
[SUMMARY of the \[Climate resilience\], \[Ajaz Ahmed\], \[Published on May 21st, 2024\]](#)

The modern economy relies heavily on critical infrastructure for basic services, but climate change poses significant challenges to its sustainability. Climate-related natural disasters disrupted essential services in at least 44 countries in 2020 and 2021, with financial losses in low- and middle-income countries reaching \$647 billion in 2019. Developing countries like Pakistan need to focus on making their infrastructure resilient to climate shocks, such as floods. Currently, infrastructure development often overlooks climate risks due to high upfront costs. When disasters strike, they destroy infrastructure and disrupt services, exacerbating vulnerabilities. Resilient infrastructure, however, can enhance service reliability, prolong asset life, and support livelihoods.

Investing in climate-resilient infrastructure in Pakistan would not only help meet decarbonization goals but also provide long-term benefits. The marginal increase in investment costs would be offset by extended asset lifespans and reduced disaster risks. To achieve this, a transformation in infrastructure planning, design, and delivery is needed, incorporating resilience into public procurement processes. Assessing and improving the resilience of existing infrastructure is crucial, requiring new tools and methods. Leveraging nature-based solutions can also reduce climate risks, ensuring harmony between infrastructure and the natural environment.

Easy/Short SUMMARY:

Climate change threatens critical infrastructure essential for modern economies. In developing countries like Pakistan, resilient infrastructure is crucial to withstand climate shocks and protect development gains. Currently, high costs discourage incorporating climate resilience in infrastructure projects. However, investing in resilient infrastructure offers long-term benefits, such as extended

asset life and reduced disaster risks. Nature-based solutions and improved planning can further enhance resilience.

SOLUTIONS of The Problem:

Invest in Climate-Resilient Infrastructure:

- Prioritize investments in infrastructure that can withstand climate shocks.
- Incorporate climate resilience in the planning, design, and delivery of infrastructure projects.

Assess and Improve Existing Infrastructure:

- Develop quantitative and qualitative methods to assess infrastructure resilience.
- Address weaknesses in existing infrastructure to enhance its ability to cope with natural disasters.

Integrate Climate Resilience in Public Procurement:

- Include climate resilience criteria in the public procurement process for infrastructure projects.
- Consider long-term benefits and cost savings in decision-making.

Leverage Nature-Based Solutions:

- Implement solutions that harmonize infrastructure with the natural environment.
- Use nature-based approaches to reduce climate risks and enhance resilience.

Enhance Data and Technical Capacity:

- Generate high-quality data and develop tools for assessing climate risks.
- Improve the technical and institutional capacity of relevant departments for

better decision-making under uncertain climatic conditions.

IMPORTANT Facts and Figures Given in the article:

- Climate-related natural disasters disrupted basic services in at least 44 countries in 2020 and 2021.
- Financial losses from infrastructure disruptions in low- and middle-income countries reached \$647 billion in 2019.
- High upfront costs discourage the incorporation of climate resilience in infrastructure development.
- Investing in climate-resilient infrastructure can prolong asset life and reduce disaster risks.
- Nature-based solutions can ensure a harmonious relationship between infrastructure and the natural environment.

MCQs from the Article:

1. What is a major challenge confronting the sustainability of modern infrastructure?
 - A. Political instability
 - B. Climate change
 - C. Technological advancements
 - D. Economic downturn

- Correct Answer: B. Climate change

1. What was the financial toll of infrastructure disruptions in low- and middle-income countries in 2019?
 - A. \$500 billion
 - B. \$647 billion
 - C. \$750 billion
 - D. \$900 billion

- Correct Answer: B. \$647 billion

1. What often discourages the incorporation of climate resilience in infrastructure development?
 - A. Lack of political will
 - B. High upfront costs
 - C. Technological limitations
 - D. Insufficient data

- Correct Answer: B. High upfront costs

1. How can resilient infrastructure benefit low-income households during natural disasters?
 - A. By increasing business profits
 - B. By providing stable access to basic services
 - C. By reducing tax burdens
 - D. By preventing inflation

- Correct Answer: B. By providing stable access to basic services

1. What is one suggested solution to improve infrastructure resilience in Pakistan?
 - A. Reducing investment in public infrastructure
 - B. Increasing reliance on fossil fuels
 - C. Leveraging nature-based solutions
 - D. Centralizing decision-making processes

- Correct Answer: C. Leveraging nature-based solutions

VOCABULARY:

1. **Resilience** (noun) (مقاومت): The ability to withstand or recover quickly from difficult conditions.
2. **Decarbonisation** (noun) (تقليل انبعاثات الكربون): The process of reducing carbon dioxide emissions from a system, especially in energy production.
3. **Cascading impact** (phrase) (تسلسل من عواقب): The series of consequences that follow a primary event or disaster.
4. **Mitigate** (verb) (تخفيف): To make less severe, serious, or painful.
5. **Procurement** (noun) (اكتساب): The action of obtaining or procuring

- something, especially for a business or government.
6. **Institutional capacity** (phrase) (المؤسسية القدرات): The ability of an organization or institution to effectively implement policies and manage resources.
 7. **Vulnerability** (noun) (الضعف): The quality or state of being exposed to the possibility of being attacked or harmed, either physically or emotionally.
 8. **Livelihood diversification** (phrase) (تنويع سبل العيش): The process of a household engaging in multiple economic activities to improve living standards and reduce risk.
 9. **Nature-based solutions** (phrase) (الحلول القائمة على الطبيعة): Strategies that use natural processes and ecosystem services for addressing environmental challenges.
 10. **Quantitative techniques** (phrase) (التقنيات الكمية): Methods that focus on quantifying data and using statistical analysis to understand patterns and trends.
 11. **Qualitative techniques** (phrase) (التقنيات النوعية): Methods that focus on understanding the qualities and characteristics of phenomena, often through interviews, observations, and case studies.
 12. **Upfront costs** (phrase) (التكاليف الأولية): Initial expenses incurred at the beginning of a project or investment.
 13. **Spearheading** (verb) (التوجيه): Leading or initiating an activity or movement.
 14. **Sustainability** (noun) (الاستدامة): The ability to maintain or continue a process or activity over the long term without causing harm to the environment or depleting resources.
 15. **Climate shocks** (phrase) (الصدمات المناخية): Sudden and severe climate-related events that disrupt normal conditions and processes.

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Ajaz Ahmed

WHILE the modern economy depends heavily on the smooth operation of critical infrastructure to deliver basic services, there are new challenges confronting the sustainability and durability of this infrastructure. Climate change is one such challenge. Notwithstanding the lack of data and adequate reporting, estimates show that climate-related natural disasters disrupted basic services such as health, education, and transport in at least 44 reporting countries in 2020 and 2021.

According to the World Bank, the financial toll of infrastructure disruptions in low- and middle-income countries reached up to \$647 billion in 2019. If there is one thing that developing countries like Pakistan need to learn from this, it is to ensure that development gains are preserved. This means that there is an urgent need to develop the resilience of critical infrastructure to enable it to withstand climate shocks, such as floods. However, the current approach to infrastructure development rarely factors in climate risks and the cascading impact of climate-related disasters. Similarly, high upfront costs often discourage the incorporation of the climate resilience aspect in infrastructure development.

Whenever a natural disaster, such as floods, hits Pakistan, it destroys infrastructure, depriving people of access to basic services, including water supply, sanitation, electricity, health, and transport to the nearest market to buy food and other needed supplies. The disruption of basic services during natural disasters amplifies the exposure of the affected population; it aggravates their vulnerability and undermines resilience.

The damage to critical infrastructure also has indirect effects. For example, evidence shows that small businesses that provide livelihood to low-income households suffer losses due to the disruption of transport and electricity supply and not the flood itself. However, infrastructure resilience improves the reliability of service provision and increases the life of assets — including those which are of an income-generating nature — thereby protecting returns, enabling livelihood diversification, and reducing disaster risk.

Infrastructure that is resilient to climate shock must be a priority.

Since Pakistan has yet to invest in decarbonisation to achieve Nationally Determined Contributions targets etc, investing in climate-resilient infrastructure could be a win-win situation. It would allow the economy to decarbonise and also develop resilience to climate shocks. Making infrastructure resilient to climate shock would mean a marginal increase in the total investment cost. But, not only would these be recouped soon, the extra effort will increase the lifetime of an asset. Nevertheless, investments in climate-resilient and low-carbon infrastructure need a fundamental transformation of critical infrastructure systems, which should be reflected in the projects' planning, design, and delivery. A crucial element is to incorporate this aspect into the public procurement process, while considering different proposals.

With Pakistan highly vulnerable to climate change and the frequency and intensity of climate-induced natural disasters expected to increase, ensuring infrastructure resilience should be a priority of the government. This requires prioritising investments to develop this resilience and mitigate the impact of natural disasters on vulnerable communities. In addition to such investments, assessing the resilience of existing infrastructure and improving weaknesses is also important to cope with natural disasters. This would require developing quantitative and qualitative techniques and methods to assess the resilience of a system to a potential natural disaster.

In addition to spearheading the resources, generating high-quality data and information, developing required tools, and improving the technical and institutional capacity of relevant departments are crucial to supporting decision-making under uncertain climatic conditions. Integrating this aspect of uncertainty in the planning, development and deployment of tools for decision-making can mitigate infrastructural damage and post-disaster reconstruction costs.



SUMMARY of the Climate resilience by Ajaz Ahmed

Similarly, leveraging nature-based solutions can significantly reduce climate risks and help develop infrastructure resilience. Nature-based solutions do much to ensure that infrastructure has a harmonious relationship with the natural environment, so that environmental sustainability is not undermined by weak infrastructure. Such infrastructure assets and corresponding basic services are better protected against climate shocks.

The writer has a PhD degree in economics from Durham University, UK. He is director of research programmes for the Social Protection Resource Centre, Islamabad.

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