that the goodwill to protect the environment is not sufficient and that the process of decarbonization of the economy needs to be linked with the principle of social and global justice to prioritize the interests of the poor and low-income households in developing countries.

The proponents of subsidy reformation responded by releasing many circulars outlining the practical relevance of mitigation strategies while rejecting widespread falsehoods and disinformation. They cited the research conducted by the International Monetary Fund (IMF), exposing that merely 7 percent of the total fund allocated for fossil fuel subsidies reaches low and poor households (Whitley & Burg, 2018, p. 48). However, the propagation of misleading information needs to be corrected by including the agenda of educating the masses about the comparative benefits of implementing policies to cut down the emission rate.

The reduction of energy subsidies can loosen the space from the overburdened government budget to earmark funds for the enforcement of social protection policies of either providing direct cash transfers or waiving fees for the services that are essential for sustenance, such as education, health, and public transportation (Skovgaard & Asselt, 2019). The reform strategies develop opportunities for the government to operationalize the normative approach of establishing a synthesis between economic growth, monetary progress, and social welfare (Newell & Johnstone, 2018). They argue that the reformation of energy subsidies was not to exclude the poor from the realm of beneficiaries; instead, the objective of the program was guided by the international doctrine of sustainable development goal of *leaving no one behind* from having access to clean energy resources (Patnaik, Jha, Pradhan, & Jain, 2020).

Moreover, the redressal strategy lies in strengthening the moral responsibility of the global North to collaborate in terms of providing technical support to the global South. International non-governmental organizations and civil society institutes can create a diverse network of communication and knowledge outsourcing units to assist the least developed countries. For example, FFFSR (Friends of Fossil Fuel Subsidy Reform) is a norm articulation informal entrepreneur organization that has focused its attention on researching and deriving procedures that will help the countries to learn how to establish equilibrium between climate-resilient policies along with investing in areas of social protection that require the prolonged intervention of the government (Rive, 2018). Similarly, the GSI (Global Subsidies Initiative) also conducts region-specific research to contextualize the issue of subsidy reform with the public outreach program and teach them how the curtailment of fossil fuel subsidies can be beneficial for national development and to help the marginalized, shifting the dynamics of financial responsibility and linking it to the polluter pays principle that states those who are emitting more should carry the burden of paying the price (Lemphers, Bernstein, & Hoffmann, 2018).

If we take the example of India, the studies conducted on analyzing government expenditure on energy subsidies show that in the year 2010-2011, the government devoted INR 43,904 crore to aid the Business of energy resources to protect it from the risks of market slacks and booms (Lang & Wooders, 2012). Undoubtedly, the massive disbursement of funds for non-essential goods challenged the ability of the government to allocate financial resources to develop social safety net policies to shift the continued dependency of the rural population on the use of *chullah* and biomass for cooking purposes. It is well known that traditional energy resources, such as the burning of coal and wood, release excessive smoke that can cause a drastic increase in the number of asthma and chronic bronchitis cases. The research suggests that approximately 1.24 million people have lost their lives due to excessive reliance on traditional methods of energy resources (Gill-Wiehl, Brown, & Smith, 2020). Since cooking is a gendered activity, women's dependency on conventional cooking stoves makes them much more vulnerable to the effects of carbon-intensive activities (Geraldine, 2009).

Considering the nature of embedded complexities, the government of India has taken several initiatives to launch the reformation mandate of fossil fuel subsidies without jeopardizing the economic health of the poor and marginalized social groups. The first and foremost attempt in this direction was made in the year 1970 when the government decided to subsidize the retail price of LPG gas cylinders, clean fuel used for cooking in India, to shift the dependency of the vulnerable section from conventional to modern and efficient energy (Global Subsidies Initiative, 2014). The path of redressal was accompanied by the inauguration of Direct Benefit Transfer for LPG consumers (DBTL), also known as *Pratyaksh Hastantrit Labh* (PaHaL), to improve the efficacy of the LPG subsidy program and scrutinize the procedural mechanism of setting the agenda for verifying or assess the on-sight effect of implemented policy. However, the government realized that the efficacy of the program could not be raised until they developed mechanisms to deal with the people directly, without the intervention of public agents (Jain, Agarwal, & Ganesan, 2018).

In 2015, the Modi government tried to revise the canons of energy subsidy. They launched the *Give It Up* campaign, urging wealthy and upper-middle-class households to voluntarily give up subsidized LPG cylinders. The promotion and awareness strategy of the program entailed the mechanism of organizing educational camps, running door-to-door campaigns, and using social media platforms to convey the message of doing something significant and productive for national development (Patnaik, Jha, Pradhan, & Jain, 2020). To translate the *give it up* drive into an effective policy, the government laid the foundation of Pradhan Mantri Ujjwala Yojana (PMUJ) in May 2016. The fundamental responsibility of the plan was to reduce the inclusion errors and facilitate access to clean cooking fuel even in the remotest area of rural India.

Undoubtedly, the Indian government showed immense sincerity in complying with the global commitment to reform the fuel subsidies. The reformation strategy of India did not immediately withdraw the government assistance; instead, they have developed a holistic approach of educating affluent families into accepting a cap measure or cease their control on energy safety nets while providing free LPG cylinders for poor households and emancipating women as the free connections could only be claimed under the name of women, to ensure the active participation of women in the Indian financial system (Patnaik, Jha, Pradhan, & Jain, 2020).

The philosophical underpinnings of the plan reveal that the proposal of a reformation strategy is influenced by the Rawlsian postulation of allowing unequal distribution of government subsidies in terms of primary goods to protect the least well-off sections of the society (Rawls, 1971). However, the critics argue that the empowerment of the

marginalized section can never be achieved with the dubious approach of government to marginally allocate the benefits of subsidies via cash transfer unless the socio-economic unfreedoms continue to deprive the targeted group of exercising the advantage of social protection.

Therefore, the distributional strategy of primary goods must be supplemented by the capability approach of Amartya Sen. The fundamental criteria should be to create such a domain where we can perceive what the person is capable of doing if the structural impediments are removed. Sen believes that the notion of *basic capability equality* would not only allocate the burdens and benefits but also develop the consciousness to protect an individual's self-respect (Sen, 1997). In other words, the implementation of any beneficial program should consider the convergence of ethics with politics simply because moral reasoning acts as motivational factors that compel the political leadership to address the growing distributional disparity and structural inequality to foster an inclusive social agreement without jeopardizing the relevance of pragmatism in policy formulation.

2.2. Taxing Carbon: A New Market Experiment

The stabilization process of carbon emission advocated the need to move beyond the realm of curtailing the negative externalities in government subsidization programs to act positively to implement the risk aversion climate policy. Subsequently, a carbon tax is an innovative market-based instrumental strategy that replaces the political-centric approach of government, coerced by the arbitrary procedural protocols and rigid bureaucratic norms that usually slow down the pace of effective implementation process, with quick and easy taxation policy to punish the polluter (Nishimura, 2015). The carbon tax will restrict the role of government to only identifying the areas or economic activities producing excessive emissions and imposing a high rate of tariffs on carbon-intensive production and consumption enterprises. The lofty taxation policy will automatically increase the original price of the product, making the *Business as Usual* approach less profitable. The implication of employing the taxation policy will have an immediate effect on the consumption and production structure of the market. The business entrepreneurs will be given the choice of either continuing to pay the price for causing harm to the environment or finding an alternative mechanism to reduce the emission rate. However, the natural impulse of cutting costs will indirectly motivate the market to invest in energy-efficient resources, following the measures of recycling and reusing to keep the price elasticity intact to improve sales. Consequently, the change in market structure will deter the activities that cause excessive pollution in the atmosphere, which analogously asserts that carbon tax can be a practical and pragmatic approach to curb global and local pollution levels (Baranzini, Goldemberg, & Speck, 2000).

According to Dale Jorgenson, taxing carbon and reducing the cost of capital leads to m considerable gains in terms of alleviating the efficiency of the overall economy and improving public health, which will be beneficial for combatting environmental hazards (Shaw, 2014). For Jaffrey D Sachs, the problem of excessive emission lies with easy and cheap access to energy resources. The lower coal prices create the incentives for making coal a vital source of energy production. Therefore, Jaffrey suggested imposing a high tax on coal to problematize the ease of availability. He argues, *suppose coal produces electricity at the cost of $0.06 per kilowatt-hour, while solar power costs $0.16 per kilowatt-hour. The tax on coal-based electricity would have to be $0.10/kilowatt-hour. Following the case, consumers would pay $0.16/kilowatt, either for coal or for solar. The utilities would then shift to low-carbon solar power* (Sachs, 2010).

In 1991, Sweden executed the most significant carbon tax, equivalent to €105/t carbon dioxide, on polluting firms, which was closely monitored by the Swedish Tax Agency (STA) with the establishment of an authorized warehouse and to maintain the relevance and avoid any discrepancy and leakages; the STA regulate the conduct of polluters through the introduction of random tax audits (Coria & Jaraite, 2019). The introduction of the carbon tax in Sweden benefits the country by curtailing the emission rate by 9%, exceeding the target set by the Kyoto Protocol. According to Andreas Carlgren, Swedish environment minister, *Our carbon emission would have been 20% higher without the carbon tax* (Fouche, 2008).

Following Sweden's trajectory, British Columbia and Boulder, Colorado, have also implemented a downstream carbon tax to regulate the direct carbon emission source. The downstream taxation includes the categories that may reduce the daily consumption level of high carbon-intensive products, such as controlling the emission of carbon dioxide released from personal vehicles. It was argued that an upstream tax would be more administrable nationally as it focuses on regulating the conduct of firms and industries producing emissions at a large scale (Mann, 2009). In contextual terms, upstream conduct is for *polluters* and downstream conduct is for *consumers*. For example, upstream regulation targets power plants in electricity markets, while downstream regulations are administered to retailers.

Metcalf and Weisbach stated, *Regulating a few thousand fossil fuel-producing companies would account for 80% of the GHG emissions in the U.S., and the transaction costs of adding these polluters would be modest* (Mansur, 2011). The implementation of downstream tax is quite complex. It requires a colossal transaction and MRV (Monitoring, Reporting, and Verification) costs as the number of emitters is substantial (Coria & Jaraite, 2019). Moreover, the substance of pricing the carbon emission is also subject to corruption, and leakages produce an increased rate of emissions in the unregulated parts of the economy, negating the whole objective of taxing carbon. The marginal gains might provide a strong incentive to deliberate on shifting the manufacturing unit to a region that

has retained environmental tax neutrality. The relocation process creates structural barriers to carrying forward the objective of moving to a low-carbon economy. On the contrary, reducing emissions in one country will alleviate the emissions in another, trapping us in the never-ending complex cycle of the emission game (Baranzini, et al., 2017).

However, implementing global carbon pricing could downsize the probability of carbon leakages. The international community consists of multiple stakeholders, such as the national government, international civil society institutions, and international economic institutions, which could develop a consensus on determining the pricing of carbon or energy either by imposing an international tax or by putting a cap on the use of energy resources. The internationalization of the tactic of carbon pricing will only leave two choices for production units, i.e., either to pay the price for causing pollution or to invest in finding innovative or alternative technology to curtail the emission levels. Referring to the narrative of global carbon pricing, William D. Nordhaus also suggested implementing a carbon border tax to check the free riding and imposing the fee to reduce the demand for carbon-intensive goods for trade-related purposes (Baranzini, et al., 2017).

Nevertheless, the computation of carbon border tax is highly sceptical and not free from criticism. From the subaltern standpoint, the poor and low-income countries have charged the affluent countries for being too condescending in appropriating the marginal shares of profits in the realm of international trading and looking for devising alternative protectionism strategies to cater to the interests of developed countries (Ianchovichina & Onder, 2021) No consideration is given on how the distributional impact of manoeuvring the global carbon pricing could destroy the income credibility of lower-middle-class households that might aggravate poverty and structural inequality in developing countries. The concern of people with low incomes is in no way to protect the environment or think of the interests of the future generation. Instead, the primary instinct is to protect their family from the clutches of poverty that severely attack their survival, adversely affecting their capability to mobilize food, water, and shelter for sustenance.

Moreover, the tax usually denotes the negative implication of overburdening the pockets of people, and it will eventually increase personal expenditure, making it difficult for middle-class families to meet their subsistence targets (Carattini, Carvalho, & Fankhauser, 2018). Analyzing the electoral benefits and political backlash, the government also fears using the terminology of *excessive taxation* in their election manifesto to protect their political credibility among the masses.

The government could try to mobilize consensus, as the Indian government did with the *give it up campaign* we have discussed above. They could educate the masses about the tax shifting apparatus, where the emphasis is on increasing taxes on the negative externalities, in this case, tax on carbon emissions, and decreasing the supplementary value of the taxation imposed on positive externalities such as labour, sales or VAT (value-added tax) (Carattini, Carvalho, & Fankhauser, 2018). However, people usually overestimate the burden of taxation and underestimate the relative benefits of improving environmental conditions, health, and education. The social costs of enacting carbon tax outweigh the benefits of economic tactics of safeguarding the canons of ecological sustainability. Moreover, we must understand that India presents a complex case of the global south. There is no denying that poverty still haunts the marginalized community in India. However, the democratization of the political structure and the institutional maturity have provided a solid foundation for the Indian government to observe the contemporary changes and adapt and design innovative strategies to ensure the participation of all segments of society. We do not see similar political stability in other least-developed nations of the global south. They are dealing with domestic crises that are so severe that they do not give any importance to the agenda of environmental sustainability. In other words, the strategy lost its political relevance, so the intellectual group developed a new proposal for trading carbon credits, which we will discuss in the next section.

2.3. Trade of Carbon Credits: An Innovative Pricing Scheme

Emission trading is an umbrella concept consisting of a cap-and-trade system and carbon credit offsets that regulate the emission rights and trade of surplus rights. The cap-and-trade system allows the emitter to either reduce their emission or purchase the allowances of carbon credits to emit more than their quota. The implementation of a cap-and-trade system necessitates three steps: first, to determine the emission cap; second, to decide who will receive the allowances; third, distribution or auction of the allotments; and last, the government also needs to determine how to utilize the funds collected through the auctioned revenue. When the cost of carbon allowances exceeds a specific maximum limit, the government will entail a *safety valve price mechanism* and set the ceiling on carbon emission prices to regulate the arbitrary pricing apparatus (Mann, 2009).

For example, the government will distribute carbon allowances to businesses to emit, but not beyond the specified cap in the given timeframe. Suppose the firm in question proved successful in reducing the emission level. In that case, they will be entitled to sell the additional allowance or permits in the international market to assist the other enterprises that have exceeded the emission quota and whose production unit requires excessive emissions to meet the criteria of demand and supply. The anticipation of the scarcity of emission rights can provide conducive reasons to the international market to alleviate the pricing mechanism of carbon and give a solid incentive for production

units to work efficiently to reduce emissions below the quota. Subsequently, the reduction of emissions will generate positive environmental outcomes. Moreover, the notion of 'offsetting,' i.e., the residual permits, has shifted the modus operandi of command and control to a flexible and malleable approach. It has created opportunities for the market firms to preserve surplus credits to accumulate additional revenue on the sale of carbon permits (Philibert & Reinaud, 2004).

Historical analyses reveal that the conceptualization of emission trading was inspired by the simple phenomenon of taxing the externalities that may cause harm to the welfare of society, popularly known as the Pigou tax. Pigou believed it would be reasonably unjust to continue the propagation of economic activities that can dismantle the balance of social equity with no mechanism to either regulate or control the damage caused to social welfare. For instance, the implementation of the Pigou tax encapsulates charges against the person who indulges in smoking in public places for detrimentally affecting the health of the people surrounded by the offender (Zheng, Sun, Zhang, Wang, & Mao, 2021).

Ronald Coase criticized the operationalization of the Pigou tax for being too simplistic to tackle the complex intricacies of global climate change. He proposed the neo-liberal capitalist approach that establishes a close nexus between the right to pollute and the reallocation of carbon permits. The commercial logic dictates that if you put the pollution rights into the realm of the market for the transaction, the pollution resource will be used to formulate decisions that will maximize the absolute interest of production. For instance, since it is a known premise that pollution can adversely affect productivity, by any chance, the business house that will choose to increase productivity without thereby considering the social and environmental impact will not receive the optimum benefits of supplementary goods. The business will eventually end up with reduced production capacity. Therefore, the utilitarian Pareto optimal rationale will compel the business firms to develop a balancing mechanism to cease increased emissions against a certain minimum baseline (Reyes & Gilbertson, 2010).

J.H Dales has altered Coase's formulation to develop the economic theory of emission trading for translating the complex market jargon into a practical apparatus. The theoretical design was first presented in the Kyoto Climate negotiations in 1997 to stimulate intellectual innovation to build consensus on the operational norms of allocating emission permits, to determine the structure and framework of tradable permits related to banking, transferability, and, of course, specifying the timeline along with the allocation of assigned amount reserve norms (Philibert & Reinaud, 2004).

The cap-and-trade system has assisted nation-states, particularly the United States of America, in complying with the Montreal Protocol, an international agreement that put binding constraints on the conduct of the nation-state to act on combatting anthropogenic crises (Stavins, 2008). Following a similar trajectory, the European Union Emission Trading Scheme (EU ETS) has taken the program one step ahead to internationalize the premises of decarbonization for curtailing GHG emissions with a network of 11,500 installations related to power stations, manufacturing units, and aviation in more than 30 countries. It covers almost 40 percent of emissions from Europe. The system has undergone numerous reforms and reformulation phases since the culmination of the EU ETS in 2005. In July 2021, the European Commission determined the new agenda of achieving carbon neutrality by 2050. The EU ETS has inspired many developed and developing nations to work through innovative market instruments to combat the hazards of global climate change.

The cursory analysis depicts cap-and-trade as a practical innovation that will help the government generate revenues that can resolve the problem of financial inadequacy to achieve sustainability goals. However, wealth creation is directly linked to the wealth extracted from the industries, and they will organize lobbies against the government's strategy to steal their money. Highlighting a similar rationale, Roger A. Pielke Jr. argues that Cap-and-trade policies are bound to fail. It will never be able to reduce carbon dioxide emissions successfully, but it may bring in some new and significant cash for the government. The rationale is straightforward: imposing a strict limit on emissions would unavoidably raise energy prices, raising expenses across the board for the economy. Customers will object if they bear these expenses – which is the goal of such a strategy. Since no elected official wants disgruntled voters, they will make every effort to assist citizens in avoiding the rising expenses (Yale Environment, 2009).

Moreover, the profound analysis also shows that the system undermines the struggles of social groups positioned at the margins of mainstream society. The strategical discourse on tradable credits has failed to address the issues embedded in the structural framework of economic activities, particularly overconsumption and unequal appropriation of global resources. The market-based approach doesn't emphasize the elements of shared responsibility or owning up to the actions for past injustice and causing harm to the survival and sustenance of future generations; instead, it provides a free hand to shift the burden of environmental responsibility. The mechanism rewards the polluters for balancing the excess emission based on the presumption of the declining rate of emissions in the firms situated in the global South, forgetting that the subject matter of concern has no relative association with territoriality. The destruction of the environment anywhere can potentially aggravate the risks to human security everywhere. In other words, emission trading is indeed favouring the businesses of dirty industries. It incentivizes them to gain rewards from carbon offsets (Reyes & Gilbertson, 2010). Oscar Reyes and Tamra Gilbertson state, *carbon offsets are not emission reductions. Each offset that is developed in the South allows pollution from fossil-fuelled*

power stations or heavy industries in the global North to continue over and above reduction limits while the same companies and industrialized countries claim compliance with paltry reduction targets on paper (Reyes & Gilbertson, 2010, p. 53).

In India, the enactment of emission trading has exposed the hypocritical approach of the affluent and elite classes to dodge their social responsibility. The investment of business houses in the so-called *green and clean technology* failed to adhere to the ethical obligation to cooperate to stabilize excessive emissions. On the contrary, the producing firms took the opportunity to utilize green energy projects to expand the annual turnover of their businesses and to gain benefits from the governmental subsidization program (Paul, 2010). For example, in 2001, Tata Motors established a wind turbine project in *Sahajanpur* village, predominantly consisting of Dalit households, the socially excluded groups facing caste discrimination, implementing the CDM Project. The enactment of the project has destroyed the primary livelihood of villagers and illegally deprived them of their landholdings. To attract the support of villagers, the company tried to tempt the locals with horrendous promises of opening schools and health centres, supplying electricity, constructing roads, and facilitating public transportation. However, none of the promises was fulfilled. The villagers complained that they were given no prior information about the project establishment and could not follow the complex jargon of emission reduction and CDM. The locals were betrayed by selling their land below market prices. The *sarpanch*, the head of the village, charged the company for evading the taxes due to the *gram panchayat* (village council). The company has also created impediments to appropriating the means of violence and intimidation against the residents who insisted on seeking legal action (Reyes & Gilbertson, 2010).

The annexation has aggravated the plight of marginalized sections of society and incentivized the forceful acquisition of land. Regarding environmental benefits, the project has given the production enterprises opportunities to utilize the loopholes of selling carbon credits for their benefits that have raised the overall emission percentage and polluted the local environment and water bodies. Moreover, no instrumental structure has been developed to ensure that the revenue generation will be appropriately utilized for the welfare purposes of poverty alleviation, assisting the global South and synthesizing the coping mechanism to mitigate the upcoming environmental catastrophe. Therefore, it would not be incorrect to argue that the trading system had ushered the race for re-carbonization.

3. A Composite Approach to Hybridisation: Synthesising Mitigation and Adaptation

The discourse on mitigation emphasizes the emergent need to operationalize the shift towards a low-carbon economy and facilitates the trajectory of reducing the carbon footprints of individuals and corporations. However, the debate on implementing mitigation policies through tax or trading systems is immersed in the complexities of leakages and ineffective dimensions. Economists are also sceptical of the efficiency and credibility of the mitigation program. Economists understand that the task of formulating economic policies for the masses is extremely complex. Therefore, Bidyut Chakrabarty and Prakash Chand argue that public policy embodies a harmonious blend of head and heart. The head refers to rational analysis that involves practical examinations of policy implementation, delving into questions concerning the potential societal benefits, the costs of implementation, and the upcoming outcomes. Alternatively, the heart represents the ideological stance on the distribution of values, or we could say the allocation of resources to ensure the fulfilment of specific social and economic rights associated with liberal and left-oriented ideological spheres (Charkrabarty & Chand, 2016). To ensure the operationalization of a just climate policy, we must build a hybrid system that simultaneously synthesizes the canons of mitigation and adaptation to contextualize the issue in social settings, providing equal opportunities to all segments of society.

The conceptual framework of adaptation is rooted in analyzing the scientific data on judging the human capacity to adjust to both physical and social changes in climatic conditions, which usually leads to a shift in the behavioural structure of society. These random and unpredictable transformations can alleviate the likelihood of risks and vulnerabilities associated with environmental hazards. Consequently, it is important to focus on building a strategic procedure of adaptation involving planning, generation and production of knowledge, technological innovation, and capacity building. This approach aims to anticipate forthcoming climate challenges and monitor growth for the timely implementation of resilience and recovery policies. For instance, a well-adapted urban settlement enhances resilience against natural disasters such as tornadoes or floods (Swart, Biesbroek, & Lourenco, 2014).

We must understand adaptation is a response-oriented approach – the execution of coping mechanisms prerequisites continuous involvement of the government and non-state actors. However, the government plays a substantial role and needs to be smart enough to understand the multifaceted nature of ecological crises. Adaptation policies do not solely rely on the effects of climate change on human security. Socio-economic and institutional factors add another layer of complexity in designing a uniform and just framework of moral entitlement to adaptation funding (Grasso, 2010). Individuals in developing countries who are impoverished and marginalized often face challenges in accessing resources and pertinent information to mitigate the harms caused by climate-related disasters and also lack the capability in terms of affordability to seek assistance from the infrastructure that is being put up in the place. Therefore, formulating any response strategy should prioritize multiple domains of safety

measures. We need the amalgamation of knowledge and innovation to ensure the development of resilience at an individual level to curtail the social vulnerabilities of the deprived sections of society (Caney, 2005).
Moreover, attention must be paid to endorsing the relevance of ethical imperatives in strengthening global collaboration and rectifying the principles of equity and fairness in designing international agreements and binding constraints to prioritize the moral standing of the global south. Therefore, the praxis of adaptation should promote shared ethical responsibility considering the criteria of need, opportunity, unequal social structure, and fairness in redistribution to expedite collective action to promote the discourse on climate justice (Bidwai, 2012). William D. Nordhaus advances *the DICE Model*, which attempts to unite fundamental elements of the biophysics with economy to explain the interrelationship between monetary allocation and global climate change, and argues that adaptation strategy is much more politically feasible because of its cost-effective nature. Pursuing adaptation doesn't demand massive budgetary allocation but holds the ability to minimize the extent of structural inequality (Gardiner, 2004).
Consequently, the policy discourse on adaptation is a moral right emphasizing the ethical narrative of subsistence rights and responsibilities. The moral right of people with low incomes entails the preposition of not suffering from the adverse impact of climate risks and the ethical responsibility of the elites to safeguard the rights of the disadvantaged sections of society. From an ethical standpoint, we can never deny that the foundational principles of a just society advocate for empowering marginalized communities with the capacity for critical analysis. This approach fosters a holistic narrative on transformative changes, emphasizing shifting the responsibility of safeguarding citizens' rights onto the shoulders of the wealthy and affluent (Pelling, 2011). However, Sen's capability approach adds a significant premise to socio-economic development, focusing on building capabilities or achieving certain functioning and valuable doings, including the capability to read or be nourished. The employment of the capability approach to adaptation could be a practical decision to improve the social functioning of marginalized communities to further an innovative realm of opportunities that could be utilized to retaliate against the unequal socio-ecological structure to destroy the monopoly of market-oriented laws (Kronlid, 2014).
Consequently, implementing adaptation policies requires cultivating social learning among the marginalized and integrating traditional wisdom with scientific analyses of environmental sustainability (Kronlid, 2014). Moreover, it expands the participatory framework of democracy and good governance along with promoting education to foster awareness regarding human rights and, most importantly, exchanging technology to fortify an institutional structure that can effectively stimulate climate resilience (Pelling, 2011).

Table 1. Justice and Adaptation in Climate Change, Author's Vision

Domain of Justice	Ethical Consideration
Distributional Justice	• Investment in Social Protection Scheme. • Raising and distributing adaptation funds considering the socio-economic and institutional framework of vulnerable societies. • Equity and Responsibility. • Provision of Insurance.
Procedural Justice	• Participation with local communities. • Fair Involvement in Negotiation Process. • Resource Management

Moreover, According to Tubiello, enhancing the adaptative response includes establishing emergency and relief funds, ensuring effective rehabilitation in the wake of storm surges, creating gender-equitable and sustainable development programs that incorporate information on new farming techniques, and ensuring the fair distribution of international adaptation financial resources that prioritize the interests of marginalized communities (Tubiello, 2008). An important advantage of investing in adaptation strategies dwells in their ability to swiftly transform the gradual and slow emission reduction process into an expedited relief mechanism. This rapid response can immediately reshape the future of the most vulnerable communities affected by natural catastrophes (Baird, 2008).
However, mobilizing funds for adaptation programs is challenging. In 2007, Greenpeace India published a report highlighting the inequality between the emission consumption of elites and the poverty-stricken masses in India. The report precisely illustrates the hypocrisy of the rich, highlighting their covert efforts to evade their moral obligation to lower emission rates. Instead, they shift blame onto the less privileged, unfairly accusing them of polluting the environment as they rely heavily on traditional sources of energy (Dubash, 2013). Similarly, developed nations are also trying to escape the moral responsibility to contribute significantly to reducing the emission rate and pressure the international community to enact provisions that will equalize the economic burden of emission reduction. Navruz K. Dubash addressed the perplexing quandary and proposed the following core narratives of hybridity, which include opting for a more realist approach of prioritizing growth and embracing a global co-benefit strategy to actualise the goals of sustainable development to highlight the significance of international collaboration to avert the adverse impact of climate change (Dubash, 2013).

In other words, the hybrid approach is incredibly significant to invest enormously in strengthening the knowledge economy and advancing human health to build human capital. The prospects of human capital foster paradigmatical changes, allowing the individual to appropriate resources for improving not only material success but also achieving the goal of spiritual growth (Krasnonosova, Mykhailenko, & Yaroshenko, 2022), making the whole community conscious of the intergenerational aspect of justice, which is an essential component of sustainability. A hybrid approach system comprises various units at distinct levels working to organize and maintain an accountable structure that divides the burdens and benefits, employing different strategies for different causes. The hybrid model shuns the symmetrical pattern for production and distribution. The asymmetrical approach fosters the narrative of a diagonal response mechanism, where every level would offer a different settlement norm for a diverse group of people. The philosophical conceptualization of the hybrid approach is influenced by the hybrid model of Simon Caney, which imposes certain obligations on affluent nations on the premise that it is not in the interest of human civilization to suffer from poverty, pollution, or any other obstacle that creates impediments in furthering the access to subsistence rights (Caney, 2005).

Subsequently, not only do we have a negative duty to refrain from causing inexplicable circumstances, but we also have a positive duty to build institutions that will monitor adherence and future compliance. If the nations were found guilty of not adhering to the principle, they would be held responsible and bear the compensation price. But one must consider that monetary aid is not the ultimate solution to everything. In my opinion, the aid must be accompanied by acknowledging the relevance of the transhumanist approach that raises concerns about relinquishing common assets, recognizing the due interest of future generations, and escaping the burden of causing an injury that will be irreversible (Weiss, 1990; Lapinski & Sadlocha, 2021). Furthermore, it is crucial to globalize the significance of the issue at a certain level that compels the international community to commit to reforming the existing biased institutional structure with a more inclusive system recognizing the cosmopolitan values of individuality, universality, and generality. Establishing such an institution will consider the deprivation element of social injustice and demand financial assistance as a legal claim in case of deprivation and non-fulfilment of subsistence rights (Pogge, 2002, pp. 181-184).

4. Conclusion

Summarising the whole debate, we can say that economic uncertainties and lack of political consciousness unquestionably have a detrimental impact on shaping the discourse on development and climate justice. However, it should not be the rationale to supersede the course of action that tries to counteract the damage caused by sprouting disasters. Mitigation and adaptation must go hand in hand to reconsider our developmental goals that provide space for marginalized and socially excluded groups.

Consequently, adopting the co-benefit program that instrumentalizes the principles of sustainability in such a way that it will result in favour of people experiencing poverty without jeopardizing the economic interest of the higher income groups is a necessary path to inclusive development. Sustainable development is a shared global commitment, its implications differ between the North and the South. Therefore, it is important to put forward a co-benefit plan which attempts to combine the practical components of mitigation and adaptation considering the developmental background of the nation. Moreover, the approach provides equal space for business activities, imposing a readjustment clause that monitors the use of clean and green technology and building an institutional framework based on the collaboration with active civil society agents to evaluate the impact of the corporative activity on lower-income households (Ahmad & Choi, 2010; Ghosh, 2009). Furthermore, the program worked effectively to ensure the enactment of relief projects to strengthen their ability to reduce physical damages caused by natural calamities. The approach seriously considers the exclusion factor in drafting the blueprint of abatement measures and tries to redress the existence of prolonged bias in allocating the goods either in terms of distributing resources or assigning duties and obligations to uphold the sanctity of just social and political order.

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