PIDE's VISION ON ENVIRONMENTAL ISSUES: A CONCISE OVERVIEW

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Contextualizing PIDE's Environmental Advocacy:

Environmental degradation in Pakistan demands immediate and coordinated action. The country is struggling with severe environmental challenges reflected in international rankings, with its dismal standing of 179 out of 180 countries in the Environmental Performance Index 2024. Urban smog has become a critical health issue, with five of Pakistan's major cities ranking among the top 20 globally for poor air quality. Reasons behind this are the highly emissions-intensive energy sector, reduced tree cover especially in urban centers, rapid and unplanned urbanization, and shrinking forest area. Although Pakistan's contribution to total global emissions remains below 1 percent, the country's overall emissions and per capita figures have been on a consistent upward trajectory since 1998. Along with this rising temperatures and worsening climate conditions are intensifying the threat of climate change, particularly for vulnerable communities. These mounting environmental risks underscore the urgent need for comprehensive policies to mitigate these challenges and build resilience against future impacts.

As a premier national think tank, the Pakistan Institute of Development Economics (PIDE) has been at the forefront of advocating for a sustainable environmental future for a long time through a series of webinars, reports, knowledge briefs, articles, and policy papers. PIDE has sought to provide practical solutions to issues such as air pollution, deforestation, climate change, and energy sector emissions, ensuring a balanced approach to sustainable development. This document aims to summarize PIDE's comprehensive narrative on environmental issues over the past five years only, drawing on its extensive research and expert discussions. It will focus on the key insights and policy recommendations offered by PIDE to mitigate the country's environmental degradation.

Air Pollution and Sustainability:

Over the past five years, one of the most extensively researched topics has been the worsening air quality, particularly the phenomenon of smog. Researchers have approached this issue from multiple perspectives. For instance, studies have explored the causes of smog, identifying factors such as industrial emissions, vehicular pollution, and, notably, the burning of crop residue by farmers. The role of farmers in contributing to smog, especially through stubble burning after harvests, has been a critical focus area. Additionally, the complexities of transboundary smog, and air pollution that crosses borders have been examined, highlighting the challenges of addressing smog on a regional scale due to differing regulations and cooperation between neighboring countries. The COVID-19 pandemic also provided an opportunity for researchers to explore its unintended effects on air quality, as the global lockdowns temporarily reduced industrial activity and transportation, offering insights into possible long-term solutions.

"Smog: The Fifth Season in Pakistan" by Naz and Abedullah (2022), highlights the growing issue of smog in Pakistan, particularly in Lahore, which has become a persistent environmental problem over the past few winters. Smog reduces visibility, disrupts daily activities, increases accidents, and can lead to flight cancellations. Air pollution, of which smog is a major component, is responsible for millions of deaths worldwide, with Pakistan suffering from high exposure levels, particularly in its urban centers. The authors underscore the need for coordinated efforts to mitigate smog and improve air quality in Pakistan, emphasizing stricter environmental regulations and public awareness. The government has initiated several measures to combat smog, including plans to import Euro5 fuel, transitioning industries to cleaner technologies, and promoting electric vehicles. Smog control rooms have also been established for monitoring air quality, particularly in Lahore. To effectively reduce smog, efforts should focus on investing in energy-efficient power generation, improving waste management, minimizing agricultural waste burning, and enhancing public transportation systems. Technical measures, such as using hydrogen fuel additives and smog-free towers, are also suggested.

[40]https://pide.org.pk/research/smog-the-fifth-season-in-pakistan/

Rose and Ali (2023) examined the ongoing debate about smog in Punjab, emphasizing that the burning of rice crop residue frequently places disproportionate blame on farmers. Policymakers and urban residents, highlight this practice as the primary cause, despite evidence pointing otherwise. According to two key studies, crop residue burning contributes a much smaller portion to smog than the transport sector, which is the leading emitter. Despite the common misconception that smog only occurs during the rice harvest, particulate matter persists year-round. Farmers often resort to burning due to economic pressures, including distorted input and output markets. The rising costs of fertilizers and black-market practices, combined with lower crop prices, force farmers to seek quick and cost-effective land clearance methods. This practice, while cost-efficient for farmers, has broader environmental and health consequences. The solution to crop residue burning requires a multidimensional approach that includes policy reforms, financial incentives, and technological support. Government plans to provide machines like happy seeders have been insufficiently implemented. More comprehensive solutions could include increasing access to shredding machines, using crop residues for renewable energy, and fostering public-private partnerships. Monitoring systems are essential for evaluating the effectiveness of these interventions and guiding future policy refinements. [41&42]

Rose (2024) discusses the challenges of air pollution, particularly the smog with a focus on the transboundary nature of the problem, largely influenced by emissions from neighboring India. India's crop burning in Punjab and Haryana contributes significantly to the smog in Pakistan, particularly in Lahore. Despite efforts, Pakistan's isolated measures have had limited success, highlighting the need for regional collaboration. The author also emphasizes the importance of diplomatic efforts to address these environmental challenges, noting Pakistan's advocacy for regional collaboration at international forums like COP-26. However, political tensions between India and Pakistan, compounded by economic disparities, have hindered meaningful cooperation. Drawing on international environmental law, such as the 'Trail Smelter Case' and the 1992 Rio Earth Summit principles, the author argues for a shared responsibility in reducing emissions. It calls for a regional framework and improved monitoring and pollution control technology. The 'Male Declaration' of 1998, which called for regional cooperation on transboundary pollution, is critiqued for its ineffective implementation. This article suggests reviving such frameworks with the support of regional bodies like SAARC and international organizations like ICIMOD to achieve more effective cooperation and mitigation. The author calls for urgent, collective action in South Asia to reduce air pollution, proposing joint monitoring systems, harmonized regulations, and technology investments.[43]

[41] https://pide.org.pk/research/farmers-not-the-principal-culprits/
[42] https://pide.org.pk/research/farmers-are-not-the-main-culprits-of-smog/
[43] https://pide.org.pk/research/threats-across-the-borders-tackling-transboundary-environmental-injustice/

Yahya and Abedullah (2022)[44] investigated the impact of the COVID-19 lockdown on air quality in some of the most polluted cities globally, including Anyang, Hotan, Tashkent, Beijing, and Karachi. The lockdowns, imposed to curb the virus's spread, resulted in a significant reduction in air pollution due to restricted mobility and halted industrial activity. Using PM2.5 concentration data, the study observed a substantial decline in pollution levels, with decreases of 26% in Anyang, 23% in Hotan, 14% in Beijing, 24% in Karachi, and 21% in Tashkent. Key findings indicate that reduced transportation and industrial activity contributed to these declines, temporarily improving air quality. However, the study warns that once lockdowns are lifted and economic activities resume, pollution levels are likely to rebound, presenting ongoing challenges for global warming. The study emphasizes the importance of reassessing industrial and transportation needs and enhancing environmental laws to promote sustainability. Additionally, it suggests that COVID-19 may disrupt long-term environmental diplomacy as developing nations shift focus from environmental sustainability to economic recovery.

A study presented by Ali and Rose (2023) at two conferences, one at IBA, Karachi, and the other at the University of Lahore, examines university students' perceptions of environmental issues in Lahore and their trust in key stakeholders to address these concerns. The research highlights that pollution, climate change, waste disposal, and traffic congestion are seen as the most pressing environmental challenges. Students place the highest trust in environmental organizations and scientists for reliable information on climate change, while media and government rank lower in terms of trustworthiness. The findings show that students view the government, businesses, and industry as primarily responsible for tackling climate change, but there is a notable trust deficit, particularly in the actions of the government and industry. Students also pointed out clear indicators of climate change, including more hot days, extreme temperature fluctuations in summer and winter, heavier rainfall, and frequent flooding. The study underscores the need to integrate indigenous knowledge and public perceptions into policy development to create more effective, inclusive, and sustainable environmental solutions.

PIDE also organized a series of webinars aimed at exploring sustainable solutions through expert discussions and conversations, focusing on the various challenges that impede progress toward an environmentally sustainable future. Some of the webinars include Trade as Part of the Solution to Climate Change[45] , Pakistan: Managing Climate Change [46], Climate & Pollution: Law, Politics & Governance[47], Impact Of Climate Change On Rainfall Patterns & Water Resilience In Pakistan[48] , Smog in Punjab: A Least Addressed Issue[49] and People-Centric and Climate Resilient Development in Pakistan[50]

[44] https://pide.org.pk/research/post-covid-19-lockdown-air-quality-analysis-in-most-polluted-cities-of-the-globe/
[45] https://pide.org.pk/webinar/trade-as-part-of-the-solution-to-climate-change/
[46] https://pide.org.pk/webinar/pakistan-managing-climate-change/
[47] https://pide.org.pk/webinar/climate-pollution-law-politics-governance/
[48] https://www.youtube.com/watch?v=Oilld4Vrcd8
[49] https://pide.org.pk/webinar/smog-in-punjab-least-addressed-issue/
[50] https://pide.org.pk/webinar/people-centric-and-climate-resilient-development-in-pakistan-pide-world-bank-invited-lecture/

From Private Cars to Public Transport:

PIDE also researched the growing issue of air pollution in Pakistan, with a focus on the transportation sector's significant contribution to the problem. A shift from private car use to public transport as a sustainable solution for reducing urban air pollution is a suitable way forward. The study by Abedullah (2022) highlighted the environmental benefits of lowering vehicle emissions through this transition. It highlights how the sharp rise in motor vehicles, especially private cars and motorcycles, is a key factor driving this environmental challenge. While some public transport systems (such as metro buses in Lahore and Islamabad) have been introduced, they are insufficient to meet the growing demand for mobility, leading to increased car ownership. Shifting from private cars to public transport can significantly reduce pollution. Buses, for example, have the potential to replace multiple cars and cut down on CO2 emissions. A bus carrying 80-100 passengers emits less CO2 per person compared to private cars and takes up less space on the road, making it a more efficient and environmentally friendly option. The article calls for enhanced public transport infrastructure and policies, such as higher car parking fees, to encourage a shift from private cars to public transport, which can lead to lower emissions and reduced air pollution in urban areas.[51]

Sustainable Electoral Procedures:

The Economic and Environmental Cost of Election 2024 provides an in-depth analysis of the financial and ecological implications of Pakistan's 2024 General Election, a report by Ali (2024). This report emphasizes the urgency of addressing environmental degradation within Pakistan's electoral system. The environmental footprint is substantial, with the paper required for 260 million ballot papers resulting in the deforestation of approximately 52,080 trees. The broader environmental toll, including campaign materials and deforestation, is projected to account for nearly 6.64 percent of GDP, potentially escalating to 10 percent when the impact of chemical, and water costs to prepare the paper and other associated factors are considered. The document advocates for the adoption of Electronic Voting Systems (EVS) to reduce both economic and environmental costs, citing the potential for reduced deforestation and energy use, alongside more streamlined election processes.[52]

"Polls and Environment" is a newspaper article by Ali (2024), published in The Dawn. This article is an extension of the previously discussed report, with similar recommendations. However, the article places particular emphasis on the global response, highlighting the evolution of eco-friendly balloting systems. As global concern over climate change grows and the shift toward sustainable practices accelerates, the article explores how voting processes have adapted to become more environmentally conscious. He reemphasizes the need to rethink Pakistan's traditional ballot-based election process due to its severe environmental impact. To mitigate this impact, a transition to Electronic Voting Systems is advocated again. While EVS presents challenges such as cybersecurity concerns, its environmental and economic benefits such as lower costs, reduced paper imports, and simplified election processes, make it a crucial step toward sustainable electoral procedures in Pakistan.[53]

[51] https://pide.org.pk/research/a-smart-shift-from-private-cars-to-public-transport-can-help-to-reduce-smog-air-pollution-in-pakistan-2/
[52] https://pide.org.pk/research/the-economic-and-environmental-cost-of-election-2024/
[53] https://pide.org.pk/research/polls-the-environment/

Water Security, Climate Change and Pakistan:

Pakistan's water crisis, driven by climate change, requires immediate and coordinated action across sectors to build resilience and ensure water security for the future. Pakistan is listed among the water-scarce countries, having reduced its per capita water availability. It is predicted to face absolute water scarcity by 2025. Population growth, urbanization, climate change, and poor water governance are exacerbating the water crisis. Agriculture dominates water consumption in Pakistan, using 90 percent of water resources to produce just 5 percent of GDP. This inefficiency is alarming, as water productivity in Pakistan is significantly lower than the global average. The country also engages in "virtual water trade," exporting water-intensive crops like rice, which exacerbates the water shortage. A cohesive and strategic national approach is required to mitigate the water crisis. This includes addressing inefficiencies, promoting conservation, and enhancing governance mechanisms to ensure long-term water security for Pakistan.

Nazam (2022) examined Pakistan's water crisis, identifying its causes and potential solutions. He found that water availability in Pakistan has significantly decreased, transforming the country from water-abundant to water-scarce. The agricultural sector, which consumes 94 percent of the available water, continues to have low productivity. Overdependence on the Indus River system and unsustainable groundwater extraction have further strained water resources. Additionally, Pakistan's reliance on external water sources, mainly from India, heightens its geopolitical vulnerability. While exploring the causes behind the crises he noticed:

- Population growth has increased pressure on static water resources, reducing per capita water availability.
- Pakistan is highly vulnerable to climate impacts, faces altered monsoon patterns, glacial melt, and recurring floods and droughts, affecting water availability.
- Inefficient irrigation systems, low water productivity, and underpriced canal water contribute to wastage.
- Contamination from industrial and human waste exacerbates the water crisis, affecting public health and further straining the water supply.

The water crisis demands immediate attention and ownership from political leadership to prioritize water management reforms. A significant paradigm shift is needed to address governance failures in water management, focusing on infrastructure maintenance and water conservation technologies. Learning from global examples like Israel and Singapore, Pakistan should prioritize wastewater treatment and reuse. Introducing compulsory metering and revising the water pricing structure can promote efficient use and generate revenue for water infrastructure. Water-efficient irrigation technologies like drip irrigation, along with a shift to less water-intensive crops, are crucial for sustainable water use[54].

[54] https://pide.org.pk/research/water-crisis-in-pakistan-manifestation-causes-and-the-way-forward/

Nazam (2023) explored further the impact of Climate Change on water in Pakistan. Pakistan is highly vulnerable to climate change, particularly concerning its water resources. Climate-induced changes such as rising temperatures, erratic weather patterns, and glacial melting are affecting water availability, quality, and distribution. Pakistan, already a water-stressed nation, ranks among the top 17 countries facing extreme water risks, with per capita water availability declining sharply from 5,260 cubic meters in 1951 to less than 1,000 cubic meters today. The country is on the brink of facing acute droughts by 2025.

• Pakistan's water supply heavily depends on glacial melt, with the Himalayas providing around two-thirds of the Indus River's flow. Rapid glacial melt due to climate change could lead to both increased flooding and long-term water shortages. This is particularly critical for regions such as Gilgit-Baltistan, which face the risk of glacial lake outburst floods (GLOF).
• Climate change has shifted monsoon patterns, increasing the frequency and intensity of both floods and droughts. These extreme weather events are exacerbating the water crisis by reducing water storage capacity and damaging critical infrastructure.
• Climate change is leading to increased water demand for agriculture due to higher temperatures, while water supply becomes more unreliable. Key crops such as wheat and rice are projected to suffer yield declines, threatening food security.
• The over-extraction of groundwater, exacerbated by reduced river inflows, is leading to a significant depletion of Pakistan's water reserves. The Indus Basin's aquifer is one of the most stressed in the world, according to NASA's satellite data.

Pakistan needs to adopt water recycling practices, as seen in countries like Israel and Singapore, and invest in desalination plants to ensure sustainable water supplies. Setting efficiency standards for domestic, agricultural, and industrial water use is essential. This includes better groundwater management and promoting conservation technologies in agriculture. Building local water storage facilities, rehabilitating dams, and increasing rainwater harvesting are key strategies to mitigate the impacts of water scarcity. Pakistan should work with neighboring countries to establish mechanisms for shared water resource management. Regional cooperation could help address water shortages, improve flood management, and promote joint climate adaptation strategies. There is an urgent need to reform water governance to address the disconnect between federal and provincial management. Strengthening institutions like the Permanent Indus Water Commission is critical to addressing climate change impacts on water resources. [55]

Governance challenges, such as inefficient water pricing (Abiana charges), unequal water distribution, and poor management of groundwater and canal systems, severely limit effective water management in Pakistan. There is an urgent need to improve water governance protocols, enhance infrastructure, and adopt modern agricultural technologies.

[55]https://pide.org.pk/research/impact-of-climate-change-on-water-in-pakistan-policy/

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Ali and Abedullah (2024) argue that the improper pricing of agricultural water is driving its unsustainable use. They assessed the true value of surface water available for irrigation in the last cropping year, underscoring the critical need for improved water management practices. Using diesel prices as a reference, they estimate the economic cost of water per cubic meter to range from Rs. 7.92 to Rs. 10.39 for an average extraction of 110 cubic meters. The total value of surface water, excluding the consideration of water scarcity rent, is estimated to be between Rs. 710.22 billion and Rs. 931.71 billion. Due to the lack of effective water pricing or appropriate charges, the government faces an annual financial loss estimated at Rs. 677.56 billion to Rs. 899.05 billion. The authors stress the urgent need for the implementation of economic water pricing to promote sustainable water use, warning that failure to do so could push Pakistan closer to becoming a water-stressed nation in near future.[56]

Green Financing with an Islamic Perspective:

Faraz (2022)[57] explores the intersection of Islamic finance and green finance, emphasizing how Islamic principles can contribute to sustainable development and environmental preservation. He highlights the potential of Islamic finance to contribute to the global green finance movement by aligning with Shariah principles that promote environmental responsibility and social welfare. It calls for the expansion of Islamic financial instruments like Green Sukuk and the creation of a robust green finance ecosystem to address environmental challenges. The concept of "Maqasid al-Shariah" encourages investments that maximize societal benefits while minimizing harm, aligning Islamic finance with socially responsible goals. Islamic teachings stress the responsible use of resources, conservation, and avoidance of wastefulness. There is an emphasis on viewing climate as a divine asset and ensuring its responsible use. The connection between Islamic finance and green finance is based on the shared values of promoting environmental sustainability and social welfare. Financing green projects is challenging due to a lack of conducive environments for mobilizing capital and a need for innovative financial instruments. Developing a green finance ecosystem involves stakeholders such as governments, financial institutions, and advisory firms. Islamic financial institutions can play a key role in this ecosystem.

- Green Sukuk, which are Sharia-compliant financial instruments, provide funding for renewable energy and environmentally friendly projects. They represent a growing segment of green finance, although their market size remains small.
- Green bonds and Sukuk are on an upward trend globally, with increasing issuance since 2013. However, there is still a gap in green equity products, which could be a future avenue for sustainable finance.
- Islamic finance's focus on financial stability, poverty alleviation, wealth distribution, and environmental preservation makes it a natural partner for green finance initiatives.

[56]https://pide.org.pk/research/the-cost-of-government-interference-in-agricultural-markets/
[57]https://pide.org.pk/research/green-finance-an-islamic-way-to-rescue-the-nature/

• The development of frameworks and best practices in Islamic green finance is necessary to enhance the role of Islamic financial institutions in promoting sustainable development.

The Nexus of Environment, Electronic Waste, and Human Health:

Armughan and Sameen (2022)[58] focused on the electronic waste (E-Waste) effects on human health and the environment in Pakistan. Their key thesis was that the growing challenge of E-waste in Pakistan is exacerbating environmental degradation and causing serious health hazards. E-waste, which includes discarded electronic devices containing hazardous materials like heavy metals and toxic chemicals, is poorly managed in the country. Informal recycling practices and crude processing techniques are prevalent, leading to widespread air, soil, and water contamination. The lack of proper regulation and recycling infrastructure poses significant risks to public health, particularly for workers directly involved in e-waste processing. The key insights of the study include:

- Pakistan generated approximately 433 kilotons of e-waste in 2019. This is expected to increase as electronic consumption rises with the growth of electrical and electronic equipment in the market.
- Exposure to e-waste leads to various diseases, including respiratory, pulmonary, skin, eye, and inflammatory bowel diseases. Workers in informal recycling sectors and communities near e-waste processing sites are particularly vulnerable to these health risks.
- E-waste contains hazardous substances like lead, cadmium, mercury, and brominated flame retardants, which contaminate the environment. These pollutants enter the food chain through soil, water, and air, affecting both human and animal health.
- Despite the existence of a National Hazardous Waste Management Policy (NHWMP), its implementation regarding e-waste remains remains weak. Pakistan lacks a specific, comprehensive policy to manage e-waste effectively.
- This study recommends
- The development of a national e-waste management policy should be done urgently, focusing on regulating e-waste imports, improving recycling standards, and enforcing safe disposal practices.
- Increasing public awareness about the environmental and health risks associated with e-waste is crucial, especially targeting vulnerable populations and workers in the informal recycling sector.
- Pakistan should adopt international best practices in e-waste management, such as recycling technologies from countries like Singapore and Israel, to minimize environmental harm and enhance resource recovery.
- Strengthening labor laws to protect workers from the hazardous conditions in e-waste recycling facilities is essential. This includes enforcing safety protocols and ensuring proper health care for affected populations.
- A comprehensive approach to e-waste management, integrating policy reforms, public education, and international collaboration, is necessary to mitigate the harmful effects of e-waste on both human health and the environment in Pakistan.

[58] https://pide.org.pk/research/analyzing-the-effects-of-e-waste-on-human-health-and-environment-a-study-of-pakistan/

Tourism, Environment, and Pakistan:

Armughan (2023) conducted a comprehensive analysis of the effects of tourism in the GB region, exploring its economic, environmental, and socio-cultural dimensions. Tourism plays a significant role in GB's economy by generating employment and business opportunities. However, the heavy reliance on seasonal tourism creates challenges for local livelihoods, especially during the off-season and periods of disruption like the COVID-19 pandemic. Further, tourism has resulted in severe environmental degradation in GB, including increased solid waste, air pollution, traffic congestion, deforestation, and water contamination. The mismanagement of natural resources and the construction of unregulated infrastructure have further strained the environment. Moreover, the influx of tourists has disrupted the local socio-cultural fabric. Changes in traditional customs, dress, and values are evident, with domestic tourists often imposing their cultural norms, sometimes leading to disrespectful behavior towards the local community. Issues such as harassment and privacy violations have also been highlighted. It was observed that there is a significant gap between policy formulation and implementation, with government policies primarily focused on increasing tourist inflows rather than ensuring sustainable and community-friendly tourism. Local initiatives and associations have had to step in to address environmental concerns, but the lack of governmental support remains a significant challenge. It is suggested that promoting ecotourism, improving government regulation, enforcing sustainable tourism practices, and increasing the involvement of local communities in tourism management to mitigate these negative impacts is necessary. Expanding off-season tourism and creating alternative economic opportunities beyond tourism are also emphasized. The overall conclusion stresses the need for a balanced approach to tourism that supports economic growth while protecting the environment and preserving the socio-cultural identity of GB.[59]

Key Takeaways:

Overall PIDE accentuates major environmental challenges in Pakistan, such as severe air pollution, deforestation, and water scarcity, emphasizing the urgent need for a coordinated policy response. PIDE points out that although Pakistan's per capita emissions remain low, the rising emissions and worsening climate conditions pose serious threats, especially to vulnerable communities. Comprehensive policy reforms, regional cooperation, and sustainable practices are essential to tackle these pressing environmental issues. Despite having relatively low per capita emissions, Pakistan's environmental vulnerabilities are intensified by inefficient resource management and governance issues. The country faces significant environmental degradation, including deteriorating air quality, increasing emissions, shrinking forest cover, and climate-related risks such as rising temperatures and glacial melt. The key takeaways from PIDE's environmental advocacy include:

- Plummeting Smog, particularly in big urban centers should be the top priority. While policy responses have been introduced, such as transitioning to cleaner fuel and promoting electric vehicles, broader systemic changes are needed. Farmers are not the primary contributors to smog, but emissions from crop residue burning can be greatly reduced with a relatively small reallocation of financial resources, especially compared to large-scale

[59]https://pide.org.pk/research/the-impact-of-tourism-on-the-environment-socio-culture-and-local-communities-of-gilgit-baltistan-pakistan/

scale infrastructure projects like building flyovers. Redirecting funds to provide or facilitate technological solutions for farmers could have a significant impact. Additionally, addressing this issue requires regional cooperation, particularly with neighboring countries like India, to effectively manage transboundary pollution.

- PIDE calls for enhanced public transport infrastructure and policies, such as higher car parking fees, to encourage a shift from private cars to public transport, which can lead to lower emissions and reduced air pollution in urban areas.
- A transition to Electronic Voting Systems is strongly advocated to reduce both economic and environmental costs, citing the potential for reduced deforestation alongside more streamlined election processes.
- Pakistan's water scarcity crisis is driven by climate change, inefficient agricultural practices, and poor water governance. It calls for reforms such as improving water governance, economic water pricing, the application of efficient irrigation technologies at a larger scale, and infrastructure investment to ensure long-term water security.
- PIDE advocated for a green finance ecosystem aligned with sustainable development goals. The intersection of Islamic finance with green finance, proposing instruments like Green Sukuk to fund sustainable development initiatives. This approach aligns environmental responsibility with Islamic principles.
- A comprehensive approach to e-waste management, integrating policy reforms, public education, and international collaboration, is necessary to mitigate the harmful effects of e-waste on both human health and the environment in Pakistan.