International Journal of Transcontinental Discoveries (IJTD), ISSN: 3006-628X
Volume 12, Issue 1, January-December, 2025
Available online at: https://internationaljournals.org/index.php/ijtd

Impact of Structural Changes on the Environmental Aspects of Life

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ABSTRACT

The structural changes metamorphoses the composition of the gross domestic product through paradigm shift in the technologies, infrastructure, institutions, and social practices. These variables are the most powerful determinants of environmental quality and human well-being. This paper blends all information to ascertain the causality of structural transformations and changes in the environmental aspects. The shift from agriculture to industry and services affects the environment in many ways. Energy transition changes implies that how power is produced and used. Digitalization changes Socio-Eco fabric of the society while the mobility transition alters how people and goods move. These changes influence climate stability, air quality, and health. They also affect biodiversity, land systems, materials and waste, and water stress.

The reports of the Intergovernmental Panel on Climate Change (IPCC), United Nations Environment Programme (UNEP), the International Resource Panel (IRP) International Energy Agency, World Health Organization, and International labour organization (ILO) reflects that extraction and processing of natural resources put a plethoric pressure on environment. The purposeful structural change based on concrete policies availability of finance, and equitable transitional strategies deliver rapid improvements. The relationship between Kuznets curve and the environmental aspects have been evaluated to determine the causality of structural changes. This paper also evaluates the potential pressures of the economic development on the different aspects of environment.

Keywords: Structural Changes, Gross Domestic Product, Mobility Transition, Bio-diversity, Equitable Transitional, Strategy, Kuznets Curve.

INTRODUCTION

The environmental conditions of any country is interwoven with the structural which accretes with economic development to raise the economic standard of the people. Intergovernmental Panel on Climate Change (IPCC) has unequivocally mentioned that all the human activities like unsustainable use of energy, land, changing lifestyles, patterns of consumption and production which emit greenhouse gases have caused global warming. Emissions Gap Report 2024 of United Nations Environment Programme (UNEP) warns that current trajectories in the cosmic system will raise the temperature above one and half Celsius. It will happen without a rapid increase in ambition and implementation in the next Nationally Determined Contribution (NDC) cycle in align with the agreement signed by all the participated countries to maintain the temperature below one and half degree Celsius retard the speed of global warming. All the signatories in the agreement of Paris has pledged to chalk out strategy to preclude the emission of Green Houses Gases (GHG) to regulate the increasing global warming.

According to Paris Agreement all countries is to submit their concrete plan to control the perilous gases and prioritise their implementation to bridge the gap between current climate actions and prospective goal of limiting the outcomes of global warming . Unless the integrated actions are intensified to control the Green Houses Gases (GHG), the prospective goal of limiting the outcomes of global warming to half degree Celsius which has been determined in the Paris agreement will slip farther away from human reach. Thus, the integrated actions are to be intensified to control the Green Houses Gases (GHG) across the World. The global National Determined Contribution (NDC) conference which has recently concluded in Berlin (Germany) attended by over three hundred policymakers and participants from sixty countries. The main focus remains on moving from the climate pledges to practical implementation and increased ambitions. The pivotal point of the discussion is to move from pledges to progress.

The key Takeaways of the conference to mobilize fiancé, to foster multi-stakeholders collaborations. It also concentrated on sharing a practical solutions for stemming plans for Green House Gasses and their accelerated implementation. It also focused upon the dynamics of gender and diversity and spectral decarbonisation. The gender and diversity have a crucial causality with spectral decarbonisation. The diverse perspectives of woman and marginalized section of the society enhance innovation, dexterous skill of making decisions. Their involvement also ensure that whether the decarbonisation strategies are egalitarians or inequitable for the unprivileged section of the

society. It has been observed that the companies who have higher gender diversity on their boards and management have higher carbon reduction and better adaptations to the bearings of climate change. The decision to incorporate gender and diversity into the decarbonisation efforts is imperative from the societal perspective. Their inclusion also have a strategic advantage for fulfilling the commitment to mitigate the effect of greenhouse gases from the planet i.e., net-zero goals and sustainable development. This paper also take up the issues that how do the structural changes in the economy affects the environmental dynamics of life and how the policy architect ensures these changes produce absolute impact reductions with high social legitimacy?

Structural changes of the economy

Structural changes of any economy define as an abiding reformatting of the sectoral composition. It beacon the paradigm shift in the contribution of different sectors in the total gross domestic product. Sectoral changes increases the contribution of industrial as well as service sector in terms of income generation and creation of employment. It helps formalizing the informal sector which generally exists in the backward economy .It creates derive demand for new technology, encouraging innovations in the prevailing systems. These changes revolutionize the economic landscape swapping industries with primitive and obsolescent techniques with high tech and sophisticated industries .These are possible only through the diffusion of radical technological breakthrough needed to fuel the economy to take off. These changes also customize existing spatial organization through increasing urbanization, establishing new transport corridors and opening new pathways to regional specialization. Institutional rules like pricing and standards systems, labour protection and labour law, and trade engagements also bubbles up because of structural changes in the economy. These should not be considered as marginal tweaks. They customize capital stocks like infrastructural prerequisites, machinery and buildings, reconfigure labour markets to economic development and set in new consumption patterns with the policy of preserving the environmental dynamics human life. The International labour organization (ILO) emphasizes that a fair transition to a carbon- and resource-efficient economy is essential to align environmental and social outcomes.

Structural changes and Creative destruction

The structural changes begets creative destruction in the economy. This concept has been articulated by Schumpeter in 1942.It refers to the dynamic process in which outdated economic structures are dismantled and replaced by more inventive and productive systems. This phenomenon is easier to understand in the process of structural transformation of the economy. It can be perceived as candidly historical shift from agrarian economy to industrialization during the rudimentary stage of structural changes. The continuation of such changes derives the economy to move from industry to service oriented economy.

The adoption of renewable energy, digitalization and sustainable mobility embodies the structural transient of the economy. The gradual substitution of coal and oil with energy sources mitigates the emissions of the Green House Gases. It help generating the new employment opportunities in the green economy. Typewriters and landline phones swaps with Digital technology. This change has created many new jobs in computers and communication. Cars that run on petrol and diesel are also being replaced with Electric vehicles.

This has reduced some old auto jobs but created new work in batteries and charging stations (OECD, 2022). These changes are good for the economy, the environment, and health. But they also cause job loss for some workers. That is why fair rules and social support are needed (UNDP, 2021). Creative destruction means old things end and new things grow. The establishment of sophisticated institutions and good planning will be conducive to drive these changes helpful to everyone across the glove.

Emission of greenhouse gasses and mitigation pathways

According to the reports of the Intergovernmental Panel on Climate Change (IPCC) perennial use of fossil-energy ,change of land-use and industrial processes have driven warming to about 1.1 °C above 1850–1900 by 2011–2020.
There is an unequal contribution of the emission of the greenhouse gasses of different regions and income groups. Structural changes is capable of reducing the effects of greenhouse gasses by power sector decarbonisation, shift from fossil fuel powered technologies to electric alternatives in all end-uses, demand-side shifts, and land-based removals.

The sixth assessment report of Intergovernmental Panel on Climate Change details that the feasible and effective options are available in different sectors to use decarbonised techniques to reduce the emission of greenhouse gases. However, it requires commitment to change the system at the place of starting different projects for the achieving the pertinent goal of mitigating the pressure of Green House Gasses in the environment. The assessment report of United Nations Environment Programme (UNEP-2024) and the Emissions Gap Report-2024 warned of a critical need to draft plans as an ambition and ratchet their implementation to redeem the pledges to limit the global warming to one and half degree Celsius. It requires standards, i.e., measurement framework of Greenhouse Gasses, sophisticated and high-tech infrastructural logistics, and particularly financial reallocation instead of focusing upon the incremental efficiency only.

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Deterioration of air quality and its perilous effects upon health of the people

Air pollution is aserious looming concern which has been affecting the health of the people across the globe. The estimates of world health organization details that air pollution has taken toll of around 6.7 million people across the World in 2019. Structural determinants like power generation, industrial combustion, transport fleets, biomass cooking, and urban form would be helpful to reduce air pollution and protecting the life of millions. The report of Guardian highlights that wildfire smoke and utilization of fossil energy sources also increasing the risk of air pollution. In essence, the initiatives for the utilization of the clean energy, clean cooking, and clean –mobility transitions, institutional measures to keep the environment pristine will multiply their benefits when they are paired with compact urban development policies.

The Environmental Kuznets Curve: Limits and Lessons

The environmental Kuznets curve hypothesis postulates an inverted U shape relationship between income and environment degradation. It may be useful as a descriptive pattern for some pollutants in certain countries, but it must not considered a universal law or a strategy of grow first, and clean later. According to Stern the environmental Kuznets curve is a hypothesized version of relationship between income and environment degradation with limited empirical support. It does not account for policy and technological measures aimed reducing Green Houses Gases (GHG) that tend to accrete per-se with the economic activities that drive economic development. The institutions, policy measures and technology are the critical variables which determine the slope and point of diversion of the curve .There is nothing automatic about an improvement in the degrading environment.

Structural Transformations in Practice

World Urbanization Prospects of world population Dashboard reveals that sixty eight percent (68%) population of the World will be urbanized. The demand for the houses, transport, water and materials will increase with the growing urbanization. The well planned and compact designing of the township connected with good public transport help using less energy per person that will create less pollution. However the sprawling and sporadic inhabited cities makes people to have their own vehicle to commute which will cause more pollution and long travel time. Urbanization would be useful to reduce emissions by reusing building materials and recycling used materials. According to the Ellen MacArthur Foundation, such 'circular' practices in construction could cut emissions from building materials by up to 38% by 2050.It shall be a major lucrative benefit of the structural changes in terms of growing urbanization.

Miscellaneous critical effects of structural changes

Switching to clean energy, electric vehicles, and better public transport can cut emissions, reduce air pollution, and improve health. It brings about changes in take–use–waste system to a circular economy. It protect biodiversity and lower resource stress.These structural changes evolve huge health benefits to the society. Air pollution is a major cause of disease. Cleaner fuels, better land use, and wildfire prevention can save many lives.However, these transitions affect the life of all sections of the society.In epitome, last but not the least, Government must formulate and implement good policies to create employment opportunities. The societal friendly system is needed to provide strong social protections to make the shift fair and widely accepted in their respective countries.

CONCLUSION

The effects of the Structural changes are not indifferent. They behave like levers through which societies either degrade or repair environment system. Recent evidence indicates that well-planned structural changes can help both people and the planet. Application of clean energy and transport, recycling materials, building compact and healthy cities, and protecting land can reduce climate and environmentalpressures. Simultaneously, they are useful to improve public health and increase livelihoods of the people. The period from 2020s to 2030s is propitious time to take productive measures to mitigate the effects of Green House Gasses.There is a need for strong institutions and fair policies to put existing solutions into action.

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