Policy Brief

Strengthening Pakistan's Climate Resilience: Application of Climate Policy Assessment Tool (CPAT)

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Executive Summary

Pakistan is facing increasingly severe climate change challenges, necessitating the development of strong policy instruments to build resilience. This policy brief explores various climate models and their applicability in Pakistan. Among these models, the International Monetary Fund's Climate Policy Assessment Tool (CPAT) stands out as particularly effective for a climate-resilient environment. The primary sector covered within CPAT comprises energy, industry, oil and gas, and waste management. CPAT facilitates the implementation of measures such as carbon taxation across sectors and integrating emission trading systems into Pakistan's national climate change policy. The government may encourage its ministry to adopt climate change mitigation strategies and to facilitate the country's economic development using the CPAT tool.

Introduction

Pakistan is vulnerable to climate change due to its warm weather, shifting weather patterns, and catastrophic floods.[1] Unfortunately, these impacts are projected to escalate, with forecasts suggesting that climate-related events, environmental degradation, and air pollution may cause Pakistan's GDP to shrink by 18-20% by 2050.[2] This alarming statistic underscores the need to address climate change and mitigate its effects on people and their livelihoods. Even though developing countries like Pakistan may not be the primary contributors to climate change, acknowledging and confronting its fallout is indispensable, especially for combatting pressing local issues like air pollution and smog.

In August 2022, torrential monsoon rains triggered the most devastating floods in Pakistan's history. Over 33 million people were affected by the floodwaters — a staggering number close to the population of Canada.

Pakistan produces less than 1% of the world's carbon footprint yet is suffering the biggest consequences of climate change. According to the Global Climate Risk Index, Pakistan is currently the fifth most climate-vulnerable country in the world, having lost nearly ten thousand lives and suffering economic losses worth 3.8 billion USD due to climate change throughout the years 1999 to 2018.

CPAT and its significance

Global greenhouse gas emissions must be cut by 25 to 50 per cent by 2030 compared to 2019 to stabilise the climate. Such an unprecedented rate of decarbonisation necessitates climate mitigation policies across countries, notably carbon pricing, fossil fuel subsidy reform, renewable subsidies, feebates, emission rate regulations, and public investments. Governments need tools to assess economic, environmental, fiscal, and social impacts to design and implement effective, efficient, and equitable policies. The IMF and World Bank made their joint CPAT available to governments to support this effort.

CPAT is a transparent, flexible, and user-friendly model covering over 200 countries. It allows for the rapid quantification of impacts of climate mitigation policies, including energy demand, prices, emissions, revenues, welfare, GDP, households and industries, local air pollution and health, and many other matrix.

[1] Climate Change in Pakistan, (2012). https://www.pmd.gov.pk/report_rnd.pdf
https://openknowledge.worldbank.org/entities/publication/614ddc2b-ca31-53c9-b59c-6bf12a56d336

CPAT helps governments design and implement climate mitigation strategies. This includes impacts on energy production, consumption, trade, and prices; emissions of local and global pollutants including reductions needed to achieve NDCs; GDP and economic welfare; revenues; industry incidence (across many sectors); household incidence (across ?, urban vs. rural samples, and horizontal equity); and development co-benefits (local air pollution and health impacts). This allows for the assessment of trade-offs (e.g., among efficiency, equity, or administrative burden) and, hence, tailoring of policy design to each country's context.

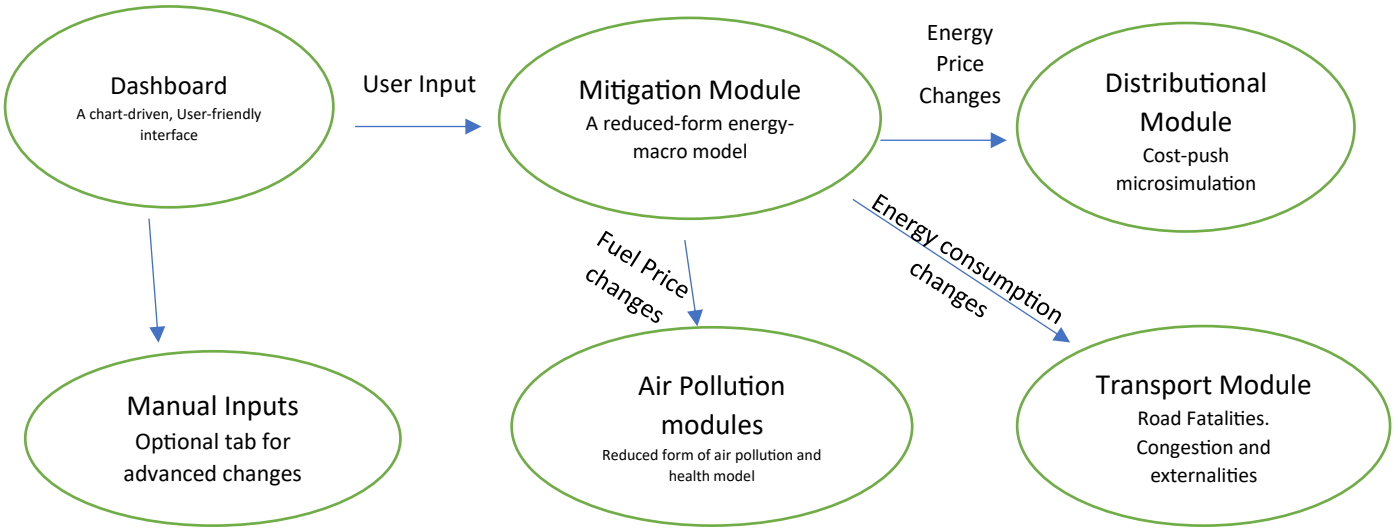
CPAT can evaluate mitigation policies including carbon taxes, ETSs, fossil fuel subsidy reform, energy price liberalisation, electricity and fuel taxes, removals of preferential VAT rates for fuels, energy efficiency and emission rate regulations, feebates, clean technology subsidies, and, most importantly, combinations of these policies (policy mixes).

CPAT covers over 200 countries accounting for more than 95 per cent of global GHG emissions. CPAT's input data is complete and there is no need for external data inputs (though the user has the option of incorporating their data or parameter assumptions).

CPAT contains and contributes to new global datasets, including energy consumption and prices, GHGs?, local air pollutants, price and income elasticities, environmental costs, and NDCs. It also includes comparable decile?-level data on household consumption of energy and non-energy goods for more than 65 countries—one of the largest.[3]

[3] https://www.imf.org/en/Publications/WP/Issues/2023/06/22/The-IMF-World-Bank-Climate-Policy-Assessment-Tool-CPAT-A-Model-to-Help-Countries-Mitigate-535096

CPAT Overview:



Source: International Monetary Funds[4]

Climate models and their limitations

Pakistan is among the most vulnerable nations to climate change even though it is one of the least GHG contributing 0.9% in the whole world. The nation has confidence in a worldwide community exertion to minimise the risk of climate change impact caused by human actions. The decision makers in Pakistan keep a keen interest in ensuring future development plans in line with a low-carbon strategy. All climate models have policy implications that lead to reduced Greenhouse gas emissions and increase the growth and development of the country. CPAT is the most comprehensive multicounty climate mitigation model available (in-country, policy, and effect coverage), but no model can answer all policy questions.

The Dynamic Integrated Climate-Economics (DICE) model portrays how the world economy generates income and output for consumption and investment and, as a by-product, releases emissions of greenhouse gases. Regional Integrated Climate-Economics (RICE) is a regional model which is used to find out different scenarios of national strategies indulging with climate change policy. It includes solutions of pure market, outcomes of efficient corporation and equilibrium produced in non-cooperate sectors. Energy-Environment-Economy Global Macro-Economic (E3ME) is a macroeconomic global model but is country-specific. It includes the highest disaggregation level, analysis of the effect of scenarios like social impact on the country

[4] https://www.imf.org/en/Publications/WP/Issues/2023/06/22/The-IMF-World-Bank-Climate-Policy-Assessment-Tool-CPAT-A-Model-to-Help-Countries-Mitigate-535096

level and sectorial specific. Impacts like unemployment level and distributional effect are the main outcomes. CE energy is the sub-form of the CIM-EARTH model which expands core capabilities of the energy sector more adorably to enhance better policy analysis. It includes renewable and non-renewable energy resources, transition and peak and base-lead power.

Unfortunately, most of these models are not feasible to assess Pakistan's climate change situation because these models are regional and global. Country-specific models have their limitations and assumptions which do not apply to Pakistan. Most of the model like SWITCH, E3ME, and TIMER have country-based scenarios but due to lack of research capacity and research grants, Pakistan is unable to prepare these for their own country for future research. CPAT can evaluate mitigation policies including carbon taxes, ETSs, fossil fuel subsidy reform, energy price liberalisation, electricity, and fuel taxes, removals of preferential VAT rates for fuels, energy efficiency and emission rate regulations, feebates, clean technology subsidies, and, most importantly, combinations of these policies can give a detailed framework to tackle the climate-related issues. In summary, we can see that all the models may provide, over their role as boundary objects, the access of new ideas and perceptions into policy discourse, enabling and reinforcing new policy images and hence policy change.

Pakistan's SWOT analysis under CPAT guideline

Pakistan understands the advantages of different methods for addressing climate change impacts. Climate models and tools give better results to diminishing outflows and lifting green investment. Furnishing any such arrangement is good with national destinations of financial development, reduction of poverty, expanded access to sustainable energy, and other feasible development targets. The climate policy assessment tool is a better instrument for developing countries like Pakistan to develop in a more sustainable and responsible,. Developing countries can increase their revenue, growth rate, and investment in green energy by making such policies like carbon taxation which will help reduce the carbon footprint. However, it is essential to conduct a thorough analysis of Pakistan's strengths, weaknesses, opportunities, and threats in addressing climate change. This will enable the development of more accurate climate mitigation strategies for Pakistan.

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Pakistan has established climate change policies and legislation providing a foundation for addressing climate challenges.

Pakistan actively engages in international climate agreements and partnerships, allowing access to funding, technology transfer and knowledge exchange.

The country has implemented various adaptation measures to mitigate the impacts of climate change.

Pakistan possesses significant renewable energy resources offering opportunities for transitioning towards cleaner and sustainable energy sources.

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- Pakistan faces obstacles in effectively implementing and enforcing these measures at the national, provincial, and local levels.
- The country struggles with limited financial, technical, and human resources for implementing climate adaptation and mitigation initiatives
- Pakistan's population is highly vulnerable to climate impacts exacerbating existing social and economic disparities.
- Inadequate infrastructure exacerbates climate vulnerabilities and hampers efforts to build resilience and adapt to changing climatic conditions.
- There may be inconsistencies and gaps between national climate policies and other sectoral policies, hindering coordinated and integrated approaches to climate action

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- Pakistan can explore opportunities for accessing international climate finance mechanisms to support climate-resilient projects.
- Collaboration with international partners can facilitate technology transfer and capacity building in renewable energy.
- Encouraging private sector involvement in climate initiatives can unlock new funding sources and expertise.
- Empowering local communities through participatory approaches in climate decision-making and adaptation planning can enhance resilience and foster ownership of climate initiatives.
- Investing in green technologies and sustainable industries can create employment opportunities and contribute to economic growth while addressing climate challenges.

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- Political uncertainty and governance challenges may impede long-term planning and implementation of climate policies and initiatives, leading to inconsistent progress in addressing climate change
- Pakistan faces water scarcity issues exacerbated by climate change, posing threats to agriculture, food security, and socio-economic stability, especially in rural areas.
- Increasing frequency and intensity of extreme weather events can cause widespread destruction and loss of lives and livelihoods.
- Continued degradation of natural ecosystems can undermine ecosystem services and exacerbate climate vulnerabilities.
- External economic factors can affect Pakistan's ability to finance and implement climate actions.

Policy strengthens based on CPAT

Pakistan needs to work on the mitigation and adaptation strategies for climate change as per CPAT guidelines.

1. The government may implement policies to incentivise the quick adaptation of renewable and reliable energy resources like solar energy and hydroelectric power. That would reduce the reliance on fossil fuels, and lower greenhouse gas emissions from the energy sector.
2. Pakistan made its EV policy to promote electric vehicles in Pakistan which might be a useful policy in the upcoming year but the government also needs to de-motorise the existing vehicles whose emissions are high.
3. Introducing climate-smart agricultural practices and technologies that improve soil health, increase crop resilience to climate change, and reduce emissions from agricultural activities such as methane from livestock are suggested for economic growth and climate control.
4. Enforce green building standards and codes to promote energy-efficient and sustainable construction practices, so that emissions from the building sector can be reduced.
5. Launch public awareness campaigns and capacity-building programmes to educate citizens, especially kids in schools, colleges and universities, about the importance of climate change mitigation strategies.

Conclusion

Pakistan's policy assessment tool to find the appropriate and reliable strategies for adopting or mitigating climate change is very weak. Most models do not apply to Pakistan’s framework for several reasons. The climate policy assessment tool includes 200 countries, making it a perfect way forward for Pakistan to make its strategies and policy for adaptation and mitigation of the impact of climate change. Pakistan needs a strong and worthwhile tool to face all the hurdles for a climate-resilient structure. Though Pakistan is facing economic instability, yet it needs to work on the implementation of national climate change policy along with the help of tools like CPAT. The government may also need to engage Pakistan’s private sectors to fulfil the requirements and needs for a climate-resilient country.

Action Matrix

Action Area	Pathways to Solution	How to Implement Each Solution	Actor Responsible	Implementation Timelines
Policy & Regulation:	Advocate for trade policies that incentivise low-carbon products and technologies	Lobby policymakers to implement tax breaks or subsidies for importing or producing low-carbon products.	Government, Private Sector Associations	5 Years
Market Development	Facilitate collaboration between businesses and research institutions for developing climate-friendly solutions.	Develop tax incentives for businesses that invest in research and development of climate-friendly solutions.	Government, Private Sector Companies NGOs & Development Organisations	5 Years
Poverty Reduction & Inequality	Invest in social safety nets and targeted programmes for vulnerable populations	Promote financial inclusion initiatives to ensure access to financial services for vulnerable populations.	Government, International Development Partners	5 Years
Sustainable Development	Invest in renewable energy infrastructure and resource conservation projects.	Streamline permitting processes for renewable energy projects.	Government, Private Sector Companies and Environmental NGOs	5 Years
Governance & Transparency	Increase citizen participation in decision-making processes and Improve access to information and freedom of the press.	Develop platforms for public participation in environmental decision-making processes.	Government	5 Years

About the Authors

Dr. Aneel Salman holds the distinguished OGDCL-IPRI Chair of Economic Security at the Islamabad Policy Research Institute (IPRI) in Pakistan. As a leading international economist, Dr Salman specialises in Monetary Resilience, Macroeconomics, Behavioural Economics, Transnational Trade Dynamics, Strategy-driven Policy Formulation, and the multifaceted challenges of Climate Change. His high-impact research has been widely recognised and adopted, contributing in strategic planning and policymaking across various sectors and organisations in Pakistan. Beyond his academic prowess, Dr Salman is a Master Trainer, having imparted his expertise with bureaucrats, Law Enforcement Agencies (LEAs), military personnel, diplomats, and other key stakeholders furthering the cause of informed economic decision-making and resilience.

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