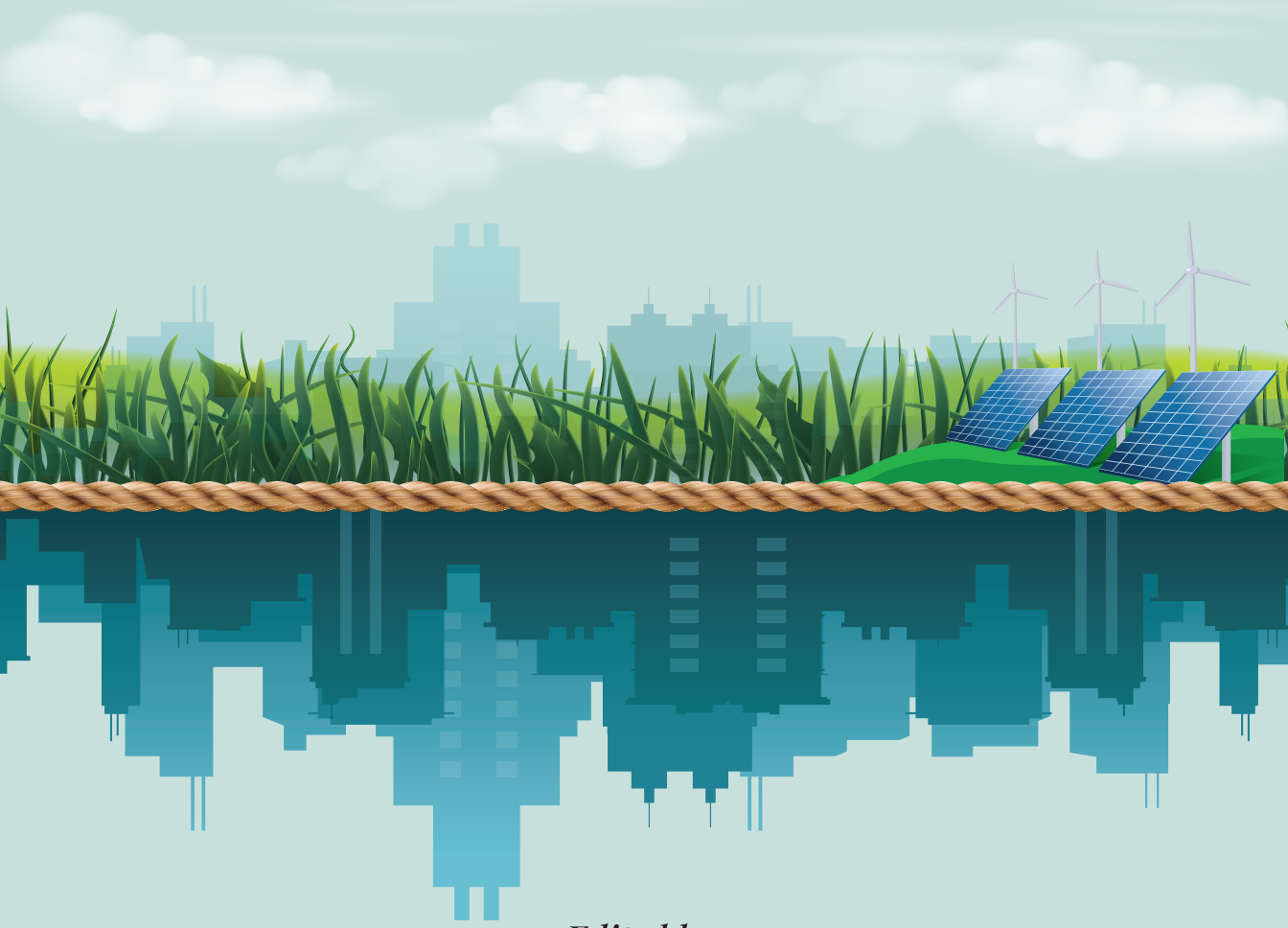
SDPI
Sustainable Development Policy Institute

Sustainable Development in the Emerging World Dis|Order



Edited by:

Uzma Tariq Haroon | Sarah Siddiq Aneel | Tayyaba Hanif

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Preface

Preface

There are moments when the theme of a conference acquires greater meaning with the passage of time. *Sustainable Development in the Emerging World Dis|Order* was conceived at one such moment.

When we chose this theme for SDPI's Twenty-Eighth Sustainable Development Conference, the world was already confronting geopolitical fragmentation, climate emergencies, debt distress, weakening multilateralism and rapid technological disruption. Since then, these trends have become even more intertwined. The distinction between an economic shock, a climate shock, a geopolitical shock and a social shock is becoming increasingly difficult to maintain.

The good news is that disorder does not take away our ability to act.

The difficult news is that it makes delayed or poorly considered choices much more expensive.

This was the context in which the Twenty-Eighth SDC was held. Over four days, the Conference brought together more than 300 speakers, including over 200 national and 90 international participants from 23 countries, joining both physically and virtually. Policymakers, ministers, parliamentarians, academics, development practitioners, business leaders, civil society representatives and young researchers brought very different experiences to the same table.

The SDC did not take place in isolation. It was held alongside SDPI's Third Sustainability Investment Expo, the Ninth South and South-West Asia Subregional Forum on Sustainable Development convened with UNESCAP, and the Sixteenth South Asia Economic Summit. This convergence was important. Sustainable development cannot remain a conversation confined to researchers, just as investment cannot remain detached from social and environmental outcomes, and regional cooperation cannot be discussed independently of domestic development realities.

The presence of practitioners from across South Asia and beyond also reminded us of something easily forgotten during periods of political tension: countries may disagree, but many of their development challenges refuse to respect national borders. Air pollution travels. Rivers flow. Supply chains connect. Climate disasters spill across boundaries. Technology travels faster still. Our policy responses require both national ownership and international cooperation.

This anthology is an attempt to preserve some of that collective wisdom.

It is deliberately more than a conventional collection of academic papers. Several contributors responded to our call for research and submitted papers that subsequently went through peer review. I thank these authors for entrusting their work to SDPI and for responding constructively to the review and editorial process.

Equally important are the voices of senior policymakers and practitioners whose contributions were made from the conference podium rather than originally written for publication. Their interventions contained experience and institutional memory that would have been unfortunate to lose once the microphones were switched off. Key speeches were transcribed, carefully edited and developed for inclusion in this volume. I am grateful to these distinguished contributors for allowing their ideas and reflections to become part of the permanent record of the Conference.

I also acknowledge our peer reviewers, whose largely unseen contribution remains central to the credibility of an SDPI publication, and the editorial team — Uzma Tariq Haroon, Sarah Siddiq Aneel and Tayyaba Hanif — for undertaking the demanding task of bringing together research papers, policy interventions and conference deliberations within one coherent volume.

An event of this scale is never the achievement of one person or one team. It rests on the intellectual contribution of our speakers, the confidence of our partners, the curiosity of our participants, and many

months of work by colleagues across SDPI. To all of them, I owe my sincere appreciation.

For nearly three decades, the SDC has tried to remain a place where uncomfortable questions can be asked, competing ideas can coexist, and evidence can inform policy without becoming detached from lived realities. This anthology continues that tradition.

The emerging world order may not be ours to determine entirely. Our response to its disorder, however, remains very much our choice.



Dr Abid Qaiyum Suleri
Executive Director
Sustainable Development Policy Institute

1

Emerging World Disorder and the Future of Development

Finding Order Within Disorder: A Call for Creative Reconstruction

Dr Abid Qaiyum Suleri

Five Global Forces Shaping the Next Decade

Dr Ishrat Husain

Reimagining Global Development in an Age of Geopolitical Disorder

Senator Sherry Rehman

Imagining the Future: Climate, Equity and Responsibility

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From Aid to Action: Transforming Development Pathways

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Growth, Investment and Poverty Alleviation: Lessons for Pakistan

Qaiser Ahmed Sheikh

Finding Order Within Disorder: A Call for Creative Reconstruction

Dr Abid Qaiyum Suleri[*]

For nearly three decades, this forum has stood as the region's intellectual commons where research meets policy, where ideas meet responsibility, and where optimism meets realism.

This year's theme, '<u>Sustainable Development in the Emerging World Dis|Order</u>', captures the mood of our times. When we announced it early in the year, few could have imagined how swiftly the world's sense of order would unravel.

Today, uncertainty has deepened across every front. The familiar pillars of progress — trade integration, multilateralism, and predictable growth — are weakening. Geopolitical alignments are shifting faster than our institutions can adapt. Climate extremes have become more frequent, more costly, and more political. And technology, once hailed as the great equaliser, now risks amplifying divides — in knowledge, in trust, and in opportunity.

The post-Second World War consensus that sustained the global economy for nearly eight decades is fragmenting. In its place stands a mosaic of rival systems — each with its own currencies, data rules, and narratives of development. The shared language of progress is being replaced by the grammar of self-preservation.

If disorder defines the global scene, South Asia lives it daily. From the Himalayan glaciers to the Bay of Bengal, the climate crisis, debt stress, and digital divides have become our shared realities. Yet South Asia also possesses something more powerful — a remarkable capacity to adapt.

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* *Dr Abid Qaiyum Suleri* is Executive Director of the Sustainable Development Policy Institute (SDPI), Pakistan.

If survival of the fittest is the planet's oldest law, then adaptation is its most enduring strategy. South Asia's people and governments are proving that truth daily. From the deltas of Bangladesh to the deserts of Sindh, they are learning to live with uncertainty — adjusting crops, rebuilding homes, revising budgets, and rethinking policies. The capacity to adapt, rather than the absence of risk, will define our region's resilience.

And it is precisely this spirit of adaptation — of learning, collaborating, and evolving — that animates this year's Conference. This year's Conference is unique.

Under its umbrella, we are also convening SDPI's Third Sustainability Investment Expo (SIE) titled 'Collaborations for a Climate Smart Future'; the Ninth South and South-West Asia Subregional Forum on Sustainable Development on 'Transformative, Equitable, Innovative and Coordinated Actions for the 2030 Agenda and its SDGs for a Sustainable Future for All'; the Sixteenth South Asia Economic Summit (SAES) 'Exploring Innovations and Policies in the Circular Economy'; as well as the first South Asia Circular Economy Forum, co-organised with the Institute for Global Environmental Strategies (IGES), Japan and United Nations Environment Programme (UNEP).

Together, these platforms extend our conversation beyond 2030 — to ask what sustainable development should mean in a world where old metrics no longer capture new realities.

To guide that search, we might recall this year's Nobel Prize in Economics, awarded to Joel Mokyr, Philippe Aghion, and Peter Howitt. Their work reminds us that prosperity is shaped not by what societies own, but by what they imagine. Mokyr showed that the Industrial Revolution thrived where curiosity triumphed over conformity. Aghion and Howitt proved that progress depends on *creative destruction* — the courage to dismantle what no longer serves.

That insight holds deep relevance today. The systems we inherited — growth that is dependent on carbon emissions, fragile supply chains,

trickle-down development — are no longer sustainable. The question is not how to restore them, but how to replace them with models fit for the realities of interdependence and constraint. Disorder, then, is not just a crisis; it is an opportunity — a call to rebuild differently.

That spirit runs through the sessions at this year's Conference. Panels on alternative finance, anticipatory resilience, green industrialisation, and digital futures all ask the same question: how can societies design stability in an age of shocks?

A promising answer lies in the idea of a *Circular Economy*. Circularity is not simply about waste management; it is a philosophy of resilience. It rejects the linear logic that created our crises — take, make, dispose — and replaces it with a regenerative one: reuse, redesign, restore.

I am not advocating for recycling; I am talking about redesigning. The deeper task before us is redesigning — not recycling the old order but rethinking the very rules that shape it. The world we built on fossil-fuel growth, linear production, and trickle-down assumptions cannot be mended; it must be redesigned for a century defined by interdependence and constraint.

That same conviction must guide our collective frameworks. The emerging Agenda Beyond 2030 should not merely extend the Sustainable Development Goals but reimagine their foundations — aligning them with the realities of climate volatility, digital disruption, and geopolitical fragmentation.

Over the next four days, we must weave together ESCAP's regional review processes, the South Asia Economic Summit's policy innovations, and community-led adaptation at the grassroots, creating a new architecture of cooperation built for an age of disorder.

Our collective wisdom can help us to think through how to transform what did not deliver — a conscious act of creative reconstruction. It demands the courage to discard what no longer works and the imagination to build policies and institutions that reflect today's world, not yesterday's map.

The 2030 Agenda gave the world a shared vocabulary of progress. But the world of 2025 looks very different from the one we envisaged in 2015. The Sustainable Development Goals must evolve — from a checklist to a compass that points not only towards growth, but towards justice, equity and planetary balance.

The *Agenda Beyond 2030* must therefore ask new questions:

- **How do we measure prosperity in a world of climate volatility?**
- **How do we define security in an era where floods, heatwaves, and pandemics can kill more than armies?**
- **How do we build legitimacy in global institutions that increasingly feel distant from those they claim to serve?**

We may not yet have all the answers. But we share one conviction: progress cannot wait for order to return. We must build order within disorder.

I will conclude with four reflections as food for thought.

First, planning must learn from the climate, rather than treating it as an afterthought. Fiscal prudence and environmental purpose are not opposing virtues. When public investment anticipates risk instead of reacting to it, it ceases to be expenditure and becomes foresight. That is the idea behind today's dialogue on *Rewiring Fiscal Planning for Climate Prosperity* — to place climate logic at the very centre of economic reasoning.

Second, reform must be powered by imagination. The transition before us is not merely technical but moral — how to build systems that are leaner, fairer, and more responsive. Whether in trade, energy, or finance, the circular idea is a reminder to use less, waste less, and think more. To build differently is to think differently and that is the real reform our age demands.

The above two come alive in the *Sustainability Investment Expo*. The private sector, too often seen as a bystander to policy, is proving to be a partner in transformation from climate-resilient infrastructure and

renewable energy ventures to digital inclusion and sustainable production. These innovations remind us that ideas, when allowed to breathe, can turn disorder into opportunity and risk into resilience.

My third point is that cooperation must be understood as resilience. In a region bound by rivers, monsoons, and markets, isolation is an illusion. Our vulnerabilities are shared; so must be our protections. Bangladesh played a crucial role in the foundation of the South Asian Association for Regional Cooperation (SAARC). In 2016, it was Pakistan's turn to host the SAARC Summit, when regional politics overshadowed cooperation. With two visionary cabinet ministers from the region among us, I would urge them to imagine a revival of SAARC — not as nostalgia, but as necessity. Shared resilience must be its new purpose. Those who do not believe in regional cooperation may opt out. But those who believe in collective resilience must take the initiative to renew dialogue with whoever is willing, and wherever progress is possible.

And that brings me to my final reflection. In politics, as in life, people often overrate the role of choice and agency. External events — not even the best-laid plans — often dictate where a country's attention goes, even for a great power. But wisdom lies in turning those shocks into reform, in seeing disruption as instruction. Disorder tests systems; it also reveals what still works.

As we navigate economic, demographic, and climatic transitions, this Conference is an invitation to rediscover our region's collective ingenuity. The next phase of sustainable development will belong not to those who seek order through control, but to those who find order through creativity.

Let us therefore treat this *Emerging World Dis|Order* not as a diagnosis of despair, but as a call to redesign and build fiscal, technological, and moral systems fit for the century ahead.

The world may appear unmoored, but ideas remain our most renewable resource. The challenge is to connect those ideas across borders, across institutions, across disciplines.

If, in these four days, we can identify even a fragment of order within disorder, then this gathering will have served its purpose.

Thank you and welcome once again to the Sustainable Development Policy Institute's 28th annual Sustainable Development Conference.

Five Global Forces Shaping the Next Decade

Dr Ishrat Husain[*]

There are five major trends that are going to dominate the global economy in the next decade or so. What happens after that is an evolving process.

First, technological advances are going to speed up and disrupt the existing processes of production, distribution, and services, and that is going to be driven by Artificial Intelligence (AI). While some believe AI will create more problems, others believe it will only supplement and complement human capabilities.

We must maximise the benefits of AI for the poor, the vulnerable, and the excluded. This means leveraging AI applications in four key areas:

1. **EdTech: AI tutors can coach and guide each individual according to their capability, bringing them up to the average standard, unlike the present system.**
2. **Telehealth: Doctors in urban hospitals can interact with counterparts in remote areas, guiding them on diagnostics and prescriptions, thus improving the standard of healthcare for all.**
3. **AgriTech: In Pakistan, where a progressive farmer produces significantly more than the average farmer from the same land, satellites and sensors can be used to control water and fertiliser use. This can increase productivity for small farmers, boost rural incomes, and reduce poverty.**

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* *Dr Ishrat Husain* is a former Federal Minister and Governor, State Bank of Pakistan. He is a distinguished economist, policy advisor, and academic with over five decades of national and international experience in governance, development, and economic reform. He is also Senior Advisor at the Sustainable Development Policy Institute (SDPI).

4. **FinTech: Financial inclusion becomes much easier. For example, some financial entities can assign a credit scorecard based on an individual's past transaction patterns, allowing them to assess creditworthiness and loan amounts in 15–20 minutes. Banks are taking advantage of this methodology.**

The second change that is taking place is the demographic balance which is shifting dramatically. Japan, for instance, is facing a substantial fertility decline and an increasing dependency ratio, forcing this monolithic society to open up its borders to foreign workers. South Korea is also going to do that. This trend is going to spread to Germany and other developed nations.

Meanwhile, we in the South Asia region have surplus labour. There should be a smooth movement of labour from labour-surplus countries to labour-deficit countries. While right-wing parties in the West may resist immigration, they are generally not opposed to skilled manpower, and the number of foreign workers in OECD [Organisation for Economic Co-operation and Development] countries has been rising. Over the past few years, the number of foreign workers in these countries has increased from 1 million to 3.5 million, while the foreign-born population in Europe has also grown significantly.

Countries like Pakistan have to adapt by providing the necessary skills training, as well as social skills and language training, in order to help our labour fit into the changing global market.

The third trend is climate change. I do not need to repeat what climate change is doing to our region. From the perspective of a development economist, Pakistan, Bangladesh, and India — because we share a common region of water resources — must think about how best to share and manage these resources for the majority of the population.

If we mismanage our water resources, we will face famines, water scarcity, and a humanitarian crisis. Whatever success we may have with the SDGs, it will be undone because two billion people are dependent on the glaciers that are melting in the Himalayas and Hindu

Kush-Karakoram (HKK) region, which will create severe shortages of energy, food, and water.

The fourth which is becoming apparent is that from 1990 to 2015, the period of the Millennium Development Goals (MDGs), the world achieved remarkable progress in poverty reduction. The number of people living in poverty dropped from 2.2 billion to 800 million in 2025. Even if you exclude China (which lifted 700 million people out of poverty), the reduction was still significant. During this time, the share of emerging and developing countries in global GDP and global trade actually equalled that of advanced countries. There was a prevailing atmosphere of shared prosperity in the emerging and developing countries. Unfortunately, this is not going to be the case now.

The fourth trend — the fragmentation of the shared prosperity narrative — signals a tough road ahead where the previous era's global economic convergence is being challenged.

There are leaders in the West who are very much inward-looking, who are nationalistic and protectionist, and who will not allow the same forces of trade flows, financial flows, migration flows and technology transfer that propelled this revolution between 1990 and 2015 to repeat themselves. Hence, deglobalisation demands that there should be more cooperation in the South and among the South; countries themselves have to pull up their socks and become more self-reliant rather than depending on external forces.

Finally, consider the global geopolitical situation. Following the collapse of the Soviet Union, the United States emerged as the sole superpower and the hegemon of the world. Today, we are witnessing the rise of a G2, with China increasingly recognised as a peer competitor, despite its lower per capita income. Research indicates that China leads in 53 of 64 emerging technologies, and its human capital has expanded dramatically: in 1999, Chinese STEM graduates were half the number of those in the United States; by 2024, China produces three million STEM graduates annually, compared with 500,000 in the United States.

Thus, in terms of both technology and human capital — the primary drivers of future power — China is a formidable force. This suggests intensified competition, and developing countries may feel pressure to set up blocs strategically, reminiscent of the Cold War.

In my view, however, nations should maintain sovereignty and autonomy in decision-making. A multipolar world is therefore desirable, with regions such as South Asia pursuing cooperative strategies to strengthen their collective position.

Reimagining Global Development in an Age of Geopolitical Disorder

Senator Sherry Rehman[*]

The crisis of multilateralism is a very serious one.

We are perhaps embedded in our own multiple crises here, but the theme of this conference '*Sustainable Development in the Emerging World Dis|Order*' makes us realise that the thought leadership at a very evidence-based organisation like SDPI is also taking note of the disruptive context we live in.

We are living in an extraordinary era of what I call anxiety and disruption, defined by staggering shifts in human history.

And why I say this is not just because AI [Artificial Intelligence] has taken over much of the world and we are not able to assess where it will go and how much of our water it will use. We do not talk about that because it is really not convenient, but I would like to hear about this at another time.

Reimagining global development is no longer possible because that requires a trajectory of peace and must be embedded in an architecture of law. As we see around us, that architecture is under serious challenge.

Global development, with sustainable development as an end goal, has been centralised since the post-World War II era. However, the rise of political illiberalism, hardening nationalisms, and a dangerous surge in active and simmering conflicts, at levels not seen since the Second World War should give us real cause for strategic pause. Development does not take place in a social or political vacuum.

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* *Senator Sherry Rehman* is the Chairperson/Convener, Senate Standing Committee on Climate Change and Environmental Coordination, Government of Pakistan.

This is why you are seeing funding cuts everywhere. The narrative that public international funding does not matter is exactly what people want us to think. It does matter when you are vulnerable and living on the edge. It is up to us to decide what matters, where we take our development goals, and what we do with our existing resources, which are themselves under severe challenge.

Conflict is escalating in West Asia (what used to be called the Middle East), Africa, Europe, and unfortunately, in our own region, South Asia. This is ongoing due to a lack of effective laws, while investment in global military spending is now the focus.

Beyond this debate, the world is retreating towards protectionism, illiberalism, and very hard national postures.

In this context, global military spending is set to reach USD 6.6 trillion by 2035 if current trends persist. This poses an existential threat to the world we live in and what we can expect from sustainable or global development. If this becomes the new 'local abnormal', it just should not become the normal. But it does pose an existential threat to development and climate spending.

Climate is no longer a niche issue. But even the thought leadership around it, which used to be a unified pole, has become fragmented, just like global responses. Global development will not re-emerge until conflict settles down because conflict forces countries to divert resources to their militaries and away from basic, fundamental citizen entitlements that actually enable resilience.

We are facing a situation where only 15% of global SDG targets are on track. They are not one checklist; they are not connected as part of a global picture. Nearly half have either stagnated or regressed, even during the supposed 'Decade of the Better World.'

With the return of geopolitics, we are finding that nature is not the only thing that is red in tooth and claw. So, too, is geopolitics. It is bringing wars back in a 'no-rules era.' Without rules, you cannot navigate your

development path, your entitlements, or secure your future through multilateralism.

If our SDGs are off track, can we leverage the power of — or rather, the waning power of — multilateralism to secure our own futures?

Consider the consequences of unchecked population growth coupled with a lack of data. Pakistan has a large population that is unable to provide even basic solid waste management across its cities. Why does this matter more than other glamorous subjects? Because solid waste management is at the heart and core of sanitation, public health, i.e. WASH sector, and how a population responds to any crisis — be it climate, heat, rain, or water scarcity. Cities with an integrated system for public well-being are able to face a catastrophic and unpredictable future with far more resilience.

We have a public conversation about circularity, but downstream, the interest in plastic products is choking our storm drains. During a flood, you see plastic bags choking the storm drains; they do not degrade. Pakistan consumes and uses far more plastic than it should, and our recycling rate is dismal. We are barely recycling 1%. The world is also recycling only barely 9%.

We must look inwards, because no one is coming for you other than your own agency. We have to stop resetting our development cycles because of climate disaster designs. These are no longer decade-long or isolated episodes; they are recurring more frequently, setting us in a resilience trap. While the economy is barely recovering from one exogenous shock, you are unable to rebuild before facing the next one.

Those are not going away if, for four years running, you have temperatures of 53°C in the summer in the South of Pakistan. Balochistan faced that. Europe closes down at 40°C in terms of declaring a climate emergency.

We have persistent economic volatility, and our SDG trajectory reflects the global slowdown. Pakistan will continue to face this crisis because

we are unable to imagine a future where our debt has been addressed. We need a debt reset.

Pakistan's debt servicing consumed 46.7% of our federal budget this year, amounting to PKR 8.2066 trillion. The World Bank calculates that Pakistan needs at least USD 348 billion by 2030 to become sustainable. The Climate Ministry recently submitted its NDCs [Nationally Determined Contributions] for the very expensive COP in Brazil, stating that USD 565 billion is needed just to make an energy transition by 2035.

There is a huge reality gap here between the numbers and the outcomes.

Something transformative is needed.

While the private sector is an engine for growth everywhere, in Pakistan, it is risk-averse. The idea that 'the markets will help' is delusional. The private sector works for profit; it does not rush to the frontlines of a climate disaster to sink money into saline ground, not in the numbers we need.

Many countries are in this debt trap. A few years ago, there was a positive response, notably from President Macron, who organised a summit meant to reset the global financial architecture to handle the realities and deficits of the emerging 21st Century.

If we think institutions like the World Bank, Multilateral Development Banks (MDBs) and the International Monetary Fund (IMF) can address these challenges, we face a great moral failure and a profound misunderstanding.

The global architecture is no longer designed to face the 21st Century, at least for developing countries.

No substantive financing for development or climate today arrives without debt. Every dollar comes with interest, conditionality, and a shrinking space for development sovereignty. For many of us in the Global South, it has become an impossible paradox to borrow our way out of climate disasters we did not cause.

While Pakistan is rightly asked to produce NDCs [Nationally Determined Contributions], and everyone is rushing to submit plans for decarbonisation, I want to see something else from the international community.

We would like to see a transparent accounting of the IDCs [Internationally Determined Contributions]. IDCs are the monies and funds promised, pledged, but not released to the Global South. That is at the heart of the Paris Agreement and our interest at the COP [Conference of Parties]. If we are talking about global equity, that has to be the case.

We want a transparent accounting of where that green financing is going and how climate finance is even defined. This matters because we cannot allow development aid to be mixed up with climate finance and passed off as such.

Globally, Asia requires USD 1.11 trillion annually just to adapt to climate impact. Yet, we are told there is no money. But the money is there: it is in the USD 7 trillion a year being spent on fossil fuel subsidies globally. This figure is available on the IMF website.

While the solar revolution in Pakistan is making energy more affordable, and we see investment in renewables, this investment is often added on to fossil fuels, which are still proceeding much faster than renewables. It is not being substituted, which is what the energy transition is fundamentally about.

Finally, Pakistan needs to also get its own house in order. We need to hold our own 'Conference of Parties for Pakistan.' The parties here are the people and the provinces. We all need to defragment our responses, bring them together, and understand that our adaptation goals must be brought into alignment, from the international to the local level.

Local communities are fantastic in Pakistan; they come up with resilient, low-cost solutions. It is these low-cost solutions, relevant for every district and for every crisis — from glacial melt to water scarcity

— that need to be organised at scale. I completely agree: endless pilots and small projects must stop.

With those words, I urge everyone at this table to put their minds and resources together to plan a 'Conference of Parties for Pakistan.' We have been waiting too long for the world outside. It is time to look within as well.

| Senator Sherry Rehman

Imagining the Future: Climate, Equity and Responsibility

Senator Dr Musadik Masood Malik[*]

I must begin with a confession.

As I listened to the insightful interventions before me, I repeatedly noted down points, only to cross them out moments later because they had already been articulated — often more eloquently than I could have done myself. In truth, very little remains unsaid. Yet, as my role requires me to speak and yours requires you to listen, allow me to share a reflection rather than a repetition.

Several years ago, following one of the most devastating floods in our country, the Prime Minister asked members of the Cabinet to visit affected regions. During one such visit, I met a young displaced girl sheltering near a shrine. In the course of our conversation, she asked me what I did. I replied, rather unthinkingly, that I worked in politics. She then asked, 'What is politics?' I answered, 'Politics is about the future.' She paused, looked at me with vacant eyes, and asked a question that continues to haunt me to this day: 'What is the future?'

In that moment, I said to her, 'You are the future.'

Yet her village had been washed away. Her school no longer existed. Her community had been devastated, and she was dependent on charity for her most basic needs. And still, I had the audacity to tell her that she represented the future. Shame, I realised, was not mine alone — it was collective.

This is not the story of one child.

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* *Dr Musadik Masood Malik* is Federal Minister for Climate Change, Ministry of Climate Change and Environmental Coordination, Government of Pakistan.

In 2022 alone, millions were displaced, thousands lost their lives, and entire communities were erased. Economic losses amounted to tens of billions of dollars — representing a significant proportion of national GDP. And yet, we continue to speak casually about 'the future' without confronting the lived reality of those who are meant to inherit it.

What troubles me equally is our hypocrisy — global, national and personal.

We celebrate our scientific achievements, our nuclear and missile technologies, our Nobel laureates, and our intellectual traditions. Yet it did not occur to us that every child should have access to safe drinking water, basic education, and fundamental healthcare. This failure is not due to a lack of resources or technology, but a profound failure of imagination.

We did not imagine that human development itself is a matter of national security.

I am also deeply perplexed by the global environmental governance architecture.

I have participated in many ministries and many initiatives, but rarely have I encountered a domain so rich in process and so poor in outcomes. Conferences follow conferences; declarations follow declarations. Yet when asked to point to a single transformative outcome for the most vulnerable, the response is silence — or worse, a reference to yet another process.

Meanwhile, our lived environment continues to deteriorate.

Cities once known for their beauty and romance are now choked by smog. Biodiversity has vanished from our urban spaces. The loss is not only material; it is cultural, emotional and generational.

We are told that this Conference is about the future. Let me therefore speak plainly.

Multilateralism is weakening, giving way to unilateral actions and the weaponisation of resources — including water. This sets a dangerous

precedent, placing all lower-riparian countries at risk. If conferences are all we have left, then they must at least be spaces where truth is spoken without hesitation.

Economic inequality is widening at an unprecedented pace — both between and within nations. Environmental devastation, displacement, and poverty are eroding social fabric on a scale that will shape generations. Climate change, particularly for countries situated near glacial systems, poses existential risks through floods, droughts, and food insecurity.

Yet I remain cautiously hopeful.

Technological disruption, if harnessed wisely, offers a path forward. While a small number of countries are responsible for the majority of global emissions, those least responsible suffer the greatest consequences and receive the least financing. This imbalance is neither ethical nor sustainable.

The answer cannot be more debt — particularly debt repurposed from education and health budgets. Development cannot be built by depriving future generations of learning and care.

Instead, our hope lies with our youth. History shows us that nations confronted with environmental crises — Finland and China among them — transformed adversity into opportunity by investing in innovation and setting ambitious standards. There is no reason Pakistan cannot do the same.

We must unleash the creative power of young men and women — graduates, researchers, entrepreneurs — by giving them resources, trust, and space to innovate. The solutions we need do not yet exist; they will be created by those who are not yet cynical, by those who still believe change is possible.

Development is generational. Climate systems operate over centuries. Nation-building takes decades. None of this is short-term. We are, collectively, writing the history of the future.

So, I leave you with this thought: in nation-building, we must not ask what we can do. We must ask what it would take. Those two questions yield very different answers.

The resolve of our government is clear. With partners or without them, in ten years or in twenty, we will do what must be done — because we owe it to our children.

5

From Aid to Action: Transforming Development Pathways

Mohamed Yahya[*]

Debates about an emerging world order are rife among policymakers, many of whom are here today. The biggest question facing nations, businesses, international organisations, and humanitarian actors is: How do we shape and adapt to this emerging order, or perhaps disorder?

We all have a stake in helping shape this new order, and the discussions you will have over the next few days will be important in that regard.

Ten years into the 2030 Agenda, solidarity seems to be shrinking and vulnerability is going up. We have come through a Pandemic. In Pakistan, for those who know this country and the many political leaders here, I do not need to tell you about the climate extremes you face every monsoon. We are seeing new protracted conflicts globally, and mounting debt.

Pakistan is not new to the debt issue. Growth is very likely to remain subdued, leaving little room for investing in people and the planet.

Official Development Assistance (ODA) is falling. Humanitarian aid is declining in spite of growing needs. This has been the sharpest two-year contraction in aid in more than a decade. Meanwhile, the debt issue is crowding out essential spending across the developing world. Developing countries paid USD 1.4 trillion to service their external debt, which is four times what they invest in health, education,

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and climate action combined. Global public debt is over USD 100 trillion, with developing countries carrying a significant share of that.

The return of geopolitics, accompanied by what some have called an 'age of impunity' is challenging long-established norms and values that have been the basis of the global order for the last 80 years.

Navigating this apparent disorder and shaping a future where we can all thrive is the question of our time, and policymakers, researchers, universities, and others will play a critical role. However, this disorder also brings opportunities. We can shape, change and influence how we want to live together.

Allow me to say a few things about the United Nations as we mark our Eightieth year.

The Secretary-General has been very clear.

We need a course correction on SDG financing, including the SDG Stimulus. The proposed USD 500 billion a year is necessary to meet the SDGs, but the current environment makes that challenge much more daunting. Countries facing the greatest challenges also happen to be highly indebted countries.

So, what do we do in this context?

One thing Pakistan must do, with IMF support, is shift away from relying on aid towards *Domestic Resource Mobilisation (DRM)*. You have to finance your development; there is no way out of this. It has to be DRM and better management of internal resources through:

- **Fair and broad taxation,**
- **Better expenditure efficiency,**
- **Strong public finance management, and**
- **Tackling illicit financial flows.**

Secondly, I believe the era of small projects is over.

I think we can all agree that small-scale and pilot projects are no longer sufficient when what we need are transformative pathways and large-scale, nationwide changes to national programmes. We need initiatives that are genuinely transformative, rather than a collection of small projects that lack the scale and impact required to deliver meaningful change.

Thirdly, this is why I am really excited about this meeting and the relationships developing across the region, especially seeing Bangladesh's Minister here.

Regional cooperation is key to solving some of the problems we face, especially by bringing technical expertise, sharing information, and sharing ideas from the region.

For the United Nations, one of the main internal discussions that has emerged very clearly is that we cannot serve as a substitute for government service delivery. That is simply not going to happen, nor will it lead to the results we seek. The UN has to be a support system to the government in providing technical support and helping the government deliver its own mandate. The days of service delivery as a substitute for government are, in my opinion, over.

The SDGs have never been about charity; they are a blueprint for investment and shared resilience. If we work together — with governments in the lead, alongside the UN, development banks, and the private sector and civil society and academia holding us accountable at the table — then we have a chance to bend the curve.

With all the ideas coming from across the region and globally, with technical expertise and researchers in the room, let us use this to design a future where we have:

- **Fewer announcements and more execution,**
- **Fewer pilots and more platforms,**
- **Less fragmentation and more solidarity.**

You count on the UN to support you and be with you along this journey.

6

Climate Finance and Fiscal Reform: Mobilising Investment for Pakistan's Resilience

Senator Muhammad Aurangzeb[*]

We are seeing remarkable resilience in terms of global GDP. In fact, a few weeks back, the global GDP estimates were actually revised upwards. This is a combination of a few factors:

- **Geopolitics: On a tactical level, conflicts have not led to outright global war, and a state of 'mutually assured co-existence' has been maintained so far.**
- **Structural Reforms: A lot of countries, including Pakistan, are actually on a wave of structural reforms.**
- **Private Sector: The increasing role of the private sector and diminishing role of the public sector.**

Yes, uncertainty is high and we are seeing protectionism, supply chain disruptions and readjustments. These factors demand that we ensure that our fiscal and external buffers are robust enough to meet any exogenous shocks as they come.

I would like to briefly touch upon AI [Artificial Intelligence] and crypto [cryptocurrency], particularly in my capacity as Chairman of the Pakistan Chapter of the Pakistan Crypto Council (PCC), which was established earlier this year.

Based on our analysis, as well as the growing number of citizens already participating in cryptocurrency-related activities, it is clear from a business and economic perspective that we must move forward. In the

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broader context of Web 3.0, blockchain and cryptocurrency form part of this evolving digital ecosystem. Bringing these technologies within an appropriate regulatory framework therefore makes considerable sense.

We are very clear that it is going to be 'Pakistan First.' We must mitigate all the associated risks, whether related to illicit financial flows or suitability regulation.

On climate finance, we have made progress in developing enabling policies, including the National Adaptation Plan (NAP) and Nationally Determined Contributions (NDCs). The Climate Prosperity Plan (CPP) was handed over in Washington a couple of weeks back and is already in place with identified projects. The Green Economy Guidelines are also already out.

We have enough available resources right now to start rolling things out.

We have a USD 1.3 billion facility from the International Monetary Fund (IMF) and USD 500 million in financing from the Asian Development Bank (ADB) approved in December 2024.

Pakistan has entered into a ten-year Country Partnership Framework with the World Bank Group, under which the country will have access to loans, funding, and financing over the next decade. In the current framework, discussions have focused on two existential challenges for Pakistan: climate change and population management. Of the six thematic areas identified under this Framework, approximately USD 2 billion per year will be available over the next ten years to address issues including climate finance, decarbonisation, and climate resiliency. These priorities are central to Pakistan's strategy for sustainable development and climate adaptation.

Regarding the Green Climate Fund and the Loss and Damage Fund, current allocations are relatively modest and encumbered by significant bureaucratic processes. While engagement with these funds is necessary, alternative sources of financing should also be explored.

Notably, private sector initiatives are emerging to complement these efforts. For instance, Acumen has established a USD 90 million climate-focused agricultural fund (the Acumen Climate Action Pakistan Fund and the Acumen Resilient Agriculture Fund), demonstrating innovation and additional resource potential for climate projects. It is anticipated that this fund will be operational in the near term.

We have entered into an agreement with the IDB [Islamic Development Bank] for their USD 2 million per year facility over the next ten years, a significant portion of which deals with disaster and climate finance.

While the resources available in the Green Climate Fund (GCF) and the Loss and Damage Fund are not impressive — they are small figures compared to the needs of large democracies like ours — we must engage with them. Hopefully, under the new leadership, the Loss and Damage Fund will see the necessary increase in capitalisation.

We are also working with the private sector on a Climate Action Fund, which represents the kind of unity and resources we need.

We have been talking about floating Panda Bonds to access the Chinese capital market for a few years, and we are now very close to finalising the rules. This is going to be a key route for accessing finance.[1]

The first project involving government credits is also already in place. We need to replicate and scale these successes.

Pakistan needs to move away from the narrative of being a 'special needs situation'. Instead, we must focus on bankable, industry-led projects that can be structured, monitored, and dovetailed into national standards. Technical support for this structuring is critical, and the private sector can help through Public-Private Partnerships.

When I first went to Washington, I was asked to join the Coalition of Finance Ministers for Climate Action. The underlying rationale was that, while ministers responsible for climate change in each country

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[1] Editors' Note: Pakistan issued its first Panda Bond on 14 May 2026 in China's onshore capital market.

should lead the charge in defining where we are and where we want to go, there is almost a universal consensus among finance ministers that this agenda will not become mainstream on its own. Consequently, incorporating it into policy frameworks and the budgetary process is absolutely critical. I am very clear on this point, particularly as I have consistently raised these two existential issues. While there is significant interest in the next IMF programme, structural reforms, and related matters, I believe these are also important. All that is required is better coordination around what already exists and then building on that foundation.

There is a great deal that can be achieved before calling for new policies or additional instruments, which, to some extent, is part of our institutional DNA.

My submission, therefore, would be that — with the guidance provided here today, particularly on the 'how' rather than the 'why' — we must focus on adaptation. We are where we are; this is the hand that has been dealt. The task now is to address it directly, to take ownership, and to move forward accordingly.

Growth, Investment and Poverty Alleviation: Lessons for Pakistan

Qaiser Ahmed Sheikh[*]

Historically, wherever there has been substantial investment and subsequent value-added exports, poverty has been substantially lessened, leading to significant national development. In the 1960s and 1970s, Pakistan grew substantially.

Over the last 20 months, under the current leadership, Pakistan has tried its best to stabilise the economy. Our vision, laid out in the *URAAN Pakistan* programme, is to achieve a USD 1 trillion economy by 2035. To achieve this, we need much more growth than the rate we presently have. Unless our growth is substantially enhanced, the impact on poverty reduction and human development will be negligible.

The main focus, therefore, must be on Foreign Direct Investment (FDI). I have observed that many countries, like the United Arab Emirates, are attracting investments of about USD 40 billion, while Pakistan's FDI was only USD 2.5 billion last year.

We have immense potential and huge resources, including mineral resources, oil and gas discoveries, and a strong agriculture sector. We also have to utilise our enormous youth population.

We must place strong emphasis on expanding exports and attracting greater investment, as these are critical to achieving sustainable development and addressing the pervasive poverty we currently face.

I have been visiting China since 1972. At that time, China was at a stage of development comparable to our own, with minimal exposure to the international community. I recall that when Pakistani businessmen

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visited, large crowds of Chinese citizens would gather simply to observe us — our attire and our foreign presence — reflecting the limited contact they had with international visitors. Their questions then were confined largely to the availability of basic amenities.

Since that year, China undertook regular, dedicated development efforts and achieved substantial double-digit growth for decades. While we were better off internationally at the time, we failed to maintain the same pace of development. We must make dedicated development efforts and achieve higher growth, as the current rate will not deliver the benefits and targets we are aiming for.

China's greatest achievement has been bringing 700 million people out of poverty. This is a great feat and is possible for Pakistan. The bottom line of their success was sustained effort, careful planning and consensus on economic policies.

We need to make efforts to resolve our internal political and economic matters. Where we failed to achieve success was in our lack of unity. Our nation is dedicated and hard-working, but we must now give more attention to economic policies.

While political differences are inevitable and each party has its own programme, there must be a national Charter of Economy that transcends political cycles. We should learn from the Chinese experience, where economic development remained a shared national objective, insulated from political confrontation.

We must plan for annual economic growth of at least 6–7% to achieve the target of a USD 1 trillion economy by 2035. The Board is committed to increasing investment in Pakistan. With concerted efforts by all stakeholders, we can achieve our development objectives by attracting investment and leveraging technology to promote value-added exports and create employment opportunities.

2

Climate Resilience, Justice and Community-Based Adaptation

Sustainable South Asia: Solutions for Tomorrow
Syeda Rizwana Hasan

Resilience through Collaboration: A Climate-Smart Pakistan
Dr Kamran Jahangir

The Invisible Hand of Women:
Feminist Climate Leadership in Fragile States
Dr Asjed Sanaullah

Climate Change and Food Security in Punjab, Pakistan:
Policy Gaps and Pathways for Resilience
Kiran Ejaz

Localised Impact of Climate Change
on Communities in Sindh: A Way Forward for Community-Based Adaptation Strategies in Pakistan
Rameez Ahmed Sheikh, Dr Altaf Abro and Amna Khan

Building Bridges for a Just and Sustainable Future
Prof. Kazuhiko Takeuchi

Sustainable South Asia: Solutions for Tomorrow

Syeda Rizwana Hasan[*]

The theme chosen for this year's Sustainable Development Conference is very profound, important, and pertinent. The world indeed is in disorder, and we are living through a period of instability. This instability is not only at the international level but also at the regional and national levels.

The rules-based international order is in crisis. Multilateralism, which is at the heart of the SDG Agenda, is alarmingly losing ground. We also see increased instability across the region driven by inequality, geopolitical competition that is not always fair, and then there is climate change.

We have seen this region, South Asia, shaken by political unrest — from Sri Lanka to Bangladesh to Nepal. People are taking to the streets because the model of governance we have adopted has not truly responded to the needs and aspirations of our people.

What gives me hope is the fact that this unrest has become the call of the new generation. There is a clear gap between how the rulers think and how this new generation is thinking. The new generation is exposed and connected. Since they are connected, they know where things are going right and wrong in the world. They are attempting to shape new orders. Some of this is going in the right direction, and some

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is not, because reform is not easy. It is a process that requires time and commitment, and we must learn to understand the language of both the older and the new generation.

Priorities for Regional Collaboration

There are several issues that urgently require regional cooperation and collaboration, for example: air pollution, plastic pollution, water resource management, and climate action, all while protecting our right to development.

Air Pollution

When I talk about air pollution, Nepal is an excellent example of effective policy in tackling air pollution through its transition to electric vehicles, which has resulted in cleaner skies without compromising consumer demand or development. I had read in the newspaper that Lahore has started using an air gun, which is reportedly improving its air quality. If that is correct, I would really like to learn more about it.

Climate Action and Adaptation

We have seen an increasing frequency of devastating natural disasters, not only in Bangladesh but across the region. Floods that used to occur once a century now occur every few years, causing billions in damage and affecting the lives and livelihoods of millions.

At the same time, we have to be aware of the slow onset effects taking place increasingly in my part of the world. Salinity and soil degradation are impacting our agricultural output, which is true for many highly populated South Asian countries. Increasing heat is already having significant impacts on productivity and development.

Pakistan saw historic floods in 2022, costing the economy upwards of USD 15 billion. In Bangladesh, we saw an unprecedented scale of

flooding last year. Unless proactive action is taken, these events will keep occurring.

Bangladesh's National Adaptation Plan requires USD 230 billion — or USD 8 billion a year — to be fully implemented. Where will these funds come from to protect our development gains? So far, global negotiations and the consensus-building process have not yielded much in terms of providing adequate funds to countries like ours.

If we do not manage to get the necessary funds from the international community, we cannot just sit idle. We must do our part proactively at the national and regional level. Without the means of implementation, these plans may remain just plans.

Here, I see an opportunity for the South Asian Association for Regional Cooperation (SAARC) countries to come together, exchange knowledge, and draw upon their resources to develop a regional plan of action on climate. Regional cooperation is essential for tackling climate change at the most localised level. Regional agreements can help countries share challenges, exchange knowledge, and pool resources.

Water Security

Regarding water, Bangladesh has recently signed the UN Water Convention, recognising that, as a lower riparian country, it relies heavily on its upstream neighbours to fulfil their obligations and ensure a fair and equitable share of water from transboundary rivers. Pakistan, too, has recently experienced the threat of upstream actions that could reduce water flows, raising concerns about compliance with international law.

It is regrettable that transboundary water flows are being weaponised.

South Asia is one of the world's most densely populated regions, and trust and joint covenants for water sharing are crucial to avoid further instability in the region. This trust-building and sharing must be reflected in every sphere, not only in water sharing.

Regional Connectivity

I had to travel from Bangladesh to Pakistan via Bangkok, while others have had to travel via Dubai. This is hardly a sustainable model for regional connectivity. Given our shared history, culture, and common roots, it should not be so difficult for people in our region to travel directly and connect with one another.

We have spoken for years about the importance of 'people-to-people contact', but I question how far our politics have actually empowered people to build and sustain these connections. Too often, when political tensions take over, it is ordinary people, despite their friendships, relationships, and networks across borders, who end up bearing the consequences.

There are also lessons to be learnt within the region, and these forums are important for such sharing.

Climate Change and Renewable Energy

Pakistan's solar boom has been an astonishing market-driven expansion of renewable energy. Pakistan has imported more solar panels than the entire continent of Africa. In 2024 alone, the country imported around 17 gigawatts of solar panels, making it one of the world's largest solar markets, while the average cost of solar power generation has fallen to almost half its previous level. What is particularly remarkable is that this is a grassroots energy revolution, not one driven by massive solar farms, but by ordinary citizens installing solar panels on their rooftops.

India's solar sector has also boomed, and it has now become the world's third-largest solar producer.

The interim government in Bangladesh has tried to prioritise renewable energy as a target sector for investment and has already issued a *'Renewable Energy Policy 2025.'* Bangladesh has set a target of increasing the share of renewable energy in its energy mix to 20% by

2030 and 30% by 2040, as part of its broader efforts to accelerate the transition to clean energy. But there is much to learn from our neighbours like India and Pakistan.

Plastic Pollution

We also have to come together to address the plastics problem. None of the South Asian countries is doing enough to curb the consumption of single-use plastics or to manage plastic waste effectively. As a region, we must work together because the plastic waste that reaches the Bay of Bengal is not generated by Bangladesh alone. As a lower riparian country, Bangladesh also receives plastic waste carried downstream from upstream neighbours.

Decarbonising Our Future

Climate change, water security, air pollution, renewable energy and plastic waste management are areas where we can all cooperate. In this new global order, where disorder often outweighs order, it is crucial that we initiate actions at the national level while also developing regional models that others can follow. Ultimately, the fundamental challenge we face is reorienting our development pathways.

The protection of the environment and development are often seen as mutually exclusive, but sustainability must lie at the heart of our development agenda. Increasingly, we need to focus on decarbonising our development pathways. This means focusing on things like renewable energy, sustainable design, and zero waste.

The world is entering a multipolar phase, and disorder seems to be the current reality. But in any systemic change, there is also an opportunity to reshape the global order into one that is just, equitable, and fair through collaboration, connection and solidarity.

Thank you, SDPI and the Allama Iqbal Open University, and all sponsors of this Conference for giving me the opportunity to say a few words.

Resilience through Collaboration: A Climate-Smart Pakistan

Dr Kamran Jahangir[*]

It is an honour to speak on a subject that defines our time, 'Collaborations for a Climate Smart Future.' For Pakistan, this is not just a policy issue. It is a matter of survival, of hope and opportunity. We are living through an era of what can only be called an emerging world disorder, a world of shifting power, widening inequality and growing uncertainty, and climate change stands right at the centre of it.

For Pakistan, this is not a distant concept. It is a lived reality.

In the recent past, in 2022 and again in 2025, floods of unimaginable scale submerged vast parts of our country. Millions were displaced, thousands lost their lives and the economic cost ran into billions of dollars. But beyond the numbers lies a much deeper loss. The loss of homes, of dignity and stability.

We must pursue climate-smart sustainable development. And that cannot happen in isolation. It must be built on collaboration. Across borders, across sectors, and across communities.

When the floods hit, we saw what that collaboration could look like. Government institutions, humanitarian agencies, and local communities came together to save lives, restore livelihoods and offer hope.

This year that cooperation was even stronger, more coordinated, more prepared, especially in the province of Punjab. But collaboration cannot stop at a disaster response. True partnerships must shape our

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development DNA creating an ecosystem that brings together government, academia, industry, and civil society.

Let me share a few examples of how these collaborations can transform Pakistan's future.

Government, academic and industry partnerships can help us scale up renewable energy solutions. Pakistan's geography gives us abundant solar and wind potential. The ongoing national solarisation drive is one promising example.

Regional cooperation with South Asia can help us manage shared resources through climate data sharing and joint river basin management, especially for the Indus River system which provides livelihood and life to over two billion people.

Public-Private Partnerships can unlock climate finance, channelling funds from mechanisms like the Green Climate Fund to support projects in agriculture, water management and community adaptation.

Each partnership multiplies our capacity to act. But to act effectively, we need clear goals, skilled institutions and a sense of urgency. Every plan must be followed by real implementation; and every implementation by honest evaluation because learning must continue and must be continuous. The foundation of every new policy and programme must be based on it.

A climate-smart Pakistan is not only about adopting green technology. It is about rethinking development itself. It means weaving climate resilience into every decision from urban planning in Karachi to forest conservation in Gilgit-Baltistan. Projects like 'Recharge Pakistan' which use natural flood plains for water storage show that local innovation can drive global impact. These are not just environmental projects. They are examples of climate-smart governance.

Yes, the world is polarised and economic uncertainty is real.

But, in every moment of disorder lies an opportunity for new leadership.

Emerging economies like Pakistan can become laboratories of innovation testing low-cost, high impact solutions for a sustainable world. And we have one remarkable advantage over other nations. That is our youth.

Over 60% of Pakistan's population is under 30 years of age. Their creativity, digital fluency, and growing environmental awareness can drive a homegrown green transformation, but we must equip them through education, entrepreneurship, and international collaboration. Disorder can, in fact, become the seedbed of a new order—one that values resilience over rhetoric and cooperation over competition.

The path to a climate-smart future depends on more than documents and pledges. It demands shared commitment to act together, learn together, and grow together. We must commit to investing in knowledge partnerships between the Global North and South to support community-led adaptation, especially for women and rural communities; and, ensuring that climate finance reaches those who need it the most, not as charity but as climate justice because climate justice is not about generosity; it is about fairness, equity and shared responsibility.

Pakistan's story in many ways is a story of the emerging world, vulnerable yet visionary. To collaborate for a climate-smart Pakistan is to believe that even amid global uncertainty, cooperation can chart a new path towards sustainable development.

Our greatest resource is not oil or gas or minerals. It is our ability to come together across borders and boundaries for a shared and liveable future.

The Invisible Hand of Women: Feminist Climate Leadership in Fragile States*

*Dr Asjed Sanaullah***

Abstract

Climate change is increasingly understood as a governance crisis in fragile states, where weak institutions, conflict, and structural inequality intensify environmental vulnerability. Women are disproportionately affected by climate shocks yet remain underrepresented in formal climate decision-making. This study examines feminist climate leadership as an alternative approach to climate governance, challenging dominant technocratic and top-down models in fragile and conflict-affected settings. Using a qualitative, policy-focused approach, it draws on feminist leadership theory, ecofeminism, intersectionality, and resilience thinking. It analyses secondary data and documented cases primarily from Pakistan, with comparative examples from South Asia, Africa, and Latin America, to examine women-led, community-based climate initiatives where state capacity is limited or ineffective. The findings indicate that despite their relevance, women-led climate responses remain marginalised by patriarchal governance norms, exclusionary climate finance mechanisms, and limited access to policymaking. The study concludes that integrating feminist climate leadership into national policies and international frameworks is not only a matter of gender

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* This chapter has been approved as a *Research Paper / Scholarly Article* by the referee.

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justice but also a practical strategy for strengthening inclusive and resilient climate governance in the Global South.

***Keywords*:** Feminist Climate Leadership, Fragile States, Gender and Climate Governance, Climate Resilience, Global South.

Introduction

Climate change is increasingly recognised not only as an environmental emergency but also as a profound crisis of governance. Its impacts are shaped not merely by biophysical exposure but by political choices, institutional capacities, and social power relations that determine how societies prepare for, respond to, and recover from environmental shocks. This dynamic is especially pronounced in fragile states, where weak governance systems, conflict, economic instability, and entrenched inequalities intensify climate risks. Floods, droughts, heatwaves, and resource scarcity in such settings frequently trigger displacement, food insecurity, health crises, and social tensions rather than remaining isolated environmental events. Climate change thus operates as a threat multiplier, exacerbating pre-existing vulnerabilities and revealing structural weaknesses in governance and development models (OECD 2022; IPCC 2023).

Fragile states are particularly constrained in responding to climate shocks due to limited institutional capacity, weak disaster preparedness systems, exclusionary policy processes, and unequal resource distribution mechanisms. Climate-related disasters in countries such as Pakistan, Afghanistan, Sudan, and Yemen often overwhelm state responses, leaving communities to rely on informal and community-based coping strategies. These governance gaps are not gender-neutral. Women and girls frequently experience disproportionate impacts of climate change due to longstanding inequalities in access to land, finance, mobility, education, and political representation (UN Women 2022).

Women often play central roles in managing household water, food, and energy resources and therefore confront climate stress at the frontline of everyday survival. Yet their representation in formal climate governance and decision-making processes remains limited. Gendered vulnerability in this context is less a product of exposure than of structural exclusion. Despite global commitments to gender equality and inclusive climate action, women continue to be underrepresented in environmental ministries, climate negotiations, and national adaptation planning processes, particularly in conflict-affected and politically fragile environments (WEDO 2021).

Prevailing climate governance models frequently prioritise technocratic, infrastructure-oriented, or security-driven solutions aimed at managing environmental risks. While such approaches are often necessary components of climate response, they may not fully address the social relations, local knowledge systems, and community-based resilience practices that shape adaptation outcomes in fragile contexts. As a result, formal interventions sometimes reproduce existing power asymmetries or fail to reach marginalised communities most exposed to climate risks. Within this context, feminist leadership offers an alternative perspective on climate governance that emphasises participation, relational accountability, and social justice in decision-making processes.

Feminist approaches treat climate change not only as a technical or managerial challenge but also as a question of power, inequality, and whose knowledge counts in shaping responses (CARE International 2022; Gaard 2015). In fragile settings where trust in state institutions may be weak, women-led and community-based initiatives frequently play critical roles in disaster response, resource management, and social cohesion. Such leadership practices often emerge outside formal policy arenas but remain essential to everyday adaptation and survival.

Importantly, feminist climate leadership does not assume that women are inherently better leaders, nor does it romanticise vulnerability. Instead, it recognises that the historical exclusion of women from

formal authority has simultaneously produced leadership practices rooted in collaboration, care, and community knowledge, qualities that may prove particularly valuable in contexts marked by uncertainty and crisis. Empirical research increasingly suggests associations between gender-inclusive governance arrangements and improved environmental management, stronger community engagement, and more sustainable resource practices (Agarwal 2010; Leach et al., 2018). In fragile contexts, where formal governance structures may struggle to function effectively, such relational and participatory capacities become central components of resilience.

This chapter argues that feminist climate leadership offers an alternative and underexamined approach to addressing climate vulnerability in fragile states by reframing leadership as a participatory and justice-oriented governance process. Drawing primarily on evidence from Pakistan, alongside comparative illustrations from other fragile contexts (see Table I), the study explores how women-led initiatives contribute to climate resilience, why such efforts remain structurally marginalised, and how policy frameworks might better recognise and institutionalise these leadership practices.

The analysis adopts a qualitative and policy-oriented approach based on secondary data and documented case evidence rather than primary empirical measurement. The objective is therefore analytical and interpretive: to identify recurring patterns and governance implications associated with women-led climate responses while acknowledging the limits of available evidence. The central argument advanced here is that integrating feminist leadership principles into climate governance is not only a matter of gender equity but also a practical requirement for developing more inclusive, legitimate, and sustainable climate responses in fragile states.

Table I: Climate Vulnerabilities in Selected Fragile States

Country	Flood Risk	Drought Risk	Climate-Induced Displacement (millions)	Food Insecurity (%)
Pakistan	Very High	High	33.4	22.5
Afghanistan	High	Very High	6.8	35.0
Sudan	High	High	3.0	40.0
Yemen	Very High	High	4.5	45.0

Source: World Bank (2023).

Gender-differentiated impacts of climate change are outlined in Table II:

Table II: Gender-Differentiated Climate Impacts in Fragile States

Impact Area	Women Affected (%)	Men Affected (%)
Reduced Access to Water	70	30
Agricultural Livelihood Loss	60	40
Climate-Related Health Risks	65	35
Displacement Impacts	55	45

Source: UN Women (2022).

Fragile States and Gendered Climate Vulnerability

Fragile states are commonly defined as contexts in which governments lack the capacity, legitimacy, or political will to provide basic services, respond effectively to shocks, or ensure citizen security (OECD 2022). Such states are typically characterised by weak institutions, protracted conflict, economic instability, and entrenched social inequalities. In these settings, climate change does not function as an isolated environmental stressor but rather interacts with and intensifies existing structural vulnerabilities. Climate change therefore acts as a threat multiplier, deepening pressures on already fragile political, economic, and social systems (IPCC 2023).

Before examining how these dynamics produce gendered impacts, it is important to clarify the conceptual framework guiding this analysis. Discussions of gender in climate governance often emphasise gender-responsive governance, which focuses on ensuring that climate policies consider gender-differentiated impacts and promote women's participation in decision-making processes. While such approaches are essential, they typically operate within existing governance structures without necessarily questioning how leadership, authority, and decision-making power are organised.

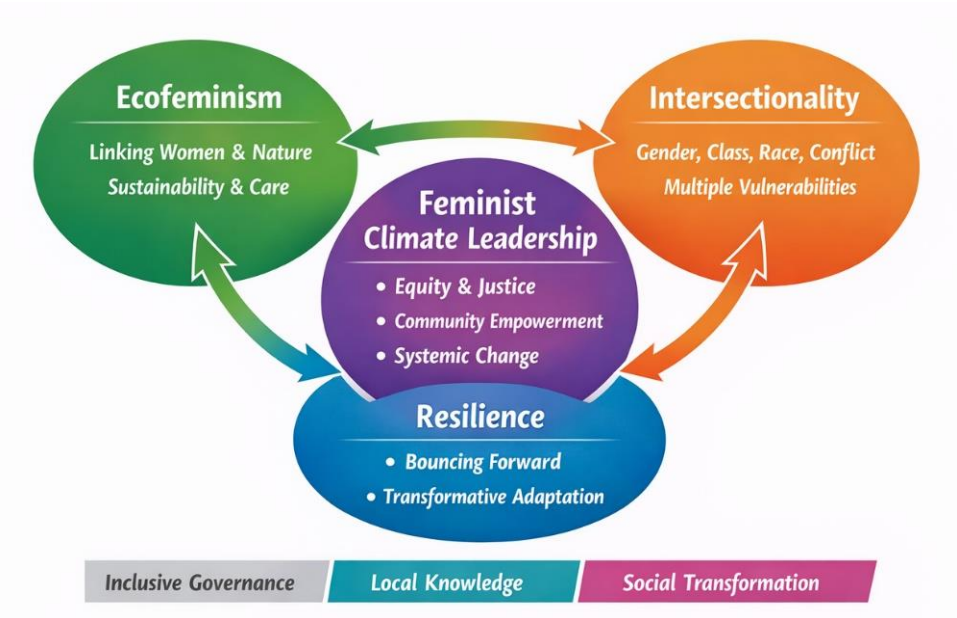
In contrast, feminist climate leadership, as conceptualised in this study, refers not only to women's participation in governance but to leadership practices that challenge hierarchical and exclusionary decision-making structures by emphasising collaboration, care, community knowledge, and relational accountability. Rather than simply adding women into existing institutions, feminist leadership approaches seek to transform how climate governance is conceptualised and practised, particularly in contexts where formal institutions may lack legitimacy or effectiveness.

This distinction is particularly relevant in fragile states, where climate responses frequently depend not only on formal state action but also on informal networks and community-based coping mechanisms. Leadership practices emerging from women-led community initiatives often prioritise collective survival, social cohesion, and locally grounded knowledge systems, providing alternative pathways for adaptation in situations where formal governance responses remain limited.

The threat-multiplier effect of climate change is especially visible in fragile contexts where institutional responses to disasters are often slow or inadequate. Floods, droughts, and extreme heat events disrupt livelihoods, intensify displacement, and heighten competition over scarce resources. In poorly governed regions, climate shocks can weaken social cohesion and increase risks of conflict and violence. These impacts are not experienced uniformly; exposure, sensitivity,

and adaptive capacity are shaped by social power relations that frequently place women and girls at disproportionate disadvantage (UN Women 2022).

Figure I: Feminist Climate Leadership Framework Linking Ecofeminism, Intersectionality, and Resilience



Source: Author's conceptualisation.

Feminist Climate Leadership in Practice

Feminist climate leadership is often most visible not within formal policy arenas but in everyday practices of survival, adaptation, and collective action at the community level. In fragile states, where institutional responses to climate shocks are frequently slow, exclusionary, or constrained by limited resources, community-based initiatives frequently emerge to address governance gaps. Women-led initiatives in such contexts illustrate how leadership practices grounded in social trust, local knowledge, and collective organisation can shape climate responses in practice.

The cases discussed in this section are not presented as causal demonstrations of effectiveness but as illustrative examples revealing recurring patterns across diverse fragile settings. These patterns include rapid mobilisation of social networks during crises, adaptation strategies informed by local environmental knowledge, and governance practices that emphasise participation and community legitimacy. Examining such examples comparatively allows for a clearer understanding of how feminist leadership practices operate where formal state responses remain limited or uneven.

The following cases from South Asia, Africa, and Latin America demonstrate how community-based women-led initiatives often complement or compensate for institutional weaknesses while foregrounding participation, social cohesion, and locally grounded resilience strategies.

Women-Led Flood Recovery in Pakistan and Bangladesh

Large-scale floods in South Asia have exposed both environmental vulnerability and governance limitations within disaster management systems. In Pakistan, floods in 2010 and again in 2022 displaced millions of people (Government of Pakistan 2022), revealing significant gaps in preparedness, coordination, and equitable relief distribution. Official responses frequently focused on infrastructure repair and emergency relief delivery but sometimes struggled to reach marginalised households, particularly women-headed families and remote rural communities.

In this context, mobilisation led by women frequently played a critical role in facilitating community recovery. Local women's organisations, often operating through informal or civil society networks, helped coordinate evacuations, organise temporary shelters, and distribute food, water, and hygiene supplies. Because these initiatives were embedded in local social networks, they were often better positioned to identify vulnerable households and mediate between communities and relief providers. Women health workers, teachers, and community

organisers frequently acted as intermediaries linking communities with humanitarian assistance (UNDP 2023).

A similar pattern is observable in Bangladesh, where women have been central participants in community-based disaster preparedness and adaptation efforts. Women's cooperatives in flood-prone and coastal areas have supported early-warning dissemination, cyclone shelter organisation, and climate-resilient agricultural practices. Such initiatives often rely on participatory decision-making and shared community ownership, enabling adaptation efforts to evolve through repeated exposure to climatic shocks. While state-led infrastructure responses remain essential, women-led initiatives often prioritise livelihood protection, social cohesion, and dignity during crisis recovery (UN Women 2022).

The relative effectiveness of these initiatives appears to derive less from formal authority than from social legitimacy and embedded community relationships. Women leaders often act as trusted intermediaries, particularly in conservative social contexts where external actors may face resistance. Their ability to mobilise communities quickly and adapt responses to local needs illustrates the governance potential of feminist leadership practices during disaster recovery.

Figure II: Pathways through which Feminist Leadership Enhances Climate Resilience



Source: Author's conceptualisation.

Indigenous and Community Environmental Leadership: Kenya & Latin America

Feminist climate leadership is also evident in long-term environmental initiatives led by indigenous and rural women. The Green Belt Movement in Kenya represents one of the most widely recognised examples of women-led environmental governance. Established in the 1970s, the movement mobilised rural women to address deforestation, soil erosion, and water scarcity through community tree planting and environmental education. Over time, it expanded beyond ecological restoration to become a platform linking environmental protection with women's empowerment and democratic participation (Maathai 2006).

Rather than treating natural resources solely as economic assets, such initiatives frame environmental protection as inseparable from

community livelihoods, health, and long-term social well-being. This perspective contrasts with externally driven conservation or development interventions that sometimes marginalise local communities or weaken social cohesion.

Across parts of Latin America, indigenous women's organisations have similarly emerged as prominent defenders of land, forests, and water resources against extractive industries. In countries including Ecuador, Brazil, and Guatemala, women-led networks have mobilised to resist mining, logging, and agribusiness expansion perceived to threaten both ecosystems and community survival. Their leadership often draws upon ancestral knowledge and collective governance traditions emphasising reciprocity between human communities and natural environments (Global Witness 2020).

These movements reveal tensions between extractive development models focused on short-term economic returns and community-based approaches that prioritise sustainability and local autonomy. Feminist leadership practices in these contexts highlight alternative governance models that foreground consent, environmental responsibility, and long-term social resilience particularly relevant in fragile states where extractive industries are often promoted as development solutions.

Why These Models Matter in Fragile Contexts

Across different regions, women-led climate initiatives display several recurring characteristics that help explain their contributions to resilience-building in fragile governance contexts. These characteristics do not guarantee successful outcomes but help clarify why community-based adaptation efforts sometimes remain functional even where formal institutional responses face limitations (Table III).

Table III: Selected Women-Led Climate Initiatives and Outcomes

Region	Initiative	Focus Area	Leadership Model	Key Outcomes	Sources
Pakistan	Women's Community Flood Committees	Flood recovery	Grassroots	Improved relief access for women-headed households	UNDP (2023)
Bangladesh	Women's Disaster Preparedness Groups	Flood and cyclone response	Cooperative	Reduced mortality and livelihood loss	UN Women (2022)
Kenya	Green Belt Movement	Reforestation	Community-based	Improved ecosystem services and women's livelihoods	Maathai (2006)
Latin America	Indigenous Women's Environmental Networks	Forest protection	Indigenous-led	Protection of land rights and biodiversity	Global Witness (2020)

Sources: UNDP (2023); UN Women (2022); Maathai (2006); Global Witness (2020).

First, social trust frequently emerges as a central enabling factor. Women leaders often operate within pre-existing community networks, enabling rapid mobilisation during crises and facilitating cooperation in adaptation programmes. Trust can increase participation in early warning systems, encourage cooperation in collective resource management, and reduce conflict over scarce resources, particularly where state institutions are viewed with scepticism.

Second, these initiatives frequently rely on local environmental knowledge. Women's daily engagement with farming, water collection, and household resource management often provides detailed understanding of environmental change. Feminist leadership practices incorporate such knowledge into adaptation strategies that are context-

specific and responsive to local realities, sometimes proving more sustainable than externally designed interventions (Agarwal 2010).

Third, programmes led by women frequently operate through cost-efficient and locally grounded resource mobilisation strategies. By relying on collective labour, social capital, and locally available materials, many initiatives remain functional even after external funding diminishes. This resource efficiency is particularly significant in fragile states where fiscal capacity is constrained.

Finally, feminist leadership practices often contribute to social legitimacy and cohesion. By emphasising inclusion, equity, and collective care, such initiatives may help reduce tensions surrounding resource distribution and strengthen cooperation in communities facing repeated climate shocks. Linking climate action to broader concerns of justice and dignity can support longer-term sustainability of adaptation efforts.

Structural Barriers to Feminist Climate Leadership

Despite growing recognition of gender responsiveness within climate governance discussions, feminist climate leadership in fragile states continues to face significant structural barriers. These obstacles are not incidental but are embedded within institutional arrangements, political economies, and governance cultures that systematically marginalise women's leadership roles. Understanding these constraints is essential to explaining why women-led climate initiatives often remain under-recognised and under-resourced within formal decision-making systems despite their practical relevance.

One major constraint arises from persistent gendered patterns of political and institutional exclusion. In many fragile contexts, leadership and authority continue to be socially and institutionally associated with male-dominated spaces, reinforced through legal frameworks, bureaucratic practices, and cultural norms. Women's participation in climate institutions like environmental ministries,

disaster management authorities, and local governance bodies often remain limited or symbolic. This exclusion is partly shaped by institutional recruitment practices and governance cultures that privilege elite networks, technical credentials, or security-oriented governance approaches, which may inadvertently disadvantage women, particularly those from rural or conflict-affected communities (UN Women 2022).

As a consequence, climate policies and adaptation strategies are frequently developed without substantial input from those most directly affected by climate risks. Even where women's participation is formally encouraged, representation may remain tokenistic. Women may be included in committees or consultations without corresponding decision-making authority, resources, or technical support. Such symbolic inclusion can allow institutions to meet participation benchmarks while leaving underlying power relations unchanged, resulting in climate policies that inadequately reflect gender-differentiated needs (WEDO 2021).

A further constraint relates to climate finance allocation mechanisms. Global and national climate finance systems tend to prioritise large-scale, centralised projects implemented through government agencies, multilateral organisations, or major international NGOs. Application procedures, co-financing requirements, and technical reporting standards often exceed the administrative capacity of grassroots organisations, including many women-led initiatives. Consequently, only a limited share of climate finance reaches local women's organisations despite evidence of their engagement in adaptation and resilience-building activities (UN Women 2023). This financing pattern reflects institutional preferences for scale, standardisation, and perceived financial risk management rather than necessarily indicating differences in programme effectiveness.

Conflict and shrinking civic space further constrain feminist climate leadership in fragile states. Prolonged conflict, political instability, and authoritarian governance tendencies frequently restrict civic

participation and limit opportunities for community organising. Women climate leaders may face intimidation, surveillance, or threats, particularly where their activities challenge entrenched political or economic interests. Restrictions on civil society operations, limitations on mobility, and insecurity in public spaces can disproportionately affect women's ability to engage in climate governance and advocacy (OCHA 2022).

In conflict-affected contexts, institutional responses to climate risks are also often shaped by security-oriented governance priorities that emphasise control and stabilisation rather than participatory or inclusive approaches. While such responses may be understandable in crisis environments, they can unintentionally sideline community-led adaptation strategies and reduce opportunities for collaborative governance.

These barriers tend to reinforce one another. Patriarchal institutional cultures contribute to tokenistic participation; finance systems marginalise grassroots actors; and shrinking civic space constrains advocacy and organising efforts. Together, these dynamics produce climate governance arrangements that struggle to respond effectively to complex and gendered vulnerabilities.

Importantly, these constraints stem not from limitations in women's leadership capacity, but from institutional structures that restrict the influence of feminist leadership within formal governance systems. Addressing these barriers therefore requires more than incremental reforms. It calls for reconsidering how climate institutions are designed, financed, and held accountable. Without confronting underlying power dynamics within climate governance, feminist climate leadership is likely to remain peripheral despite its demonstrated relevance for building inclusive and resilient climate responses in fragile contexts.

Table IV: Key Barriers to Feminist Climate Leadership in Fragile States

Barriers	Description	Institutional Design Failure
Patriarchy and exclusion	Norms and practices limiting women's access to leadership	Male-dominated governance structures
Tokenism	Superficial inclusion without decision-making power	Weak accountability for substantive participation
Climate finance bias	Limited funding for women-led initiatives	Centralised, risk-averse financing systems
Conflict and shrinking civic space	Restrictions on organising and advocacy	Securitised climate governance approaches

Source: Author's synthesis based on UN Women (2022; 2023), WEDO (2021), and OCHA (2022).

Policy Opportunities and Global Frameworks

Global climate governance frameworks increasingly recognise the importance of gender equality and inclusive decision-making in addressing climate change. Instruments such as the Sustainable Development Goals (SDGs), the UNFCCC Gender Action Plan (GAP), and National Adaptation Plans (NAPs) provide normative and institutional entry points for incorporating gender considerations into climate governance. However, translating these commitments into meaningful practice remains challenging, particularly in fragile states where governance capacity is often constrained and policy priorities are shaped by immediate crisis management rather than long-term institutional reform.

The SDGs provide an integrated policy framework linking climate action, gender equality, and governance reform. SDG 5 emphasises women's full and effective participation in political and leadership processes, while SDG 13 calls for inclusive climate adaptation and mitigation strategies. SDG 16 further highlights the need for peaceful, just, and inclusive institutions, an objective directly relevant to fragile and conflict-affected contexts (United Nations General Assembly 2015).

Collectively, these goals suggest that climate resilience cannot be separated from efforts to address governance weaknesses and gender inequalities.

In practice, however, implementation frequently occurs through sector-specific programmes, and gender objectives are sometimes treated as secondary considerations within technically focused climate initiatives. This fragmentation can limit the transformative potential of global commitments, particularly in fragile settings where institutional coordination is weak and administrative capacities are uneven.

Table V: Global Frameworks Supporting Gender-Responsive Climate Action

Framework	Core Objective	Gender-Relevant Provisions	Key Limitation in Fragile States
SDG 5	Gender equality	Women's leadership and participation	Weak institutional enforcement
SDG 13	Climate action	Inclusive adaptation strategies	Gender treated as secondary goal
SDG 16	Peace and institutions	Inclusive governance	Conflict and political instability
UNFCCC Gender Action Plan	Gender-responsive climate policy	Participation, data, capacity-building	Limited national implementation
National Adaptation Plans	Long-term adaptation planning	Gender mainstreaming guidance	Top-down, donor-driven processes

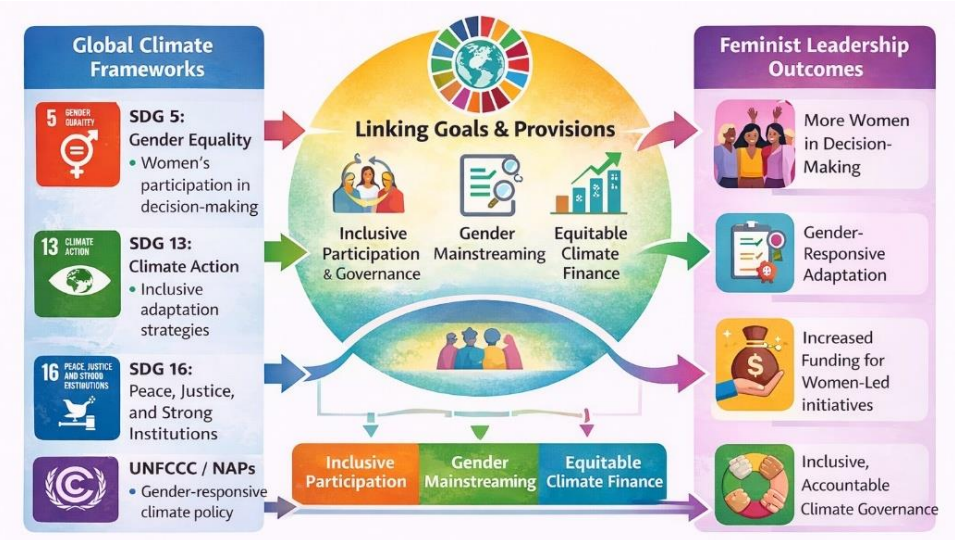
Source: Author's compilation based on United Nations General Assembly (2015), UNFCCC (2019), and UN Women (2022; 2023).

The UNFCCC GAP represents a more targeted effort to institutionalise gender responsiveness within climate governance processes. Its priorities include strengthening women's participation in climate negotiations, promoting gender-sensitive climate policies, and improving the collection of sex-disaggregated data (UNFCCC 2019). While the GAP provides a useful framework for integrating gender perspectives into climate policy, its effectiveness depends largely on national implementation capacities. In fragile states, where climate

governance structures may be fragmented or under-resourced, GAP commitments can remain largely symbolic without sustained institutional support.

NAPs are intended to translate global commitments into national adaptation strategies and development planning. Many NAP guidelines explicitly encourage stakeholder participation and gender mainstreaming, offering potential entry points for incorporating feminist leadership perspectives (Least Developed Countries Expert Group 2012). However, adaptation planning processes in fragile contexts are often shaped by external consultants and donor priorities, with limited involvement of local communities or women-led organisations. Such top-down approaches can weaken local ownership and risk reproducing existing power asymmetries.

Figure III: Linking Global Climate Frameworks to Feminist Leadership Outcomes



Source: Author's conceptualisation.

Implementation challenges across these frameworks are not solely technical but reflect broader institutional and political constraints.

Fragile states frequently operate under fiscal pressures, ongoing conflicts, and political instability, conditions that encourage short-term crisis responses rather than sustained governance reforms. Gender units within ministries may lack resources or authority, and coordination across climate and social policy institutions is often limited. Additionally, donor accountability mechanisms tend to prioritise measurable outputs and rapid delivery, sometimes overlooking long-term social transformations associated with inclusive governance practices (UN Women 2023).

Despite these challenges, global frameworks remain important sources of legitimacy and leverage for advancing inclusive climate governance. When strategically utilised, they can provide advocacy tools, support resource mobilisation, and create entry points for strengthening women's participation in climate decision-making. The central challenge lies in bridging the gap between international commitments and national institutional realities. Institutionalising feminist climate leadership therefore requires embedding participation principles not only in policy language but also in financing structures, accountability mechanisms, and governance practices. Without such reforms, global commitments risk reproducing the exclusions they seek to address.

Policy Recommendations

Strengthening feminist climate leadership within fragile-state contexts requires moving beyond symbolic commitments towards practical institutional reforms that recognise existing governance constraints. Policy recommendations in such environments must remain sensitive to limited administrative capacity, political instability, and fiscal pressures while identifying incremental yet meaningful pathways towards more inclusive climate governance. The following recommendations outline potential directions for action by key stakeholders rather than prescriptive solutions, recognising that implementation pathways will differ across contexts.

National Governments

Even within fragile governance contexts, national governments play a central role in creating enabling conditions for inclusive climate governance. One potential step involves institutionalising gender-responsive practices within climate-related laws, policies, and planning mechanisms. This could include establishing clearer participation requirements for women within climate councils, disaster management authorities, and adaptation planning bodies at national and subnational levels. Such measures would move participation beyond ad hoc consultation towards more consistent institutional representation.

A second priority concerns budgeting and resource allocation. Governments may consider integrating gender-responsive budgeting principles into climate and disaster-related expenditure planning. Allocating dedicated funding windows for community-based and women-led adaptation initiatives can help address existing funding asymmetries while improving local adaptation capacity. In fragile contexts, decentralising portions of climate finance to local authorities and community organisations may enhance responsiveness, provided adequate accountability mechanisms accompany such transfers.

A third area involves strengthening leadership pipelines. Investments in training, mentorship, and capacity-building programmes targeting women in rural and conflict-affected areas can gradually expand participation in climate governance. Building local leadership capacity can also reduce long-term dependence on external consultants and strengthen institutional continuity.

Donors and Climate Finance Institutions

International donors and climate finance institutions significantly influence climate governance priorities in fragile states. Adjusting funding mechanisms to improve accessibility for community-based and women-led organisations represents one potential avenue for

strengthening inclusive adaptation. Simplifying application procedures, reducing co-financing requirements, and offering flexible funding arrangements could allow smaller organisations to access climate finance more effectively.

Donors may also consider earmarking portions of climate finance specifically for gender-responsive or women-led initiatives, recognising the role such programmes often play in community adaptation processes. Importantly, funding decisions can benefit from co-design approaches that involve women leaders and local organisations during programme planning stages to ensure interventions reflect local realities.

Evaluation and accountability frameworks may likewise require adjustment. Rather than relying solely on short-term output indicators, donors could incorporate measures capturing longer-term social outcomes such as institutional trust, community participation, and local governance strengthening, which are central dimensions of resilience in fragile contexts.

Role of Civil Society and Think Tanks

Civil Society Organisations (CSOs) and research institutions frequently act as intermediaries between communities, governments, and donors. Supporting women climate leaders through policy literacy training, advocacy capacity development, and technical skills programmes can enhance participation in formal governance processes. Think tanks and academic institutions can further contribute by generating context-specific evidence on climate adaptation practices and translating findings into policy-relevant recommendations.

Another important role involves documenting successful community-based initiatives and facilitating policy dialogue platforms where government actors, donors, and CSOs can exchange experiences. Such engagement can help mainstream feminist perspectives within climate governance discussions.

In fragile contexts where civic space is constrained, civil society actors may also play a protective role by supporting networks that help women climate leaders organise safely and maintain advocacy efforts. Without safeguards for civic participation, policy commitments to inclusive governance risk remaining aspirational.

Table VI: Stakeholder-Specific Recommendations for Strengthening Feminist Climate Leadership

Stakeholders	Key Action	Intended Outcome
National governments	Mandate women's participation in climate institutions	Inclusive and accountable climate governance
	Implement gender-responsive climate budgeting	Increased funding for women-led initiatives
Donors and climate finance institutions	Simplify and earmark funding for women-led projects	Improved access to climate finance
	Co-design programmes with women leaders	Context-specific and effective adaptation
Civil society and think tanks	Build leadership and advocacy capacity	Stronger feminist engagement in policymaking
	Generate evidence and policy dialogue	Institutionalisation of feminist climate leadership

Source: Author's compilation.

Conclusion

Climate change in fragile states functions not only as an environmental challenge but also as a governance crisis that exposes and intensifies existing inequalities, institutional weaknesses, and social exclusions. In such contexts, women frequently experience disproportionate impacts of climate change not because of inherent vulnerability but because governance systems often marginalise their knowledge, priorities, and leadership roles. Examining climate change through a feminist governance lens, therefore, provides an opportunity to reconsider how climate responses are designed and implemented in fragile settings.

Drawing on documented case illustrations from fragile and conflict-affected environments, this study has shown that women-led community initiatives frequently contribute to climate adaptation and recovery processes, particularly where formal institutional responses face capacity or legitimacy limitations. Initiatives grounded in participation, care, and local knowledge often help sustain community resilience in contexts where state-led interventions struggle to reach marginalised populations. Such leadership practices do not replace formal governance structures but demonstrate how locally legitimate forms of organisation can complement institutional responses.

At the same time, the persistence of feminist leadership at the margins reflects institutional and structural barriers rather than limitations in women's leadership capacity. Patriarchal governance norms, symbolic participation, financing biases, and shrinking civic space collectively restrict opportunities for women-led initiatives to influence formal climate decision-making. Addressing these constraints requires moving beyond symbolic inclusion towards reforms that embed inclusive participation within governance structures, financing arrangements, and accountability mechanisms.

The research therefore advances the argument that recognising feminist climate leadership is both a matter of social justice and a practical governance consideration. Inclusive leadership practices may help strengthen adaptation efforts in fragile contexts where trust, social cohesion, and locally grounded knowledge play central roles in resilience-building. Integrating such perspectives into climate governance does not imply abandoning technical or institutional approaches but rather broadening governance strategies to incorporate social and relational dimensions of adaptation.

Climate governance in fragile states must increasingly contend with intersecting crises characterised by uncertainty and complexity. Recognising women not only as vulnerable populations but also as governance actors and innovators can contribute to more context-sensitive responses. Feminist leadership practices are not alternatives

waiting to be created; they already operate within communities responding to climate pressures. The challenge lies in ensuring that governance systems acknowledge and support these existing capacities.

As climate risks continue to intensify across the Global South, fragile states face growing pressure to adopt governance models capable of managing complex environmental and social disruptions. Institutionalising inclusive leadership practices, hence, becomes part of building climate governance systems that are not only environmentally responsive but also socially legitimate and politically sustainable.

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Climate Change and Food Security in Punjab, Pakistan: Policy Gaps and Pathways for Resilience*

*Kiran Ejaz***

Abstract

Climate change poses a significant threat to global food security, and Pakistan, as an agrarian economy, is particularly vulnerable to its impacts. Within Pakistan, Punjab faces heightened risks due to its critical role as the country's primary agricultural and food-producing region. In response, the Government of Pakistan has introduced various policy initiatives and mitigation strategies aimed at addressing climate-induced food insecurity in Punjab. This chapter examines the effectiveness of these policy measures in strengthening climate resilience, with particular attention to the role of government–stakeholder engagement in supporting resilience-building efforts. Drawing on qualitative inquiry based on in-depth interviews with food security experts in Punjab, the study assesses policy developments and implementation over the period 2012–2022. The findings indicate limited progress in building climate resilience, attributable to weak policy implementation and inter-agency coordination, inadequate integration of climate change adaptation and disaster risk reduction standards, predominantly reactive approaches to disaster preparedness, and top-down policy formulation that provides insufficient space for local community participation. The chapter recommends a shift towards preventive and mitigation-oriented

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* This chapter has been approved as a *Research Paper / Scholarly Article* by the referee.

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strategies, more inclusive governance and meaningful stakeholder engagement, and region-specific policy formulation.

***Keywords*:** Climate Change, Food Security, Climate Resilience, Punjab, Pakistan, Agricultural Policy.

Introduction

Climate change is widely regarded as one of the greatest threats to humanity because of its far-reaching and adverse consequences for societies across the globe. Although no country is entirely immune to its impacts, the severity of climate-related risks varies considerably across regions. Developing and resource-constrained countries are particularly vulnerable due to their limited financial resources, institutional capacities, and adaptive capabilities. Many of these countries are also highly dependent on agriculture for economic growth, employment, and livelihoods, further increasing their exposure to climate-related shocks. South Asia, home to approximately 25% of the world's population, is particularly susceptible to these challenges, as agriculture remains a major economic sector and a critical source of livelihood across the region (Bandara and Cai, 2014; Ebert et al., 2018).

Pakistan, a developing country in South Asia, is especially vulnerable because of the significant role of agriculture in its economy and the livelihoods of its population. Despite contributing less than 1% of global greenhouse gas emissions, the country has experienced severe consequences of climate change. According to the *Global Climate Risk Index 2021*, Pakistan ranked eighth among the countries most affected by extreme weather events over the period 2000–2019 (Eckstein et al., 2021). This vulnerability is reflected in the country's recurrent exposure to devastating floods, increasingly frequent and intense heatwaves, and accelerating glacial melt, all of which pose serious implications for agricultural productivity, food security, livelihoods, and human security.

Within Pakistan, Punjab province is considered the country's food basket because of its status as the leading producer and exporter of agricultural commodities. The province contributes 54% to the national GDP, of which agriculture accounts for 20% (Planning and Development Board, Government of the Punjab 2019). It is also the largest producer of both staple food crops, including wheat, rice and maize, and cash crops, including cotton and sugarcane.

Over the past two decades, the province has experienced major climate change impacts, including floods, droughts, extreme temperatures and heatwaves, irregular rainfall, and shifting weather patterns, which have adversely affected agricultural productivity and crop yields, thereby exacerbating food insecurity in Pakistan. During the 2012 floods, southern Punjab was completely submerged under floodwaters. Similarly, the 2017, 2022, and 2023 floods had severe impacts on the country. In the extensive 2022 floods, approximately 2 million acres of agricultural land were destroyed, of which 178,000 acres were in Punjab (Waseem et al., 2022). Climate projections suggest that by 2040, rising temperatures could reduce agricultural output in Punjab by an estimated 8–10% (Cradock-Henry et al., 2020).

Given this study's focus on climate change and food security, climate resilience in agriculture is a key concern. Climate resilience in agriculture refers to the capacity of farming systems to absorb, recover from, and adapt to climate-related shocks. Building resilience requires improved farming practices and supportive policies. As climate change adaptation is largely localised, effective local institutions and governments play a critical role in supporting smallholder farmers (Agrawal 2010).

Over the past decade, the government has introduced various policies and mitigation strategies to address growing food insecurity and strengthen the resilience of Punjab's agricultural sector. Against this backdrop, the study assesses the effectiveness of these measures in enhancing resilience to climate change and its impacts on agriculture. It also examines the role of government–stakeholder engagement in

supporting resilience-building efforts through policy implementation. The study covers the period from 2012 to 2022.

Overview of Punjab's Climate-Resilient Agriculture Policies (2012–2022)

As an agrarian economy, Pakistan relies heavily on the agricultural sector for its economic stability. This sector also meets the dietary needs of the world's fifth-largest population. It is also one of the hardest hit by climate change across the country, especially Punjab. This section provides an overview of key policies and initiatives shaping Punjab's climate-resilient agricultural framework.

The 'Punjab Agricultural Policy', launched in 2017, aims to improve agricultural productivity and competitiveness while strengthening food security and increasing farmer profitability. The policy intends to enable inclusive agricultural systems by targeting small commercial farmers, rural women, and youth. It proposes to introduce regenerative agriculture, weed management and water conservation to increase productivity and sustainability.

Punjab's provincial climate policy framework evolved from an internal draft of the 'Punjab Climate Change Policy' prepared in 2017, which remained unapproved for several years, to the formally approved 'Punjab Climate Change Policy and Action Plan 2024'. Although the 2024 policy falls outside the study period of 2012–2022, it represents the subsequent formalisation of Punjab's climate governance framework and provides useful context for understanding the evolution of provincial climate policy. During the study period, climate governance in Punjab was therefore shaped by the 2017 internal draft alongside relevant national policies, provincial sectoral frameworks, and existing institutional practices. The policy is based on the vision of sustainable farming and enhanced climate change adaptation and mitigation capacity while promoting low emission development. It set objectives for strengthening cross-sectoral foundations, embedding climate

considerations into development planning, prioritising green investments across vulnerable sectors, and addressing environmental challenges by promoting afforestation and low-emission development. Additionally, it outlined sector-wise adaptive measures in biodiversity, water resources, disaster management, and human health, while also taking steps to reduce energy, industry, transport, and waste emissions. It also sought to enhance adaptability and mitigation efforts through policies across cross-cutting areas such as agriculture and livestock, forestry, and urban planning. It also suggests measures for effective climate change communication, awareness, education, and outreach to encourage behavioural change in response to climate challenges. It also outlines measures to advance climate research and development and strengthen institutional capacity building.

The 'Punjab Water Policy' is a sectoral policy document that was launched in 2018. Its main focus is to ensure sustainable water management of surface, ground, and rainwater for domestic, agricultural, and industrial usage. The policy document clearly establishes the hierarchy of water uses by placing water and sanitation at the highest degree, followed by irrigation, livestock and fisheries, hydropower, industry and mining, environmental flows, forestry, recreation, and navigation. It adopts an Integrated Water Resource Management (IWRM) approach, reflecting a shift towards basin-level coordination of land and water resources to address climate-induced water stress. The policy's main objectives include regulation of groundwater abstraction, improving water quality, managing land resources, strengthening institutional governance, ensuring financial sustainability, and addressing transboundary issues. Lastly, the policy aims to boost disaster resilience by adjusting to climate change, floods, and droughts with a mix of short and long-term strategies.

The 'National Adaptation Plan' launched in 2021, envisions a climate resilient Pakistan in which income inequalities and socioeconomic disparities are addressed. The seven-year Plan is an embodiment of guiding principles which include strengthening local adaptive

capacity, addressing socioeconomic vulnerabilities, and promoting inclusive, evidence-based adaptation across priority sectors, including the agriculture-water nexus, disaster risk management, and social inclusion.

Conceptual Framework

The conceptual framework of this study is anchored in the climate change–food security nexus within the broader non-traditional security framework, with resilience-building serving as an analytical bridge for examining the role of government agricultural policies in mitigating the impacts of climate change on Punjab's agricultural sector (Figure I).

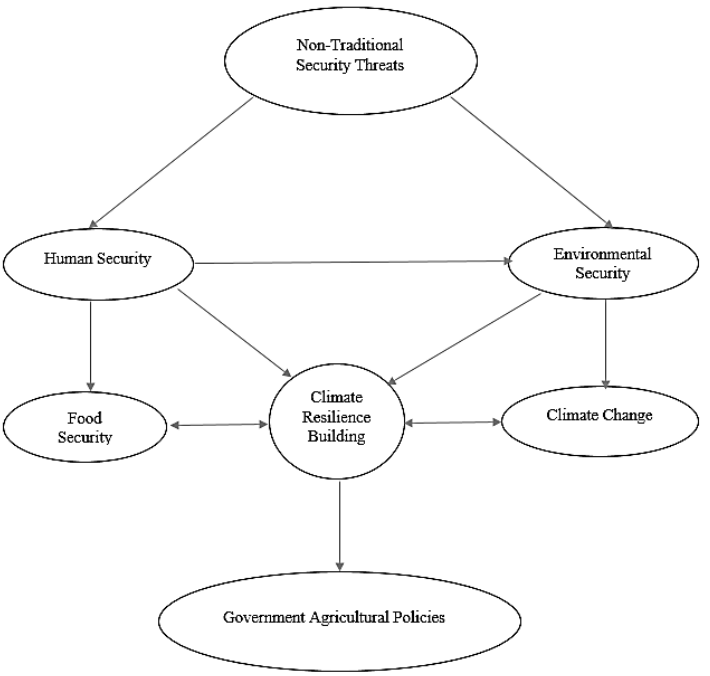
The concept of non-traditional security emerged in the discourse of security studies following the end of the Cold War. Earlier, the concept of security studies was typically defined as defence of homeland from any external aggression by states or non-state actors. Since the 21st Century, this concept is generally understood to encompass a wide range of non-military challenges in addition to traditional security threats, including infectious diseases, terrorism, environmental degradation and climate change, drug and human trafficking, and cyber threats. Human security constitutes a core pillar within the broader non-traditional security framework. This concept focuses largely on the security and welfare of individuals rather than states and emphasises safety from chronic threats, i.e., hunger, disease, and oppression, as well as from sudden and adverse disruptions in life. The two components of human security, i.e., food security and environmental security are of relevance in this study.

Food security, as defined by the 1996 World Food Summit, is a situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life (Food and Agriculture Organization 1996). This definition encompasses four key dimensions: availability, access, utilisation, and stability.

Environmental security is derived from two concepts–environment and security. The concept is generally defined as the avoidance of negative linkages between human activity and the environment. It encompasses environmental threats, both anthropogenic and natural, which can damage ecologies, people, and even nations. Issues such as water scarcity, pollution, and resource depletion can intensify vulnerabilities and contribute to broader instability. Climate change acts as a threat multiplier within this framework, exacerbating environmental stressors and undermining food and water security through floods, droughts, and rising temperatures. In response, resilience has emerged as a key concept in development discourse. It is defined as the capacity of a system to experience shocks and recover without compromising its basic functions. In this study, 'resilience' serves as a bridging concept linking climate change, governance, and human well-being.

Together, these interrelated concepts form a conceptual mosaic that enables a holistic assessment of climate-induced food security risks and the effectiveness of policy responses aimed at strengthening agricultural resilience in the Punjab province of Pakistan.

Figure I: Conceptual Framework



***Source*:** Author's own.

Methodology

The methodological framework of this study is based on qualitative techniques. Both primary and secondary data collection techniques have been applied to the study. The primary data collection sources are in the form of semi-structured interviews conducted with experts and stakeholders working on food security and climate change. The in-depth interviews were conducted with different stakeholders from public and private sectors in Islamabad. These were individuals with local knowledge and relevant experience of the food security situation in Punjab. A total of nine interviews were conducted using a purposive sampling technique, comprising officials from NGOs, think tanks, and

federal and provincial government officers with expertise in food security, particularly in Punjab. To supplement and validate the findings derived from primary data, this study also draws on secondary data obtained through a systematic review of relevant literature. Secondary sources include government and INGO reports, policy documents, and peer-reviewed academic publications. The data collected was analysed and interpreted using inductive thematic analysis technique, where the themes emerged from the data collected during interviews. The interview transcripts were then repeatedly read and coded systematically to identify recurring patterns and themes.

Results and Discussion

This section aims to evaluate the extent to which governments have been successful in building resilience to climate change in the agricultural sector of Punjab province. Drawing on insights from interviews with experts involved in food security vis-à-vis climate change governance in Punjab, the findings highlight weak climate resilience-building in agriculture, reactive disaster risk management, chequered stakeholder engagement, and top-down policy formulation.

Performance in Climate Resilience Building

The findings from interviews revealed that the government has not been successful in building climate resilience in agriculture through their policies till now. However, they are still in the learning phase. Most of the respondents believed that resilience in agriculture is very low as compared to other sectors such as energy, infrastructure, and transport. Respondents compared resilience-building performance in rain-fed and irrigated areas, mentioning that resilience in irrigated areas is better than in rain-fed areas. These findings reflect a significant policy implementation predicament in Punjab province where the policies are in place but their implementation is weak. Such uneven performance across the province reflects the government's structural

inequalities especially in the agricultural sector which constitutes a major chunk of the country's GDP.

Climate and Disaster Risk Reduction (DRR) Planning

The findings also revealed contrasting perspectives on the integration of climate change considerations and Disaster Risk Reduction (DRR) codes into infrastructure development projects. While some interviewees discussed the absence of integrated climate and DRR standards in infrastructure and agricultural projects, arguing that this omission had contributed to the repeated exposure of such schemes to climate-related impacts, others challenged this view. They maintained that climate change considerations were increasingly being incorporated into project planning and design prior to implementation. Similarly, a previous study conducted by Sayed and Gonzalez (2014) suggests that the country's DRR system could be more effectively implemented, with a greater focus on disaster mitigation and prevention, which can address the root causes of disaster risk, especially at the local level. The current study's findings underscore the need for an effective and efficient DRR governance system in the province that integrates climate adaptation to safeguard food security and enhance agricultural resilience.

Disaster Management Approach

One of the key findings from the interviews was the perceived limitation of the government's disaster management approach. Most respondents characterised government responses to disasters as predominantly reactive rather than preventive. Drawing on the example of floods, participants argued that disaster preparedness tends to focus on specific climate-related hazards, particularly riverine flooding, rather than adopting a comprehensive approach that addresses the full range of climate-induced disasters. In particular, respondents highlighted inadequate preparedness for emerging and localised hazards such as flash floods and cloudbursts. Several

interviewees described existing flood management practices as 'outdated,' contrasting them with the experience of Bangladesh, where sustained investment in climate-resilient infrastructure and the adoption of effective DRR practices were perceived to have contributed to a reduction in flood-related losses. At the same time, respondents acknowledged improvements in flood forecasting and early warning systems; however, they pointed out that these technological and institutional advances have not been accompanied by equally effective preventive and adaptive measures.

These results are consistent with a study conducted by Sayed and Gonzalez (2014) which concluded that preparedness for floods in Pakistan is higher than any other natural disaster. The current study's findings reflect a critical gap in resilience-building, as the government's ability to cope with shocks and climate stressors remains limited.

Institutional Coordination

Limited institutional coordination between provincial and federal departments emerged as another key finding affecting resilience outcomes. One of the respondents observed that the Provincial Government lacks scale and technical capacity that the Federal Government could provide, which limits effective policy implementation at the provincial level. Weak agricultural extension services were also identified as a major barrier to climate resilience-building in Punjab province. Several interviewees criticised the extension services, pointing out that these departments lack technical expertise and up-to-date knowledge and are institutionally outdated. Consistent with the findings of this study, research conducted by Abid et al. (2017) also demonstrated that farmers have limited access to public information services, alongside weak coordination among public institutions in delivering these services.

Government-Stakeholder Engagement

A wide range of literature shows that engagement between different stakeholders including government departments, private entities, farming communities, and NGOs is considered essential for agricultural sustainability and resilience-building. When asked about the role of relevant stakeholders in building resilience to climate change, the interviewees offered mixed responses. While the respondents acknowledged the importance of engaging different stakeholders in resilience-building efforts, they also reported government's limited consultation with NGOs, especially in Punjab province. Most NGOs were similarly perceived to operate primarily at the policy, planning, or 'desktop' level, with only a limited proportion reported to be meaningfully engaged in on-the-ground implementation and community-level interventions.

These findings are in line with previous research conducted in Punjab, where the institutions were reported to need more coordination and communication with local communities and other relevant public institutions associated with agriculture (Khan et al. 2020).

Policy Formulation Approach

One of the biggest reasons of policy failure in Pakistan is the government's top-down policy formulation approach. The study found that the government adopted a top-down approach in formulating the 'National Adaptation Plan.' It did not consult primary stakeholders affected by climate change at the local level, nor did it conduct hydrological modelling or risk assessments prior to the plan's development. In line with these findings, Masud and Khan (2024) indicate that no consultation was conducted with the primary parties affected by climate change impacts or the civil society representatives in policy development. This further supports the finding that the government's engagement with stakeholders in building climate resilience is limited, despite its critical importance for policy success.

Policy Recommendations

In order to build climate resilience and curb growing food insecurity vis-à-vis climate change in Punjab, the following initiatives are recommended:

1. **Emphasis on Research and Development (R&D) strategies should be placed on rain-fed areas. The government should introduce climate-resilient technologies, improve crop management and adaptive farming practices to enhance productivity and reduce climate vulnerability.**
2. **The government must prioritise strengthening its disaster risk management system and shift its focus from a reactive disaster-response approach towards a preventive and mitigation-oriented approach. Currently, the country's DRR system is largely based on avoidance and response, and this system is neither sufficient nor effective. The DRR policies must be aimed at including the protection of standing crops, agricultural infrastructure and machinery, livestock, and on-farm assets in addition to saving human lives.**
3. **There is an urgent need to integrate climate resilience into agricultural policies. This can be achieved through the promotion of climate-adaptive crop planning, adequate government funding, and targeted subsidy schemes, particularly for smallholder farmers. Improved irrigation management is also essential for enhancing agricultural productivity and reducing vulnerability to climate-related stresses. Equally important is the development of effective mechanisms for raising public awareness and disseminating knowledge on climate change, its impacts, and appropriate adaptation strategies among farming communities and the wider population.**
4. **The government should strengthen legislation related to urban development and infrastructure planning in close coordination**

with the Provincial and Federal Disaster Management Authorities. Adequate financial resources should be allocated to relevant institutions, accompanied by transparent and accountable mechanisms for their utilisation. Priority should be given to developing climate-resilient irrigation systems, storage facilities, rural road networks, and flood-protection infrastructure. Such investments would enhance adaptive capacity, reduce post-disaster losses, and ultimately contribute to strengthening the resilience of the food system.

5. A formal coordination mechanism needs to be put in place on priority to enhance inter-agency collaboration among federal and provincial institutions involved in climate change, agriculture, DRR, and water management so as to ensure coherent and effective policy implementation. While these institutions operate within their respective mandates, there is a dire need to collate information and resources during peacetime so as to waste minimal time to operationalise requisite response during crisis periods and to reduce losses.
6. Capacity building of agricultural extension services should be prioritised through continuous training in climate-smart agriculture, improved climate risk communication, and adoption of digital and technological tools to ensure effective dissemination of adaptation practices at the farm level.
7. The government should institutionalise multi-level stakeholder engagement mechanisms by ensuring the formal participation of farmer organisations, local communities, NGOs, and private sector actors throughout all stages of climate and agricultural policy development, including design, implementation, monitoring, and evaluation. Such engagement should extend beyond consultation during the planning phase and provide stakeholders with meaningful and sustained opportunities to contribute to decision-making processes, thereby promoting more inclusive, context-responsive, and effective policies.

8. **A bottom-up, participatory approach to policy formulation is essential, with meaningful stakeholder engagement at the grassroots, divisional, provincial and national levels. Such an approach would enable policies to reflect regional climatic variations, local vulnerabilities and context-specific priorities. Furthermore, institutionalising continuous monitoring and periodic evaluation would facilitate systematic assessments of policy effectiveness, identify implementation gaps and inform timely policy adjustments.**

Conclusion

From a resilience perspective, the findings suggest that the government has yet to effectively strengthen climate resilience in Punjab's agricultural sector and remains in a learning phase. Gaps in the implementation and effectiveness of Disaster Risk Reduction (DRR) mechanisms may intensify climate-induced disasters, posing serious risks to environmental and food security. Given Punjab's central role in national food production, these vulnerabilities can disrupt food availability and increase food insecurity, with broader implications for human security.

The study further finds that Punjab has considerable progress to make in building agricultural resilience and strengthening disaster preparedness. Lessons from recent floods should inform more effective coordination between provincial and federal institutions, while relevant stakeholders should be meaningfully involved throughout policy formulation and implementation. Agricultural and climate policies must ultimately translate into effective resilience-building measures that safeguard Punjab's food system against future climate risks.

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Localised Impact of Climate Change on Communities in Sindh: A Way Forward for Community-Based Adaptation Strategies in Pakistan*

Rameez Ahmed Sheikh, Dr Altaf Abro and Amna Khan **

Abstract

This study examines the localised impacts of climate change on communities in Sindh, Pakistan. Data were collected from 212 respondents across the districts of Sukkur, Larkana and Jamshoro using a representative sampling technique. A qualitative and descriptive research approach was employed to analyse community perceptions, vulnerabilities and responses to climate-related risks. The findings indicate that, despite high exposure to climate-related hazards, a substantial proportion of the affected population has limited awareness of climate change and its implications. Significant disparities also exist in levels of preparedness and adaptive capacity. Recurrent flooding, extreme heat and locust infestations have adversely affected agriculture, water

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* This chapter has been approved as a *Research Paper / Scholarly Article* by the referee.

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resources and local livelihoods, thereby deepening existing socioeconomic vulnerabilities. The study underscores the importance of integrating community-based approaches into climate adaptation strategies, strengthening disaster preparedness, and improving the effectiveness and accessibility of early warning systems. It recommends greater interdisciplinary and institutional collaboration, stronger implementation of national and international climate commitments and increased mobilisation of financial and technical resources for locally grounded climate-resilience initiatives.

***Keywords*:** Climate Change, Community-Based Adaptation, Infrastructure, Water, Sanitation, and Hygiene (WASH), Education, Psycho-social Impacts, Disaster Preparedness, Climate Resilience Framework.

Introduction

Global warming is one of the defining challenges of the contemporary era, with its impacts increasingly manifesting at the local level across diverse geographical and socioeconomic contexts. In Pakistan, particularly in the province of Sindh, communities are increasingly exposed to the adverse consequences of climate change, including disruptions to livelihoods, deteriorating health outcomes, and declining overall quality of life. This study examines the extent and nature of climate change impacts on selected communities in Sindh, with particular attention to their lived experiences and vulnerabilities. It further underscores the need to strengthen Community-Based Adaptation (CBA) strategies that can mitigate adverse impacts, enhance local adaptive capacity, and build community resilience to current and future climate-related risks.

Climate change is affecting Sindh in diverse and interconnected ways across multiple sectors, including agriculture, education, food security and livelihoods, gender equality, and water, sanitation, and hygiene (WASH). Agriculture, one of the province's most important economic sectors, is particularly vulnerable to changing climatic conditions.

Increasing climate variability has adversely affected agricultural productivity, disrupted food production systems, and heightened concerns regarding food security. Farmers are increasingly exposed to erratic rainfall, prolonged droughts, extreme temperatures, and other adverse weather conditions that constrain their ability to sustain agricultural productivity (Wells et al., 2023a). Declining agricultural output, in turn, reduces the availability and affordability of food, with particularly severe consequences for poor and marginalised households.

Education is another sector affected by climate-related hazards. Floods, heatwaves, and other extreme weather events frequently disrupt schooling and reduce student attendance, particularly in rural areas where educational infrastructure is more vulnerable to damage. Such disruptions not only interrupt learning but also reinforce existing socioeconomic inequalities. In climate-affected households, children can be withdrawn from school to contribute to household income, agricultural labour, or other coping activities. These effects are also gendered. Girls face heightened risks of school discontinuation because of increased domestic and caregiving responsibilities, while boys experience pressure to enter paid or agricultural work.

Livelihoods in Sindh, particularly agriculture, fisheries, livestock rearing, and small-scale farming, are highly dependent on natural resources and susceptible to climate-related environmental changes. For many rural households, these activities constitute the primary sources of income and subsistence. However, ecosystem degradation, changing weather patterns, declining water availability, and other climate-related pressures are undermining the sustainability and profitability of these livelihood systems (Parekh 2023). Reduced livelihood opportunities can contribute to declining household incomes, increasing indebtedness, food insecurity, and deeper levels of poverty and economic uncertainty. These conditions highlight the need for diversified, climate-resilient livelihood strategies that enable

vulnerable households not only to cope with climatic shocks but also to strengthen their long-term adaptive capacity.

Climate change also has pronounced gendered impacts, often disproportionately affecting women and intensifying pressures on household and family structures. In rural Sindh, women commonly bear primary responsibility for domestic tasks such as collecting water, preparing food, caring for children and older family members, and managing household needs. Climate-induced resource scarcity and environmental degradation can substantially increase these responsibilities. Reduced access to water and declining agricultural productivity may further constrain women's opportunities to participate in education, paid employment, and other economic activities, while simultaneously exposing them to additional health and protection risks. Addressing these gender-specific vulnerabilities is essential to the development of inclusive climate adaptation strategies that promote women's resilience, participation, empowerment, and equitable access to resources and opportunities.

Climate change further exacerbates existing challenges related to WASH, particularly by reducing access to safe and reliable water supplies and undermining sanitation and hygiene conditions. Flooding can contaminate drinking water sources, damage sanitation infrastructure, and increase exposure to waterborne diseases, while prolonged droughts can deplete surface and groundwater resources. These conditions make it increasingly difficult for communities to maintain adequate standards of hygiene and secure a sustainable supply of safe water, thereby posing risks to public health and community well-being (Wells et al., 2023a).

This research focused on three districts of Sindh—Sukkur, Larkana, and Jamshoro—selected to capture the province's diverse social, economic, and environmental contexts. The districts exhibit substantial socioeconomic variation, which shapes both their vulnerability to climate change and their capacity to adapt. Jamshoro, owing to its semi-urban character, generally has relatively better access to education and

public services, although considerable vulnerabilities persist in its rural areas. Sukkur represents a mixed socioeconomic setting characterised by commercial activity and irrigated agriculture, alongside pronounced disparities between urban and peri-urban populations. Larkana, by contrast, is more heavily dependent on agriculture and has comparatively limited access to public services and livelihood diversification opportunities. These contrasting characteristics provide an important basis for examining how climate change impacts, vulnerabilities, and adaptation options vary across different socioeconomic and environmental settings within Sindh.

The study draws on qualitative data from the multisectoral needs assessment conducted by Secours Islamique France (SIF) Pakistan to provide an in-depth analysis of the micro level impacts of climate change in Sindh province. By engaging directly with communities and social actors experiencing climate-related risks and disruptions, the study captures the lived experiences and social consequences of climate change that may not be adequately reflected in aggregate-level assessments. Particular attention is given to the psychosocial dimensions of climate vulnerability, including psychological distress, anxiety, and other mental health challenges associated with recurrent exposure to climate-related hazards, livelihood insecurity, displacement, and uncertainty about future well-being.

Literature Review

The literature reviewed on climate change and its impacts on communities in Sindh Province, Pakistan, indicates that climate-related vulnerabilities are immediate, locally differentiated, and systemic, with substantial implications for adaptation and resilience. Existing studies consistently identify Sindh as one of Pakistan's provinces that is highly vulnerable to climate change, with adverse consequences for agricultural productivity, water availability, livelihoods, health, food security, and the adaptive capacity of affected communities. Given the province's substantial dependence on

agriculture, climate variability poses particular risks to food production and rural livelihoods. Irregular and unpredictable rainfall, prolonged dry periods, and the increasing occurrence of climate-related hazards, including droughts, have contributed to declining crop yields and heightened concerns about regional food security. Wells et al. (2023b), for example, argue that climate change is undermining farmers' capacity to sustain crop production, thereby increasing the risks and uncertainties associated with agricultural livelihoods.

Another increasingly sensitive concern linked to the effects of climate change is the water crisis in Sindh. The region has been experiencing prolonged dry weather, reflected in low rainfall levels. In addition, excessive extraction and misuse of groundwater have contributed to the depletion of lakes and boreholes used for domestic consumption and irrigation. As noted by Ghafran and Yasmin (2025), freshwater scarcity has been further aggravated by floods and droughts, which both contaminate and deplete available water sources.

Climate change imposes substantial social and economic costs, affecting multiple dimensions of life and livelihoods in Sindh. Communities dependent on climate-sensitive activities, particularly fishing, livestock rearing, and small-scale farming, are especially vulnerable to ecosystem degradation, resource depletion, and changing climatic conditions. These pressures can reduce household incomes, weaken livelihood security, and increase the risk of poverty among already vulnerable populations. Parekh (2023) notes that such economic vulnerability can further marginalise climate-affected communities, compelling households to adopt alternative coping and livelihood strategies in order to meet their basic needs. Addressing these challenges requires measures that strengthen household resilience, including the promotion of livelihood and income diversification, improved access to climate-resilient economic opportunities, and targeted cash assistance for households affected by climate-related shocks.

Existing gender roles often place responsibility for household activities such as cooking, washing, caregiving, and water collection on women, making them especially vulnerable when water, food, and other essential resources become scarce. These gender-specific risks highlight the need for inclusive adaptation strategies that strengthen women's rights, access to education and resources, economic opportunities, and participation in household and community decision-making. Climate change also has important psychosocial consequences. Recurrent exposure to floods, extreme heatwaves, livelihood insecurity, and uncertainty about future climatic events can contribute to heightened levels of stress, anxiety, and psychological distress among affected communities. Roy et al. (2024) emphasise the importance of integrating mental health considerations into climate change adaptation frameworks. Accordingly, accessible mental health services and community-based psychosocial support should form part of broader adaptation and resilience-building interventions to improve the well-being and quality of life of climate-affected populations.

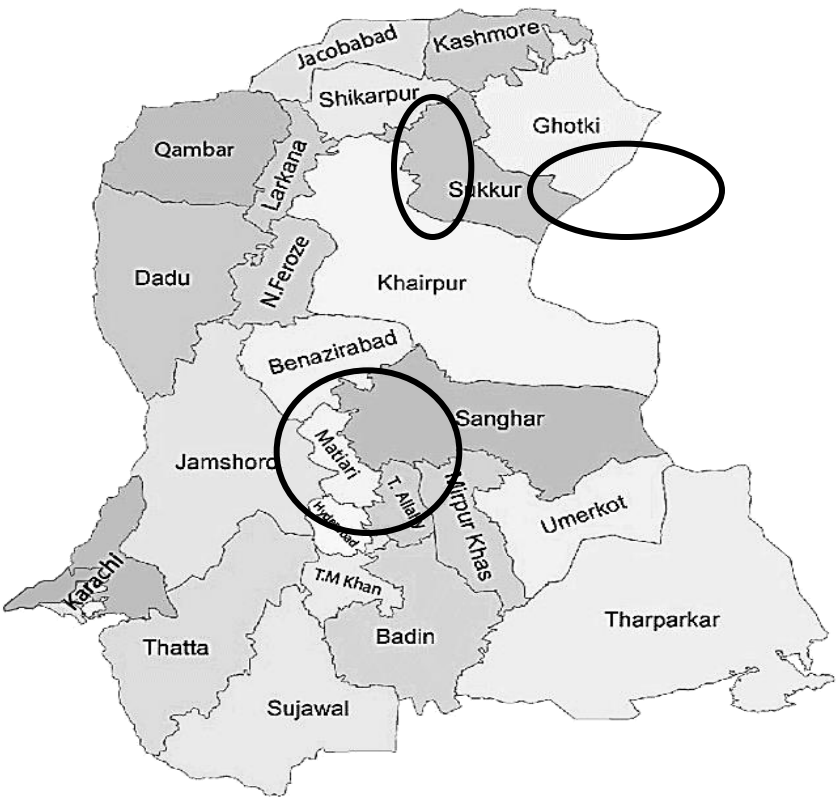
Awareness, preparedness, and prevention are essential for reducing climate-related disaster risks. This study indicates that Sindh lacks adequate systems in these areas, increasing community vulnerability to extreme events. Strengthened Disaster Risk Reduction (DRR) measures like early warning systems, capacity building, and resilient infrastructure can reduce disaster impacts and improve preparedness (Dharmarathne et al., 2024). Effective adaptation also requires coherent climate policies linked with relevant international frameworks and tailored sectoral interventions. Haque et al. (2022) point to the importance of integrating agriculture, water, and health priorities into climate policy to address the specific needs of vulnerable populations.

Methodology

The study adopted a qualitative descriptive research design to explore the impacts of climate change in Sindh. Data were collected through

open-ended questions to capture participants' in-depth perspectives and experiences. The qualitative data were analysed thematically by identifying, organising, and interpreting recurring themes, while Statistical Package for the Social Sciences (SPSS) was used to generate descriptive statistics where applicable. This approach enabled a comprehensive examination of climate change impacts across key sectors, including agriculture, infrastructure, WASH, education, gender, and psychosocial well-being.

Figure I: Study Area-Sindh



Source: Board of Revenue, Government of Sindh.

The study adopted a stratified sampling technique to ensure representation across the selected districts and population

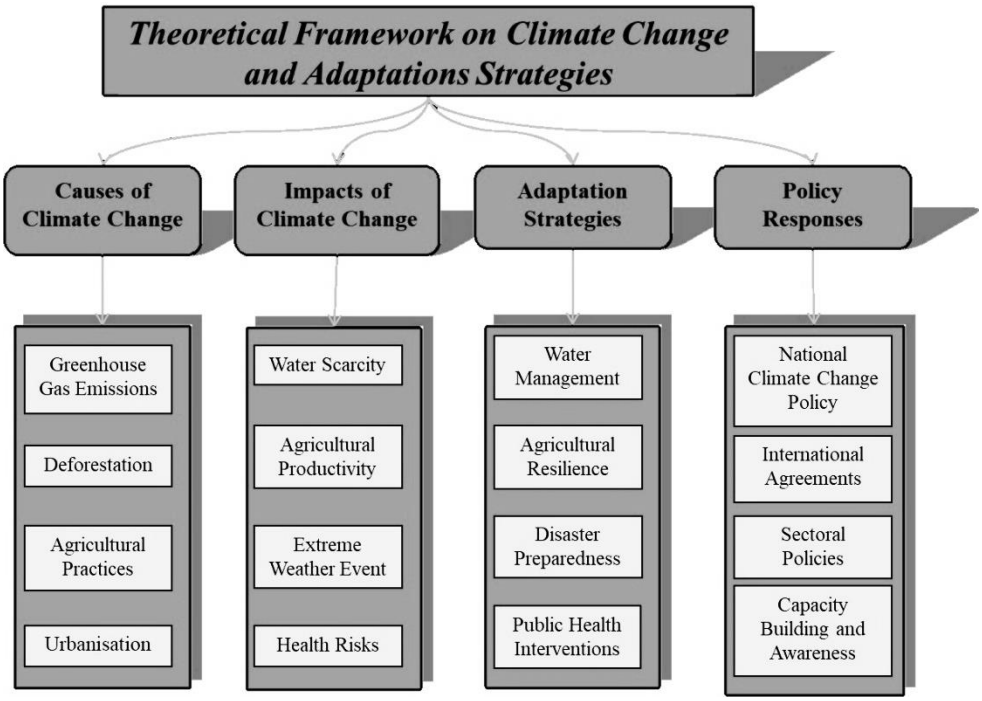
characteristics. The research targeted three districts of Sindh, i.e., Sukkur, Larkana and Jamshoro, shown in Figure I, as each district possesses different social, economic and environmental characteristics. The sample comprised 212 respondents, which ensured that researchers had a large set of data from which results were deduced. Both primary and secondary data were collected to ensure validity of the study's findings. A standardised questionnaire was developed and used to elicit specific responses regarding perceptions of climate change impacts across different dimensions, as well as the adaptive measures adopted by communities. The questionnaire was based on both open-ended and closed-ended questions. Some of the respondents were farmers, residents and stakeholders in the local communities as well as leaders and officials in charge of climate change programmes.

The collected data were analysed using thematic analysis and SPSS. Themes were developed inductively from responses to open-ended questions and supported with relevant participant quotations. Descriptive statistics were used to summarise and quantify key patterns in the data. Together, these methods helped assess the extent of climate change impacts across different sectors and the effectiveness of existing adaptation measures. The study's recommendations are intended to inform policy and strengthen the implementation of CBA in Sindh and broader climate resilience efforts in Pakistan.

Theoretical Framework

The study focuses on the causes and impacts of climate change, adaptation strategies, and policy responses. Its conceptual framework draws on elements of the Sustainable Livelihoods Framework (SLF), which provides a structured approach for analysing community vulnerability, livelihood assets, adaptive capacity, and resilience, as illustrated in Figure II:

Figure II: Theoretical Framework

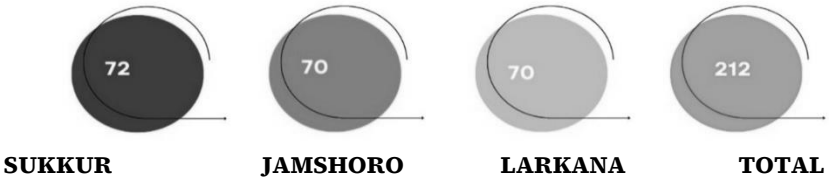


Source: Authors' own.

Quantitative Findings

The research findings are based on the analysis of responses from 212 individuals across Sukkur, Larkana, and Jamshoro.

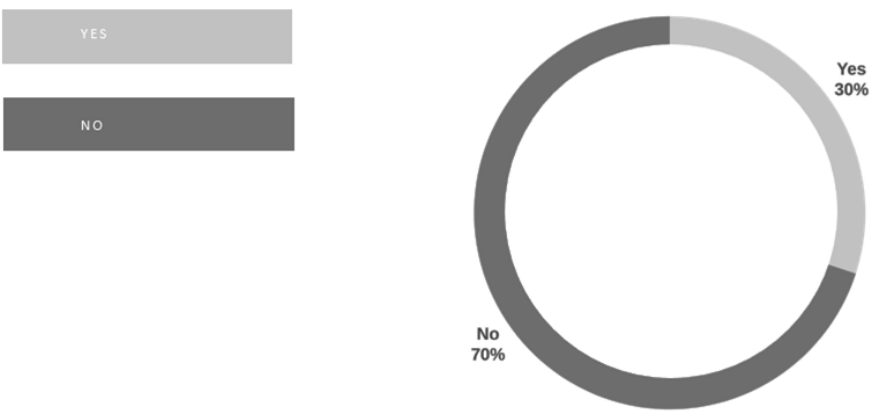
Figure III: Number of Respondents from Target Districts of Sindh



Source: Authors' own.

In order to ensure a representative sample of the population, respondents were evenly distributed across the districts. There were 72 respondents from Sukkur, 70 from Larkana, and 70 from Jamshoro.

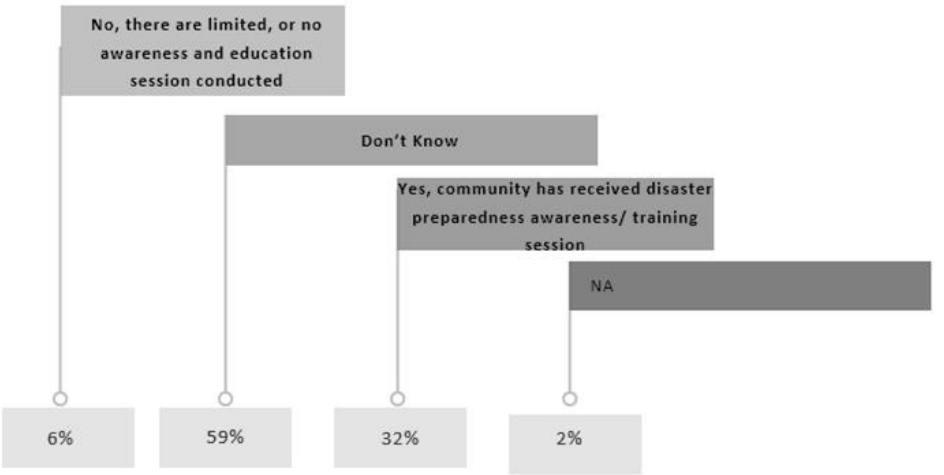
Figure IV: Awareness about Climate Change



Source: Authors' own.

70% of the respondents were not aware of climate change issues while only 30% of respondents indicated awareness of climate change issues (Figure IV). This depicts a substantial gap in knowledge and awareness that needs to be addressed through targeted education and awareness programmes.

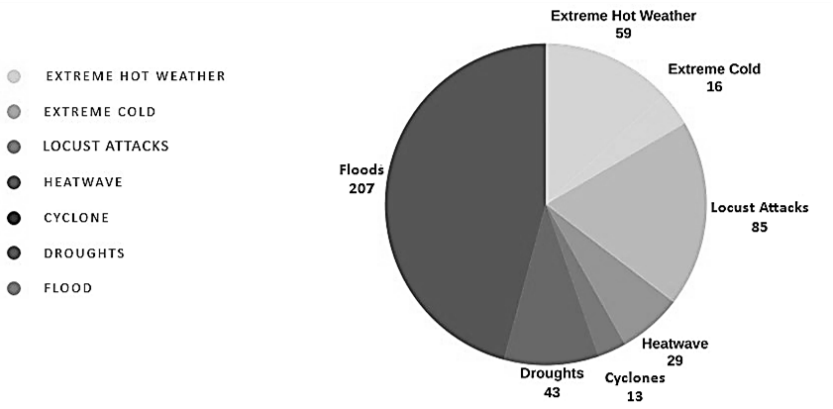
Figure V: Level of DRR-Related Education and Awareness among Respondents



Source: Authors' own.

Respondents were asked about their awareness and education regarding DRR (Figure V). A majority (59%) reported having no awareness or education related to DRR, while 32% indicated that they had received disaster preparedness awareness or training. A small proportion (6%) reported that awareness sessions were either very limited or not conducted at all. These findings suggest substantial gaps in community-level DRR knowledge and preparedness.

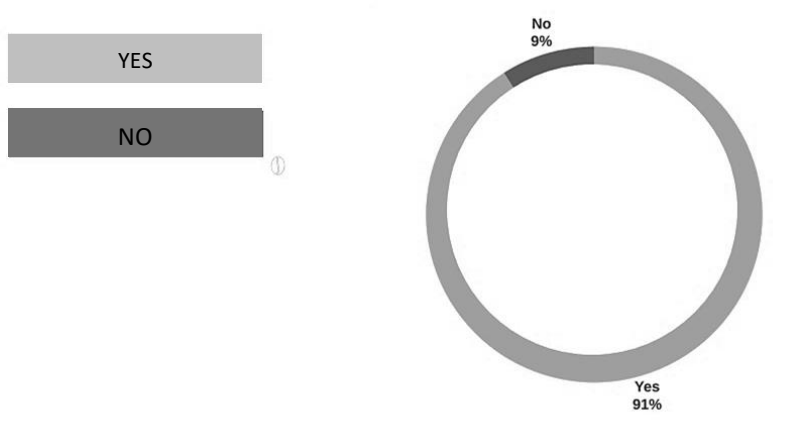
Figure VI: Frequency of Climate Change-Induced Disasters faced by the Respondents



Source: Authors' own.

The study also examined the major climate-related vulnerabilities experienced by communities (Figure VI). Flooding was the most frequently reported hazard, identified by 207 respondents. Other reported vulnerabilities included locust attacks (85 respondents), extreme heat (59), droughts (43), heatwaves (29), extreme cold (16), and cyclones (13). These findings demonstrate that communities in Sindh are exposed to multiple and overlapping climate-related hazards, with flooding emerging as the most prominent vulnerability.

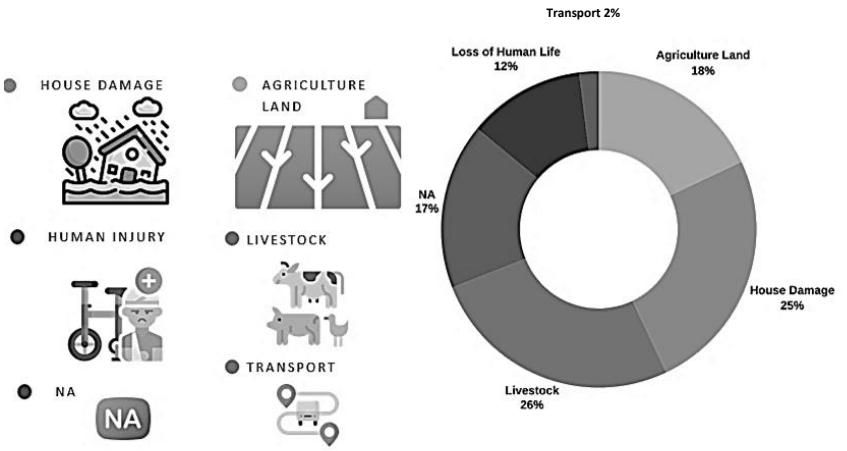
Figure VII: Incidence of Loss and Damage among Respondents



Source: Authors' own.

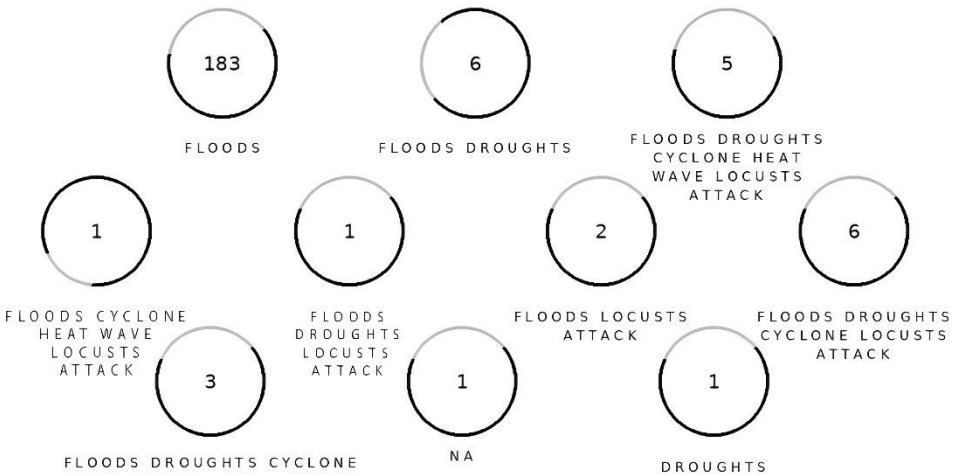
Approximately 91% of respondents reported experiencing some form of climate-related loss or damage (Figure VII). Reported impacts included loss of livestock (26%), damage to agricultural land (18%), loss of human life (12%), human injuries, and transport-related damage (2%).

Figure VIII: Types of Loss and Damage



Source: Authors' own.

Figure IX: Types of Earlier Disasters faced by the Respondents



Source: Authors' own.

The study also examined respondents' previous exposure to disasters. Flooding was the most frequently reported disaster, identified by 183 respondents. Communities also reported experiencing multiple and overlapping hazards, including floods combined with droughts, locust attacks, heatwaves, and cyclones. Repeated exposure to such climate-related disasters has intensified community vulnerability, weakened coping capacities, and increased the risk of further livelihood and socioeconomic losses.

Qualitative Findings

Table I: Thematic Analysis of Climate Change Vulnerability and Adaptation in Sindh, Pakistan

Themes	Description	Supporting Quotes
Agricultural and Livelihood Vulnerability	Highlights the impacts of climate change on agricultural productivity and livelihoods, particularly how erratic heavy rainfall, prolonged droughts, and extreme weather events contribute to reduced crop yields and increased livelihood vulnerability.	- *'Erratic rainfall patterns and prolonged droughts have led to reduced agricultural productivity, threatening food security in the region.'* - *'Fishing, livestock rearing, and small-scale farming are facing increasing economic instability.'*
Water Scarcity and Management	Focuses on key water-related impacts of climate change, including increasing water scarcity, groundwater depletion, reduced rainfall, and the contamination of water sources caused by heavy flooding.	- *'Reduced rainfall and over-extraction of groundwater have led to significant declines in water availability.'* - *'Floods contaminate water sources, creating a persistent cycle of water scarcity and health risks.'*

Themes	Description	Supporting Quotes
Gender and Social Vulnerability	Examines the gender-specific impacts of climate change, particularly on women in rural areas. Climate-related water scarcity and resource constraints contribute to heavier workloads, adverse physical and mental health outcomes, and reduced opportunities for education, employment, and career advancement.	*- 'Women bear a disproportionate burden of the impacts of climate change, with increased workloads affecting their health and limiting participation in educational and economic activities.'* *- 'Addressing gender-specific vulnerabilities is crucial in adaptation strategies.'*
Disaster Preparedness and Psycho-Social Impacts	Focuses on community preparedness and the psychosocial impacts of climate-induced disasters. It examines the extent of local readiness to respond to such events and the psychological distress associated with their recurring threat.	*- 'Lack of disaster preparedness mechanisms has made communities vulnerable to the devastating effects of natural disasters.'* *- 'The constant threat of climate-induced disasters is causing stress and anxiety among affected communities.'*

Source: Based on the study.

Agricultural and Livelihood Vulnerability

Food and income insecurity are critical challenges in Sindh and have been further intensified by climate change. The province's rural economy is heavily dependent on agriculture, livestock rearing, and fishing, which provide food and income for a substantial proportion of the population. Changing climatic conditions, including erratic rainfall, prolonged droughts, and increasingly severe weather events, have adversely affected agricultural production and rural livelihoods. The findings indicate that natural capital, particularly agricultural land and water resources, has been significantly affected, resulting in declining crop productivity. This, in turn, has weakened households' financial capital through reduced incomes and heightened economic insecurity among those dependent on farming and livestock.

A recurrent concern among respondents was the growing unpredictability of rainfall. As one respondent explained, *'the rains are unpredictable; either we get too much of it and our fields get flooded and crops destroyed or there is none and our crops dry up.'*

Such variability has disrupted traditional farming calendars and made it increasingly difficult for farmers to plan cultivation and harvesting activities. Seasonal rainfall that previously replenished water sources has become less reliable, forcing many farmers to depend on already depleted groundwater resources for irrigation. When rainfall does occur, it is often excessive, causing flooding, soil degradation, crop losses, and damage to agricultural infrastructure. A farmer from Larkana described this uncertainty: *'There are no more seasons we can rely on. Our wells have dried up, when the rains come, it washes our efforts away.'*

Climate-related pressures also extend to livestock, an important component of the rural economy. Water scarcity, declining grazing resources, prolonged dry periods, and heat stress have contributed to livestock mortality, reduced milk production, and deteriorating animal health. These losses undermine both household food availability and income, increasing the risk of poverty among already vulnerable families. Additional climate-related hazards, including heatwaves and locust infestations, further disrupt planting and harvesting cycles and place additional pressure on agricultural livelihoods. As some respondents reported, *'Our animals are perishing…We have lost many of our goats and cows to heat and could not find water.'*

Water Scarcity and Management

Water scarcity and inadequate water management are major challenges in Sindh and are increasingly intensified by climate change. The province's arid to semi-arid conditions make water a critical resource for agriculture, domestic use, and livelihoods. Declining rainfall, groundwater depletion, and flood-related contamination have further constrained access to safe and reliable water. Within the

Sustainable Livelihoods Framework, these pressures reflect the deterioration of natural capital, particularly water resources. Their effects also extend to human capital through water-related health risks and to financial capital through reduced agricultural productivity and declining household incomes.

Reduced precipitation, excessive groundwater extraction, and contamination of water sources have collectively intensified water scarcity. As one respondent from Jamshoro stated, *'Our wells are becoming dry and it is difficult to irrigate the crops since rivers are also drying up.'* Declining and increasingly unpredictable rainfall has disrupted irrigation and agricultural planning, contributing to poor crop growth and heightened food insecurity. Farmers are also finding it more difficult to anticipate seasonal conditions and adjust irrigation schedules accordingly. One farmer explained: *'Rains are unpredictable, they get delayed or fail to come, or they come in huge volumes at once, leading to floods.'*

As surface water becomes less reliable, communities increasingly depend on groundwater. However, excessive extraction has contributed to falling water tables, requiring greater effort and financial resources to access water. These pressures are particularly acute in rural areas where alternative sources are limited. Groundwater quality has also deteriorated in many locations due to salinity and pollution, reducing its suitability for both irrigation and domestic use. A resident from Sukkur observed, *'We are penetrating deeper in search of water sources but the water we obtain is highly saline, which is unfit for irrigation and even for drinking.'*

Flood-related contamination presents an additional threat to water security and public health. More frequent and intense flooding can contaminate wells and other water sources through sewage overflow, industrial discharge, and other pollutants, increasing the risk of waterborne disease. Access to safe drinking water therefore becomes particularly difficult in the aftermath of floods. As one community elder noted: *'After floods, the wells become heavily contaminated, and it*

takes time to treat them. We cannot even use the water for washing or cooking; using such water leads to disease outbreaks.' These findings demonstrate that climate-related water insecurity in Sindh is not limited to scarcity alone, but also encompasses declining water quality, rising access costs, agricultural losses, and increased health risks.

Gender and Social Vulnerability

Gender and social vulnerability are major concerns in Sindh, particularly in the context of climate change. Prevailing socio-cultural norms and gendered divisions of labour place women, especially those in rural areas, at disproportionate risk. Women are commonly responsible for fetching water, cooking, caregiving, and other household tasks. As water scarcity and agricultural stress intensify, these responsibilities become more demanding, with adverse consequences for women's physical and mental health, educational opportunities, and economic participation.

Water scarcity is a particularly significant burden for rural women, who are often primarily responsible for securing household water supplies. Declining rainfall and reduced access to nearby water sources compel many women to travel longer distances, often to collect water of poor quality. The physical strain and time required for this task reduce the time available for childcare, agricultural work, education, and other productive activities. As one woman from Larkana explained: '*I must walk for hours to get water and when I get it–it is dirty; my back always aches and I do not have time for my children or for the work in the fields, which makes it even worse with carrying heavy jugs of water and get diseases from unhygienic and polluted water. Due to the time devoted to the water collection, girls are often taken out of school to help, which makes them hardly educated, leading to poverty.'*

Climate-related declines in agricultural productivity also have implications for women's socioeconomic well-being. Women contribute substantially to agricultural activities in many rural households, meaning that lower crop yields directly affect both

household food security and income. Resource constraints may force women to prioritise the nutritional needs of children and other family members over their own, increasing the risk of undernutrition and declining health. A woman farmer from Jamshoro stated: *'We are unable to provide for our children's food needs and other requirements; I miss my meals while feeding my children such that I become weaker and do less work to generate incomes.'* Declining agricultural income may also compel women to undertake labour-intensive and poorly paid work to supplement household earnings.

Climate change further reinforces existing patterns of social exclusion and economic inequality. The findings indicate that women, particularly those from disadvantaged households, have limited access to productive assets and services, including land, credit, agricultural extension, and financial resources. These constraints restrict their ability to adopt climate-resilient agricultural practices or diversify their livelihoods. In addition, social norms that limit women's mobility and decision-making authority can further weaken their adaptive capacity. As a girl from Sukkur stated, *'Even if I have some ideas to develop our farm, I cannot arrange money or support for it. Men in the village never pay heed to my ideas.'*

Women may also face heightened risks during climate-related disasters such as floods and heatwaves, particularly where access to safe shelter, healthcare, sanitation, and other essential services is limited. Overall, the findings demonstrate that climate change interacts with pre-existing gender inequalities, intensifying women's workloads, health risks, economic insecurity, and exclusion from resources and decision-making.

Disaster Preparedness and Psycho-Social Impacts

Disaster preparedness and the psychosocial impacts of climate change are critical factors shaping community vulnerability and well-being in Sindh. Recurrent floods, heatwaves, and droughts highlight the growing need for effective disaster risk reduction and response

mechanisms. However, limited preparedness systems and inadequate emergency response capacity leave many communities highly exposed to both the physical and psychological consequences of climate-induced disasters.

Flooding has become particularly disruptive, causing deaths, damage to homes and infrastructure, and the loss of crops, livestock, and other livelihood assets. Inadequate or delayed early warning systems further reduce the ability of households to evacuate safely or protect their property. A respondent from Sukkur described the experience of his family as follows: *'We did not know that the floods were coming, we lost both the house and the livelihood, crops and animals were destroyed within a few hours.'*

The psychosocial consequences of climate-induced disasters are also substantial but often receive insufficient attention within disaster management interventions. Repeated exposure to floods and other extreme events can generate persistent fear, insecurity, stress, and anxiety, particularly among communities that have previously experienced severe losses. Prolonged exposure to such stressors may also contribute to more serious mental health conditions, including depression and Post-Traumatic Stress Disorder (PTSD). As one woman from Larkana explained: *'Every time it rains heavily, my heart races. I can't sleep at night thinking about the last flood. The fear never leaves.'* The trauma associated with losing homes, livelihoods, and loved ones can persist long after the immediate disaster has passed, yet access to appropriate mental health and psychosocial support remains limited.

The findings of the study highlight the localised impacts of climate change on communities in Sindh. The community lacks awareness regarding climate change and disaster risk reduction. This is combined with high vulnerability and losses and damages faced. These findings indicate that there should be CBA strategies focusing primarily on enhancing awareness, improving disaster preparedness, and developing sustainable practices to reduce the negative effects of

climate change. The purpose is to develop resilient communities which can combat the changing climate conditions.

Discussion

According to the study findings, a vast majority of respondents are not aware of the climate change issues despite expressing concern about its impacts on their communities in districts of Larkana, Sukkur and Jamshoro. This finding reveals that there is a significant gap in the practical exposure to climate-related risks and awareness regarding these issues. This awareness is important, as existing literature highlights it as one of the key factors encouraging people to adopt change and implement adaptation measures. However, certain studies suggest that awareness alone is insufficient to drive meaningful action. For instance, Alvi and Khayyam's (2020) study of young people in Islamabad and Dhaka revealed low levels of motivation despite high awareness. In Sindh, 70% of interviewed respondents in the present study reported no awareness of climate change, while only 30% were aware of related issues. Nevertheless, only a small proportion were actively engaged in addressing or adapting to climate change.

The results of this study clearly show that agriculture, water, and people's lives are affected by climate change, which is in line with the existing climate risk literature focusing on developing countries. Flooding emerged as the most frequently reported and immediate climate-related hazard, indicating the growing exposure of communities in Sindh to recurrent flood events. These disasters disrupt socioeconomic systems, damage livelihoods and productive assets, and increase the risk of poverty. This pattern is consistent with broader evidence that climate change can reinforce existing poverty by undermining livelihood structures and economic processes. The findings also indicate substantial losses to agriculture and infrastructure, contributing to reduced food security and household economic stability, consistent with the findings of Fisher et al. (2022).

The findings also indicate that climate change in Sindh interacts with existing socioeconomic vulnerabilities, as reflected in the Sustainable Livelihoods Framework. Declining access to natural resources, particularly land and water, weakens financial and human capital and increases community vulnerability. Addressing these risks requires more than climate awareness alone; it demands a multidimensional response that also tackles institutional gaps and socio-cultural constraints (Alvi and Khayyam 2020).

The study also highlighted the psychosocial impacts of climate change, an area that has remained comparatively underexplored. Reported levels of stress and anxiety among communities in Sindh were consistent with broader evidence linking climate-related stressors to adverse mental health outcomes (Roy et al., 2024). The findings also underscore the importance of community-based adaptation, consistent with Dharmarathne et al. (2024), who emphasised localised and participatory approaches. Weak early warning systems and limited disaster preparedness in Sindh indicate a persistent gap between climate awareness and practical resilience-building. Similarly, the findings revealed a disconnect between community needs and centrally designed policy responses. Stronger inter-sectoral coordination, alignment of national policies with international climate commitments, and greater incorporation of locally generated evidence and community participation are much needed (Haque et al., 2022).

Policy Implications

To enhance policy relevance, the recommendations below were aligned with Pakistan's key national climate policy instruments, including the National Climate Change Policy and the Pakistan Climate Change Act. These frameworks prioritise climate resilience, disaster risk reduction and CBA, closely reflecting the local needs identified in this study:

Strengthen Climate Awareness and Early Warning Systems: To enhance community preparedness, it is vital to strengthen climate

awareness and localised risk communication systems. District-level climate literacy campaigns should be launched to educate rural households, particularly farmers and women, on changing climate patterns and associated risks. The Pakistan Meteorological Department (PMD) and Provincial Disaster Management Authority (PDMA Sindh) should try to improve the coverage of early warning systems in the flood-prone districts including Sukkur and Larkana, specifically, by installing decentralised flood monitoring stations and organising disaster preparedness trainings through local government institutions. Community-operated early warning systems must be established to disseminate timely alerts for floods, heatwaves, and locust invasions using mobile phones, mosques, radio, and local volunteer networks. Additionally, DRR education should be integrated into school curricula and community learning centres to ensure that preventive behaviours are adopted early and passed across generations.

Promote Climate-Resilient Agriculture and Livelihood Diversification: A climate-adaptive agricultural model is necessary to reduce vulnerability among farming communities. This includes the promotion of drought-resistant and flood-tolerant crop varieties suited to shifting climatic realities in Sindh. Training farmers on climate-smart agriculture practices — such as efficient irrigation techniques, regenerative soil management, and pest-resistant cropping — should be institutionalised through government extension programmes. To minimise dependency on climate-sensitive income sources, livelihood diversification grants should be introduced to promote safe alternatives such as poultry farming, small agro-processing units, or solar-powered irrigation enterprises.

Implement Integrated Water Resource Management: Water security is one of the most pressing climate challenges in Sindh, requiring a shift towards integrated water resource management. This includes implementing rainwater harvesting systems and creating groundwater recharge zones to naturally replenish aquifers. Sindh Irrigation Department, in coordination with the Ministry of Climate Change and

Environmental Coordination (MoCC&EC), in cooperation with international partners like the UNDP, should encourage induction of rainwater harvesting systems and small-scale community reservoirs in drought-prone villages for better provision of water for irrigation and domestic purposes. Community-based water governance committees should be mobilised to monitor usage, promote equitable distribution, and prevent exploitation. Regulatory enforcement must curb unplanned groundwater extraction, while advanced solutions such as solar-powered desalination and filtration plants should be strategically installed in areas suffering from high salinity or water contamination.

Ensure Gender-Inclusive Climate Adaptation: Women play a central, yet often unrecognised, role in climate resilience. Climate policies should formally acknowledge women as key adaptation actors rather than passive beneficiaries. The Women Development Department Sindh as well as local NGOs should set up climate adaptation training packages for rural women and provide climate-resilient agriculture and micro finance access for women to strengthen their financial and human capital. Establishing women-led village climate committees and enabling their access to microfinance and enterprise support will strengthen resilience at the household and community level. Investments in rural water infrastructure can significantly reduce the workload of women and girls — particularly relieving girls from the daily burden of water-fetching, enabling them to attend school and participate in climate and economic development initiatives.

Strengthen Institutional Coordination and Policy Enforcement: Effective climate action requires strong policy alignment and inter-institutional coordination. Provincial adaptation strategies should be aligned with the National Climate Change Policy and the National Climate Change Act, along with international frameworks such as the Sendai Framework for Disaster Risk Reduction. District-level climate adaptation task forces involving government agencies, NGOs, academia, private sector, and local community leaders must be established to ensure locally contextualised action. Furthermore,

adaptation policies should not remain on paper; annual monitoring with clear performance indicators is essential to track implementation, identify gaps, and hold institutions accountable.

Integrate Mental Health and Psycho-Social Resilience: Climate disasters leave long-term emotional and psychological impacts, which are often overlooked in policy frameworks. Mental health care must be integrated into climate recovery and resilience programmes, particularly for women, children, and displaced families. Local women should be trained as community-based mental health focal persons to provide basic trauma counselling and psychological first aid. Establishing safe community shelters that offer protected temporary accommodation during floods or heatwaves is also critical to reducing stress, violence, and secondary vulnerabilities among affected families.

Conclusion

Climate change had significant and multidimensional impacts on local communities in Sindh, Pakistan. The findings showed that agricultural productivity, food security, water availability, gender relations, livelihoods, and psychosocial well-being were all adversely affected. Erratic rainfall, prolonged droughts, and recurrent floods reduced crop yields and increased economic insecurity, while declining and contaminated water sources intensified water scarcity. These findings highlighted the importance of sustainable agricultural practices and improved water resource management.

The study also revealed pronounced gender inequalities in climate vulnerability. Women and girls, particularly in rural areas, experienced increased burdens related to water collection, domestic responsibilities, and income-generating activities. Declining agricultural productivity and household income further limited their access to education, economic opportunities, and adequate nutrition. Addressing these gender-specific vulnerabilities was therefore essential for strengthening household and community resilience.

Weak disaster preparedness and response mechanisms further increased community exposure to climate-related hazards. Recurrent disasters contributed to psychological distress, including anxiety and symptoms associated with post-traumatic stress disorder (PTSD). The findings therefore underscored the need to integrate mental health and psychosocial support into disaster preparedness and recovery frameworks.

Overall, the study demonstrated that effective climate adaptation in Sindh required an integrated approach combining sustainable water management, climate-resilient agriculture, gender-responsive interventions, disaster risk reduction, and psychosocial support. Strengthening collaboration among local communities, government institutions, civil society, and international organisations was identified as critical for enhancing adaptive capacity and reducing current and future climate-related risks.

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Building Bridges for a Just and Sustainable Future

*Prof. Kazuhiko Takeuchi**

We cannot achieve the Sustainable Development Goals (SDGs) in silos.

The challenges we face — climate change, biodiversity loss, and pollution — are deeply interconnected, and so must be our solutions.

South Asia is one of the most vulnerable regions in the world. Rising temperatures, erratic rainfall and extreme weather events are already impacting lives and livelihoods. At the same time, our rich biodiversity, from the mangroves to the deserts, is under severe threat. Pollution, especially plastic and air pollution, is degrading ecosystems and public health.

These crises are not isolated.

Climate change accelerates biodiversity loss and pollution weakens ecosystem resilience. In turn, degraded ecosystems amplify climate risks. This is why we must embrace synergies.

- **Nature-based solutions can simultaneously sequester carbon, protect biodiversity, and reduce pollution.**
- **Circular Economy Models can reduce waste, curb emissions, and create green jobs, especially for the informal sector.**
- **Integrated Policy Frameworks can link climate action plans, biodiversity strategies, and pollution control measures.**

* *Prof. Kazuhiko Takeuchi* is President of the Institute for Global Environmental Strategies (IGES), Japan.

South Asia has shown a strong, growing commitment to sustainability, but we need coordinated action, regional collaboration, and inclusive governance.

Let me also take this opportunity to highlight the work of the Institute for Global Environmental Strategies (IGES), which is actively contributing to this agenda.

1. **Asia-Pacific Initiative on Synergy Actions (APSA): IGES is a key partner in APSA, a new regional initiative led by United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), United Nations Environment Programme (UNEP), and Asian Development Bank (ADB), with support from the Ministry of the Environment of Japan. APSA aims to mainstream synergies into policy action by addressing the triple planetary crisis and accelerating progress towards the Sustainable Development Goals (SDGs). We are developing practical tools and case studies to help governments and stakeholders implement synergistic approaches effectively.**
2. **Regional Circular Economy Framework: IGES is working closely with the Council of Common Interests (CCI), the South Asia Co-operative Environment Programme (SACEP), UNEP, and other partners to develop a Regional Circular Economy Framework for South Asia. This framework seeks to harmonise efforts across countries, promote resource efficiency, and support inclusive green growth.**
3. **National Policy Support: IGES is also supporting the Government of Pakistan in developing its National Circular Economy Policy, which will serve as a model for integrating sustainability into national development planning. This initiative reflects the growing recognition that regional cooperation and policy coherence can drastically accelerate implementation of the SDGs.**

Let us move beyond fragmented approaches.

Let us build bridges between ministries, sectors, and nations, because only through synergy can we truly accelerate progress towards the SDGs and ensure a just transition and a thriving future for all.

| Prof. Kazuhiko Takeuchi

3

Inclusive and Human-Centred Development Beyond 2030

Towards Inclusive Sustainable Development
Ambassador Shafqat Kakakhel

Rethinking Development:
Human-Centric Policies for an Unpredictable World
Haroon Sharif

Scaling Inclusive Solutions:
Leaving No One Behind in South Asia
Armida Salsiah Alisjahbana

A Roadmap for Resilient Economies in the Global South
Prof. Ahsan Iqbal

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Towards Inclusive Sustainable Development

*Ambassador Shafqat Kakakhel**

It is highly gratifying for SDPI to host such an important subregional meeting of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and the South Asia Economic Summit (SAES). I extend a special welcome to the participants of these distinguished forums and acknowledge their notable contributions to the promotion of sustainable development in our large, diverse, and dynamic Asia-Pacific region. I hope your stay with us will be comfortable, enjoyable, and productive.

The overarching theme of SDC28 is '*Sustainable Development in the Emerging World Dis|Order.*' This theme seeks to take cognisance of multiple events, trends, and issues that have exacerbated the challenges to achieving peace, security, stability, and sustainable development on an equitable basis. These include, but are not limited to, the wars in Ukraine and Palestine, which have caused colossal human losses and enormous material destruction. They have placed unbearable burdens on the multilateral system, including the United Nations and its various agencies, funds, and programmes that have been painstakingly developed since the founding of the UN eighty years ago.

Complex threats to peace, prosperity, and human well-being — such as the impacts of climate change — have grown exponentially, even as our collective will to counter them has receded. The international community has been jolted by the open defiance and outright rejection of scientific findings by countries that were once at the forefront of

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scientific inquiry, research, and development. Support for developing countries' efforts to protect their fragile and vulnerable economies from the adverse consequences of global warming and climate change has remained woefully inadequate. There has also been a worrying resurgence of unilateral protectionism in inter-state trade. As a result of these negative trends, the implementation of the United Nations Development Agenda based on the Sustainable Development Goals (SDGs) — adopted through global consensus in 2015 — has been insufficient and uneven.

Our annual Sustainable Development Conferences (SDCs) have consistently served as platforms bringing together policymakers, including parliamentarians, researchers, representatives of multilateral financial and development institutions, the media, and civil society leaders from South Asia and beyond. Together, they deliberate on sustainable development challenges and explore pathways to address them through cooperation and collaboration, including regional cooperation. The SDC agenda is invariably driven by the imperative of promoting sustainable development, encompassing sustained economic growth, environmental protection, and social equity and justice. Accordingly, the plenaries and special sessions of the Conference focus on urgent socioeconomic and environmental issues and the ways and means of countering and overcoming them.

Rethinking Development: Human-Centric Policies for an Unpredictable World

Haroon Sharif *

We are living in a time of heightened risk.

Countries, especially emerging and developing ones, are increasingly being viewed through a lens of heightened uncertainty, as the world has become more unpredictable.

Unfortunately, it has become increasingly difficult to predict what the future holds. Very large advisory and consulting firms have stopped forecasting for more than six months, even for major companies. The models being developed are fluid and must consider countless unknown and exogenous factors, including unpredictability in global leadership. This has made life more interesting.

We are also witnessing realignments across the Global South and other regions as countries try to navigate this risky and uncertain world. Where are the people in this equation?

Second, developing countries and the Global South must rethink their approaches, especially where young populations are concentrated. People-centric policies must return to the centre.

In this risk environment — climate risk, AI risk, geopolitical risk, conflict risk — where is the hope?

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This is now the new normal, and we must learn to live with it. The multilateral system is seriously threatened, partly because of its delivery record.

For 30 years, we have spoken about closing down small shops and doing something big, yet we must reflect honestly on why we are failing to deliver development.

The word 'development' today is interpreted in many ways. Previously, it meant economic and human development. Now, with shrinking resources, humanitarian relief is also being labelled as 'development.' This leaves us with massive challenges.

We are in a messy global transition — multipolarity, new partnerships, and questions around resilience. The role of the state itself is being questioned: is it truly responsive to people or trapped in power politics?

There is, however, a ray of hope. People have expressed themselves recently, and they are looking for positive change.

I want to focus on two issues.

First: where will the money come from?

Our region is debt-stressed.

In South Asia, almost 70% of GDP goes towards debt repayment. This is a serious threat to the development of more than two billion people. How will institutions be built when global institutions themselves are threatened and funding is shrinking? Aid is declining. ODA has done some good, but it is also under strain.

Countries like Pakistan must think in terms of institutional solutions and partnerships.

The first transition I would recommend is shifting from dependency on Western institutions to models of partnership — building critical mass within our own countries, regions, and sub-regions. The global financial architecture is at a stage where, due to politics and complacency, it cannot offer reliable solutions.

Pakistan is still living with the old expectation that someone will write a cheque when a catastrophe occurs. We still believe donors will put money into the state's accounts and we will simply use it. What actually happens is that we accumulate more debt instead of leveraging capital for development, growth, and economic revival.

We spent years working on the Loss and Damage Fund. Yet we must understand what is happening within the global development and multilateral system. If we continue using outdated approaches, we will continue facing frustration.

I fear that within the next five years, the role of the United Nations may be significantly redefined — if not eroded — which would be a threat to the entire global system.

So how do we move towards human-centric policies — the essence of the SDGs?

Can we make people-centred policymaking a political priority?

Can we invest in the new skill mix required for a changing world?

In 1978, Singapore shifted its skills model from efficiency-based to knowledge-based. Today, this tiny country exports USD 300 billion worth of knowledge products. This is where partnerships with the West — and with emerging partners — must be pursued.

There is a promising voice in President Xi's Global Development Initiative, which aligns with SDGs and promotes prosperity, better environments, and people-centric development. That approach may not come with 'free money' the way Western systems once did, but it offers a more stable long-term model.

In the future, there will be no traditional aid for countries like Pakistan. We must face this reality and find our own solutions. Our banking sector has earned enormous profits; why can we not establish our own climate bank? The government keeps borrowing from the banking system, yet we fail to restructure financing models. We need to examine the fault lines of the Global South and orient our strategies accordingly.

We must leverage our own resources to build critical mass rather than waiting for traditional donors to provide funding. The private sector — powerful, liquid, and expanding — must be brought into the development equation. That liquidity will not flow into government budgets unless we create strong governance structures and credible, private sector-led interventions. Partnerships must be mutually beneficial.

I am also concerned about the migration of skilled people. While some OECD [Organisation for Economic Co-operation and Development] countries have increased skilled migration, the quality of life for many immigrants is deteriorating. Can we create opportunities for them to return?

Let me conclude with a simple message: we must come out of denial.

We must break away from outdated global financial structures.

We must develop local financing solutions and build partnerships within the region.

We must also delegate responsibilities away from the state. The state is struggling to manage its own affairs — how can it meaningfully support people?

The future lies in partnership models, knowledge collaboration, and converging expertise. I no longer see institutions like the World Bank helping us beyond offering more loans.

Let us do a reality check, establish a baseline, and start rebuilding — brick by brick — for an unpredictable and uncertain world.

Scaling Inclusive Solutions: Leaving No One Behind in South Asia

Armida Salsiah Alisjahbana[*]

In today's world, environmental risks are rising, and inequalities are deepening. This is especially true in South Asia, home to half the world's poor, where inequalities are progressing or even worsening.

As this year's dialogue focuses on SDGs 6, 7, 9, 11, and 17, we must first recognise the inspiring efforts already underway. We see youth organising to contribute to climate action, and we observe that infrastructure and services have started to become more friendly towards women, persons with disabilities, and senior citizens.

The question for us is: How do we bring these solutions to scale, leaving no one behind, and address the emerging challenges? With a population of 2.2 billion in this region, coupled with immense diversity and geopolitical complexity, the challenge is gigantic.

Integrated Solutions and Regional Cooperation

A few key areas require immediate and integrated action:

1. **Sustainable Energy Transition: Getting the required share of renewables in the overall energy mix is challenging. Investment in clean energy is not keeping up with population growth and consumption.**
2. **Climate and Water Stress: Heatwaves and floods have become commonplace. Water demand for agriculture, industry, energy,**

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and consumption is surging, while river basins and aquifers are being depleted and polluted.

This necessitates an integrated planning framework. Combining energy, climate, and development objectives is vital to ensuring that renewable energy expansion keeps pace with rising demand from industry, electric mobility, or clean cooking.

Many feasible successes entail integrated approaches:

- **Coordinating with concerned government institutions.**
- **Fostering cooperation with the private sector, civil society, and research institutions.**
- **Public awareness and consultations with communities and stakeholders are important in the design and delivery of solutions.**
- **Finally, cooperation is essential across countries.**

Disasters do not recognise national boundaries. A systematic approach to early warning systems, data sharing, and advanced technologies can save lives. Nuanced and tailored South-South cooperation can facilitate investment in climate-smart agriculture, resilient infrastructure or water saving technologies. We serve as a regional platform for countries to exchange relevant knowledge and solutions and to foster collaboration and cooperation.

A Roadmap for Resilient Economies in the Global South

Prof. Ahsan Iqbal[*]

For nearly three decades, SDC has not only illuminated South Asia's path as the region's premier forum for dialogue, evidence-driven insights, and transformative collaboration on sustainability but has also expanded its scope to include the participation of almost 23 countries.

My deepest commendations go to the Sustainable Development Policy Institute (SDPI), the Institute for Global Environmental Strategies (IGES), and our own Ministry of Planning, Development, and Special Initiatives for convening this critical discourse at a pivotal juncture for our region, the globe, and the planet. A special tribute must be paid to Ambassador Shafqat Kakakhel, Prof. Nasir Mahmood, Vice Chancellor, Allama Iqbal Open University, and Dr Abid Qaiyum Suleri, whose leadership has elevated SDPI into a national treasure, forging unbreakable links between rigorous research and real-world reform.

I warmly welcome our esteemed guests and partners from the United Nations, Japan, Bangladesh, Nepal, and across South and Southwest Asia. Your presence and discourse reflect a remarkable shared conviction that the road to enduring peace and prosperity is paved with sustainable development.

Nowhere does the clarion call for sustainable development echo louder than in our region, South Asia, home to nearly 2 billion souls — a quarter of humanity's heartbeat. This is a tapestry of boundless human

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ingenuity, profound cultural heritage, and untapped economic dynamism.

Yet, it is also a frontline of converging crises:

- **Despite remarkable strides, over 380 million South Asians remain in poverty.**
- **Nearly all are exposed to escalating climate hazards.**
- **One in three children battles stunting.**
- **Without bold adaptation, climate shocks could thrust 40 million more into poverty's grip by 2030.**

Our region emits less than 10% — and Pakistan, particularly, less than 1% — of global carbon, yet we bear the heaviest scars, from vanishing Himalayan glaciers and devastating floods to unrelenting heatwaves and ferocious cyclones.

The cataclysmic floods that ravaged Pakistan in 2022, and the similar devastation in India and Bangladesh in 2024, and in Nepal in 2025 serve as harrowing harbingers. Climate chaos knows no sovereign boundaries.

I will never forget surveying the devastation this year in my own constituency of Narowal, where rivers like the Ravi overflowed, submerging vast rice fields and turning livelihoods into ruins. I met farmers who had lost not just their crops but their homes and hopes built over generations. That raw human resilience amid such profound loss drives my commitment to turning vulnerability into strength. The imperative is unmistakable: our perils are intertwined, demanding solutions forged in unity.

We must forge a compact for sustainable development, amplifying cooperation in climate adaptation instead of promoting conflicts in the world.

Cross-border renewable energy trade, resilient agriculture, and knowledge sharing — only through this regional and global renaissance

can South Asia, and indeed the world, evolve from a victim of climate vulnerability into a vanguard of climate leadership.

We convene amid a storm of global upheaval, economic fractures, technological divides, and eroding international trust. The UN Sustainable Development Goals Report 2024 paints a sobering picture: only 17% of targets are on track, while nearly half are moderately or severely off-track, and over one-third have stalled or regressed.

Developing nations now allocate much of their budgets to debt services, often eclipsing investments in health or education. Without a radical overhaul of the global financial architecture, the SDGs will remain a mirage for the Global South. Pakistan amplifies the clarion call for a new development compact — one that guarantees equitable flows of finance, technology, and trade. Climate finance must be reliable, accessible, and just. We cannot mortgage our futures by being forced to choose between repaying debt and uplifting our people. As our Prime Minister Shehbaz Sharif declared, the climate crisis is an economic crisis, and it demands collective responsibility, not collective indifference.

In Pakistan, we have woven the SDGs into our national fabric earlier under Vision 2025 and now through the *URAAN Pakistan* framework, our roadmap to an inclusive, knowledge-driven, and globally competitive USD 1 trillion economy by 2035. This vision rests on five unwavering pillars:

1. **Export-Led Growth: Igniting competitiveness and productivity to fuel prosperity.**
2. **Digital Pakistan: Harnessing digitalisation to revolutionise governance, education, and economic opportunity, transforming our economy into a techno-economy.**
3. **Environmental and Climate Resilience: Infusing sustainability into every policy, particularly focusing on the challenges of water and food security due to climate change.**

4. **Energy and Infrastructure: Championing efficiency, affordability, and a bold green transition.**
5. **Equity and Empowerment: Unleashing human potential and ensuring dignity for all, with a particular focus on youth, women, and marginalised communities.**

These pillars harmonise social equity, economic vitality, and environmental stewardship into a unified national symphony.

At the core lies equity and empowerment, for no nation thrives on inequalities. True progress is gauged not by elite capture, but by universal opportunity. Under this pillar, we advance a comprehensive human development agenda:

Education for All: Education is society's great equaliser. With over 25 million children out of school, this is a crisis of conscience. Our National Education Emergency Initiative aims to expand access, elevate quality, and tailor the curriculum for a digital, green future, affirming every child's right to learn, innovate and aspire irrespective of gender, religion, or needs.

I recall, during my earlier tenure, sending thousands of young scholars abroad under programmes such as the Teachers and Researchers Overseas Scholarship Scheme. One such student, from a remote village in Balochistan, returned with a PhD in engineering and is now leading innovations in renewable energy back home. Stories like his — transforming lives from exclusion to excellence — remind us that education is not an abstract policy. It is the spark that ignites dreams and builds nations.

Health and Well-being: A vibrant populace powers progress. We are amplifying primary health care, maternal nutrition, and disease prevention through health insurance programmes, advancing health coverage for millions. Tackling stunting, which affects nearly 38–40% of our children, is paramount. No young life should be stunted by deprivation.

Population Planning: With our population surpassing 240 million and a growth rate increasing from 2.4% to 2.55%, population planning and family well-being present a significant challenge. In fact, recent census data show that our population growth has accelerated, potentially adding 200 million people over the next couple of decades if trends are not reversed.

Inclusion and Social Protection: Our strategy empowers women through education, rights, and healthcare while supporting population planning programmes, building resilient families, and fostering national inclusion and social protection. The Benazir Income Support Programme has been strengthened, uplifting over nine million families by integrating digital tools, girls' education, and skills training to break the cycle of poverty. This is justice in action — a social covenant embodying the SDGs and the principle of leaving no one behind.

Our reforms extend further, anchored in three game-changing priorities:

1. Data for Development: Through the National Data Exchange Platform and the modernised Pakistan Bureau of Statistics, we are enabling evidence-based decision-making that drives targeted and effective interventions. Data is not mere numbers; it is the democratiser of development, driving progress and climate resilience through the 4RF framework and the National Adaptation Plan.
2. Resilience Across All Sectors: Resilience now permeates every sector. The Living Indus Initiative is restoring ecosystems across 25% of our land, bolstering water security. Renewable energy now comprises about 12% of our energy mix, surging towards 30% by 2030.
3. Fiscal and Institutional Reforms: The National Fiscal Pact has strengthened revenue generation and institutional efficiency. The FBR's tax-to-GDP ratio has risen to over 10.5%, with power recoveries up 15%, freeing resources for development, social

programmes, and investments in human capital and sustainable development.

Sustainable development defies silos. It thrives on global and regional synergy, rooted in solidarity, equity, and mutual accountability.

Let South Asia and the Global South emerge as the laboratory of collaboration — sharing disaster data, trading clean energy, co-investing in green infrastructure and agriculture, promoting academic research, and fostering youth-led innovation for peace. Forums like the South and Southwest Asia Regional Forum are our catalysts to propel these alliances. Together, we can redefine the Global South as a paragon of collective triumph over adversity.

Sustainable development is a generational relay where each of us must carry the baton forward with courage and conviction.

Data is the compass of good governance and illuminates the path of sustainable development.

Innovation is the engine of transformation.

Equity is the foundation of justice.

Partnership and collaboration are the bridge between vision and reality.

In this era of geopolitical conflicts, unity for sustainable development is our ultimate resilience. May this Conference ignite a global renaissance, transmuting chaos into a blueprint of shared destiny of sustainable peace and prosperity.

Policy Priorities for a Resilient and Inclusive Pakistan: Lessons from South Asia*

*Dr Rabia Manzoor and Waqar Ul Hassan***

Abstract

This study aims to identify key policy areas for building inclusive, resilient, and sustainable development pathways in Pakistan within the 5Es framework of URAAN Pakistan. This policy brief draws on regional experiences from South Asian countries to identify five key reform areas, each aligned with one of the 5Es of the national framework. Within this framework, the five proposed policy priorities focus on advancing women-led circular economy initiatives in the textile sector, upskilling and reskilling of human resources for the digital economy, strengthening gender-responsive climate leadership, integrating mental health into community resilience efforts and promoting Extended Producer Responsibility (EPR) for plastic waste management. The analysis shows that inclusive governance, Public-Private Partnerships (PPPs) and targeted reforms can strengthen social inclusion, increase women's participation and support economic growth and environmental sustainability.

***Keywords*:** Extended Producer Responsibility, URAAN, Circular Economy, Climate Leadership, Economic Growth.

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* This paper has been approved as a *Policy Brief / Policy Paper* by the referee.

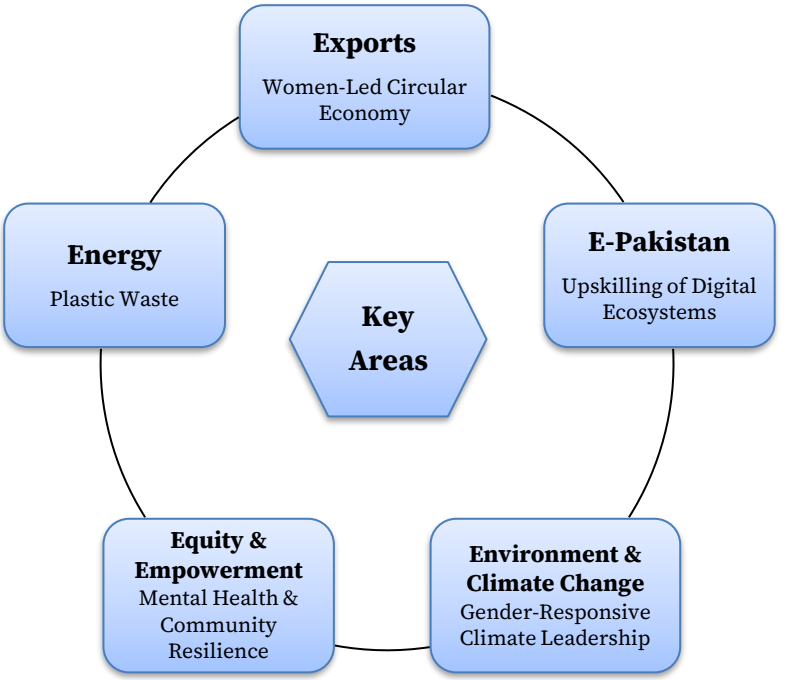
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Introduction

Pakistan continues to face interconnected economic, social and environmental challenges that threaten inclusive and sustainable development. Climate vulnerability, weak environmental governance, gender disparities in labour force participation, widening skill gaps and growing mental health concerns are placing pressure on the country's economic growth and social resilience (Zhao and Chen 2026; Mansab et al., 2026; World Bank 2023). These challenges are further intensified by structural weaknesses such as unemployment, low productivity, and poor waste management, which continue to limit Pakistan's development potential (Finance Division 2025). Evidence from developing economies shows that resilient growth requires integrated policies that strengthen institutions, build human capital, promote gender inclusion, and support environmental sustainability (OECD 2022; Kirchherr et al., 2017). To respond to these structural challenges, the Government of Pakistan has introduced the URAAN Pakistan framework, organised around five strategic pillars: Export, Environment and Climate Change, Equity and Empowerment, Energy, and E-Pakistan (5Es). However, turning these priorities into practical outcomes requires evidence-based reforms that reflect Pakistan's local context and draw lessons from regional experiences.

Therefore, this policy brief identifies five high-impact policy priorities aligned with the URAAN framework: (i) women-led circular economy initiatives in the textile sector, (ii) upskilling and reskilling human resources for the digital economy, (iii) gender-responsive climate leadership, (iv) mental health and community resilience, and (v) Extended Producer Responsibility (EPR) for plastic waste management as shown in Figure I. Based on successful examples from South Asia, such as Bangladesh, India, Nepal, and Sri Lanka, the study proposes practical policy reforms to strengthen institutional resilience, advance social inclusion, improve environmental sustainability, and support long-term economic growth and competitiveness (UNDP Nepal 2023; OECD 2022; ILO 2024).

Figure I: Key Policy Priorities for a Resilient and Inclusive Pakistan



***Source*:** Authors' illustration based on the URAAN Pakistan Framework (MoPD&SI 2024).

Policy Priorities and Sectoral Analysis: Key Insights from South Asia

This section presents five high-impact policy priorities that can help accelerate Pakistan's progress towards resilient, inclusive and sustainable development.

Policy Priority 1: Women-Led Circular Economy in Textiles

Situation Analysis and Problem Statement

Pakistan's textile industry is the country's largest manufacturing sector, contributing approximately 8–9% to GDP, generating nearly 60% of national exports, and employing roughly 40% of the total labour force (Ministry of Finance 2024; SBP 2024). Despite its economic importance, the sector generates substantial waste throughout the production, distribution and consumption cycle.

In Pakistan, textile waste consists of both i) pre-consumer waste such as fabric offcuts, cutting scraps, mill waste, and overproduction; and ii) post-consumer waste including discarded garments and used clothing (see Table I for further details). Due to weak collection systems, inadequate recycling infrastructure and underdeveloped circular manufacturing models, much of this waste remains unrecycled. It is often exported at low value or disposed of through open burning and landfilling (UNEP 2023; World Bank 2022). This reflects the sector's continued dependence on a linear 'take–make–dispose' model, which results in material loss, increased carbon emissions and environmental degradation. At the same time, women's participation in Pakistan's labour market remains low compared to other South Asian countries. Women mostly work in informal, home-based textile-related activities including stitching, embroidery, sorting, and recycling. However, these jobs are typically low-paid, unstable, and lack social security, while women also face limited access to finance, skills training, and formal markets (Dharejo et al., 2025; ILO 2021). As a result, Pakistan faces a dual challenge: the textile sector continues to generate environmental inefficiencies, while women remain concentrated in informal and low-value parts of the textile economy.

Table I: Types of Textile Waste Streams in Pakistan

Waste Category	Type	Sub-Type	Quantity (Ktons)
Domestic Textile Waste	Pre-Consumer Textile Waste	Total	887
		Spinning Waste	402
		Ready-made Garment Waste	202
		Mill Waste	180
		Over Production	103
	Post-Consumer Textile Waste	Total discarded garment	270
Imported Textile Waste	Second-hand clothing	Total	809

***Source*:** Authors' calculations based on ITC data.

Policy Landscape and Gaps in Pakistan

Pakistan has introduced several policy frameworks such as Pakistan Vision 2025, the National Climate Change Policy (2021), and its Nationally Determined Contributions (NDCs) to advance green growth and sustainability. These frameworks recognise the importance of resource efficiency, climatic resilience, and sustainable industrial development (MoCC 2021a). However, their implementation in the textile sector remains weak. Policy and institutional gaps persist particularly in the enforcement of environmental regulations, investment in recycling infrastructure and development of waste recovery systems. As a result, Pakistan continues to lack an effective system for textile waste collection, sorting, and recycling, which leads to significant material loss (UNEP 2023; World Bank 2022). Women working in the informal textile-related sector continue to face significant structural challenges such as limited access to formal employment, finance, skills development, and market linkages (ILO

2021). At the same time, the absence of a functional Extended Producer Responsibility (EPR) framework leaves post-consumer textile waste largely unmanaged. Without clear producer responsibility, there are limited incentives for recycling, reuse, and circular production in the textile sector.

Regional Lessons from South Asia

South Asian countries offer important lessons on how circular economy models in the textile and waste sectors can promote industrial competitiveness, women's economic empowerment and environmental sustainability at the same time. Bangladesh is particularly relevant for Pakistan because both countries have export-oriented textile industries, a large informal workforce, and labour-intensive manufacturing systems. Historically, Bangladesh's textile and garment industry depended heavily on informal textile waste networks characterised by low productivity, weak coordination, and poor working conditions. Currently, Bangladesh has introduced circular textile initiatives supported by local community enterprises, development agencies and international brands. These initiatives mainly focus on textile waste recovery, recycling, reuse, and enhancing sustainability across the garment value chain.

Another important example is the collaboration between global apparel brands and local recycling companies to recover cotton waste from garment factories and convert it into recycled yarn and fabrics. According to SWITCH to Circular Economy Value Chains (2025), pilot circular economy initiatives increased Bangladesh's annual textile waste recovery from approximately 129 tonnes to more than 16,000 tonnes. Women have played a crucial role in these activities, particularly in sorting, recycling, repairing, and creating value-added goods like bags, garments, and household items through small-scale and community-led enterprises. Women-led social enterprises are also transforming discarded textile materials into export-quality products for sustainable fashion markets. These initiatives demonstrate how

formalisation, technical training, and better market access can turn low-value informal work into profitable green enterprises. Another example comes from India's women-led self-help groups (SHGs) and recycling firms. In states such as Tamil Nadu and Gujarat, women-led firms have been involved in textile waste collecting, fabric reuse and handicraft production. The Self-Employed Women's Association (SEWA) has also supported women workers through skills training, microfinance, and market access, enabling many informal workers to move into more organised and higher-value economic activities. India's growing sustainable fashion sector has further encouraged the reuse of textile materials and promoted circular production practices among small enterprises.

Expected Impact and Policy Payoff

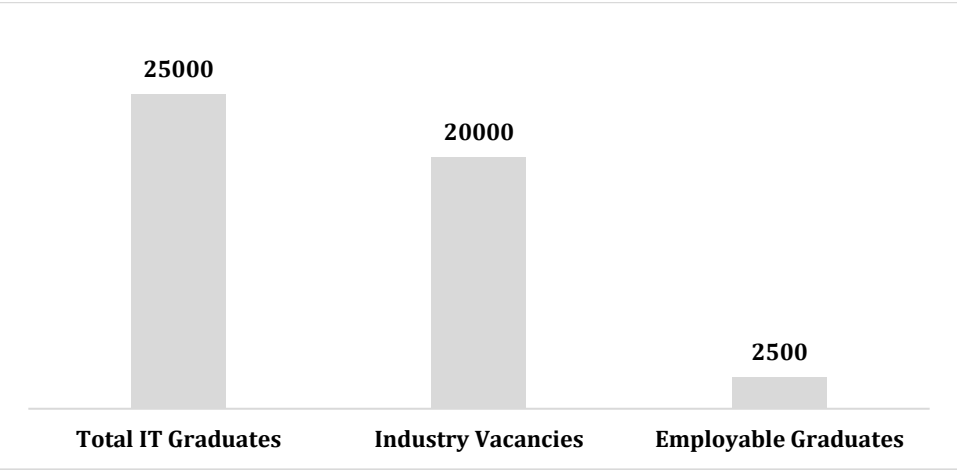
A women-led circular economy strategy in the textile sector can generate significant economic, social, and environmental benefits. First, it can promote women's economic empowerment by helping women move from informal and low-paid work to more formal and productive employment. Improved access to finance, skills and markets can increase women's productivity and earnings (ILO 2021). Second, it can strengthen Pakistan's export competitiveness by promoting recycled and sustainable textile products, helping the country access global markets for ethical and circular fashion. Third, it can reduce environmental degradation by lowering textile waste, improving recycling rates, and reducing pollution and greenhouse gas emissions (UNEP 2023). Finally, it can support inclusive and resilient industrial growth by generating green jobs and strengthening women-led SMEs in the textile value chain (Kirchherr et al., 2017).

Policy Priority 2: Upskilling and Reskilling of Human Resources

Situation Analysis and Problem Statement

The demand for skills is changing rapidly in the labour market. In the era of AI and digital transformation, new skills are emerging faster than the existing academic system can train, while many traditional skills are becoming less relevant. In Pakistan, this skills gap is made worse by demographic pressure and rapid technological change. Nearly 60% of the population is under the age of 25, while around 34% of young people, approximately 15 million, are not in education, employment or training. At the same time, Pakistan needs to create around 25–30 million jobs by 2030 (Maken 2024; ILO 2024). This shows the urgent need to develop a skilled and job-ready workforce. Although Pakistan has around 262 universities producing approximately half a million graduates each year, employability remains a major concern. Around 50,000 students graduate in Computer Science, Software Engineering, or related fields, yet only about 25,000 IT graduates enter the workforce each year. More importantly, only around 10% of IT graduates are considered industry-ready, while over 30% of higher education graduates remain unemployed (Sajjad and Gardezi 2022; British Council, GIZ and EU 2024; Ahmed and Palma 2025). See Figure II for details.

Figure II: IT Labour Market Gap in Pakistan



***Source*:** Sajjad and Gardezi (2022).

The gap between academic training and labour market demand is further widened by outdated curricula and weak industry linkages. As a result, many graduates enter an economy where over 80% of the workforce is employed in the informal sector (Ali et al., 2024). Findings from a survey of 800 university students showed that 44% of graduates had limited knowledge of AI, highlighting critical gaps in AI awareness, practical competencies and career guidance (Ishaq and Asghar 2025). Gender disparities further deepen this challenge, as women account for only 16% of Pakistan's IT workforce. This underrepresentation reflects persistent gender, access, and opportunity barriers in the digital economy (British Council, GIZ and EU 2024). See Table II for details.

Table II: Labour Market Outcomes and Skills Mismatch in Pakistan's Youth and IT Workforce

Indicators	Pakistan Status
IT graduates employable	~10%
Graduate unemployment	>30%
Youth unemployment	~11%
Informal employment	>80%
Employers satisfied with graduates	~20%
Students aware of industry needs	<10%
Women in IT workforce	~16%

***Source*:** Compiled by authors using British Council, GIZ and EU (2024), Ahmed and Palma (2025), and Sajjad and Gardezi (2022).

Policy Landscape and Gaps in Pakistan

Pakistan has initiated several digital upskilling programmes to improve workforce readiness. For example, DigiSkills is a government-led initiative implemented by the Virtual University. Since its launch in 2018, the programme has delivered more than 3 million trainings, including over 800,000 for women, and contributed to Pakistan becoming the fourth-largest provider of online freelancers globally. In recent years, freelancer earnings have increased by around 47.4%, showing the strong economic potential of digital skills (DigiSkills.pk 2025).

Provincial governments also introduced digital upskilling programmes to strengthen youth employability. In Punjab, the Punjab Skills Development Fund (PSDF) trains over 80,000 youth annually, while KP Merged Areas Digital Connect programme has trained 7,000 youth. Sindh has introduced initiatives such as Digital and Financial Literacy Training (DFLT) and Sindh Skills Development Programme (SSDP).

Similarly, the government of Balochistan is expanding youth IT skills initiatives including the Digital Transformation Awareness Network (DTAN) which has trained over 6,500 young people along with the DigiBizz Freelancing Program and DigiSkills Training Programme for South Balochistan (ADB 2025).

Despite these efforts, existing initiatives remain insufficient to meet the needs of Pakistan's growing youth population. Many youth skills development programmes are still not well aligned with labour market needs. They often lack scale, continuity, and strong links with employment systems. At the same time, the traditional academic system is not fully preparing graduates for a technology-driven labour market due to weak industry-academia linkages, outdated curricula, and underdeveloped institutional training systems.

Regional Lessons from South Asia

Regional policies can provide a useful way forward for Pakistan. India, with similar demographic pressure, offers a scalable one-window model through the Skill India Digital Hub (SIDH). SIDH integrates training, certification, and employment services within a unified digital platform. It operates as a one-stop ecosystem that connects users with industry-relevant courses and includes built-in skill assessment tools. This flagship initiative is strengthening the transition from skills acquisition to labour market employment opportunities by providing personalised training through AI tools and job matching through an integrated national employment portal.

SIDH mainly serves as a central hub of Industry 4.0 skills enhancement with a model based on digitally verified credentials (DVCs). The novelty of DVCs enhances the trust and portability of the Hub. It encourages lifelong learning by enabling continuous upskilling and reskilling of human resources across career stages (Ministry of Skill Development and Entrepreneurship [MSDE] 2026). Moreover, the Hub improves inclusivity through mobile-first access, multilingual support, and integration with labour force databases. A skills-development initiative

with such features demonstrates how system integration with digital infrastructure can improve the efficiency and effectiveness of national skill development strategies.

Expected Impact and Policy Payoff

Pakistan can draw important lessons from a centralised platform that provides a unified ecosystem linking skills development with employment opportunities. A national strategy for upskilling and reskilling human resources, developed in coordination with provincial governments, is needed. Skills development initiatives targeting unemployed youth and graduates can improve labour market outcomes and strengthen Pakistan's regional competitiveness. Stronger industry-academia linkages, combined with aligned education pathways, personalised training modules, verified credentials and industry requirements, can further enhance graduate employability.

Upskilling and reskilling of human resources in digital skills, particularly AI, automation, data science, and freelancing, can increase Pakistan's IT exports, which already exceed USD 3.2 billion and have strong growth potential. Moreover, Pakistan's freelance economy is projected to grow from USD 350 million to USD 1.6 billion by 2030, highlighting the potential of digital platforms for foreign exchange earnings and job creation (British Council, GIZ and EU 2024).

Investment in young people, particularly young women, will support inclusive growth by increasing labour force participation and competitiveness. Aligning these efforts with the E-Pakistan pillar of the URAAN Pakistan framework will provide graduates with technology-driven job opportunities.

Policy Priority 3: Gender-Responsive Climate Leadership

Situation Analysis and Problem Statement

Pakistan is among the most climate-vulnerable countries globally, facing intensifying risks from floods, heatwaves, droughts, and sea-level rise, while recent disasters have affected millions and caused substantial economic losses. The economic cost of climate change is estimated at approximately USD 38 billion annually, posing a serious threat to development gains and projected to reach USD 1.2 trillion by 2050 and almost 10% of GDP by the end of the century (WB and ADB 2021; Burns et al., 2021; MoCC&EC 2024).

Climate-induced impacts are not gender-neutral. Women share the burden of climate stress, and it multiplies with their preexisting conditions of unequal access to resources, information, and services. These risks collectively pose unique threats to their health and well-being, livelihoods and safety. Globally, climate change could push an additional 158 million women and girls into extreme poverty by 2050, highlighting the scale of gendered impacts (UNDP 2026).

Women remain underrepresented in climate leadership, comprising 24% of heads of delegation at COP29. Only 25 out of 64 countries have established coordination mechanisms to ensure gender equality in climate policymaking (UN Women and Kaschak Institute 2025). This reflects a persistent gap between their representation in climate-responsive leadership and vulnerability.

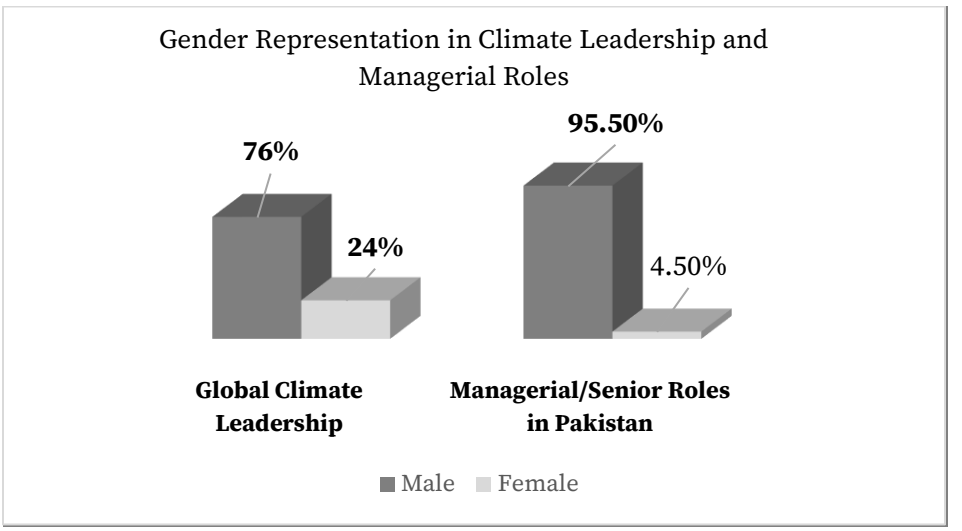
Policy Landscape and Gaps in Pakistan

Pakistan is a signatory to several international commitments, including the Paris Agreement, the Climate Change Gender Action Plan, The UNFCCC (2023) Gender Action Plan (COP27) and the National Climate Change Policy (MoCC 2021a). These commitments or plans explicitly recognise the need for gender-responsive approaches. Pakistan has

also established a formal policy framework for climate action. However, implementation remains limited, and women continue to face structural barriers to participation in climate governance. Women's limited access to leadership positions in governing bodies is largely due to socio-cultural norms.

Evidence shows that women's participation in policy formulation is often symbolic rather than substantive (UN Women and Kaschak Institute 2025). This reflects broader gaps in gender-responsive leadership. In Pakistan, women make up roughly 49% of the population, but hold only 4.5% of senior, managerial, and legislative positions. Limited gender-disaggregated data and weak representation in climate decision-making further constrain women's effective participation in climate governance (UNDP 2025). As a result, gender-responsive climate leadership in Pakistan remains underdeveloped and fragmented as shown in Figure III.

Figure III: Gender Disparities in Climate and Managerial Leadership



***Source*:** Authors' calculations based on UN Women data.

Regional Lessons from South Asia

Neighbouring South Asian countries offer practical and scalable lessons for strengthening gender-responsive climate leadership. The Bangladesh Climate Change Gender Action Plan provides a robust model for integrating gender into climate policy and leadership. The plan defines clear priority areas, measurable indicators, institutional responsibilities and a comprehensive framework for gender-responsive climate action (BCCT and UN Women Bangladesh 2024). Its implementation also focuses on gender-responsive climate training and inclusive adaptation planning, enabling women to actively contribute to resilience-building. Women's leadership is treated as a key policy priority, supported by targeted capacity-building and community-level engagement.

In contrast, evidence from Nepal highlights that while many policies are gender-aware, they often fail to address underlying structural inequalities, which limits their ability to achieve gender-transformative outcomes (Parajuli and Neupane 2025). Nepal's experience shows that policy recognition alone is not enough and highlights the need to move beyond commitments. For effective gender-responsive climate leadership, Pakistan needs meaningful women's participation, institutionalisation, and targeted capacity building.

Expected Impact and Policy Payoff

By drawing lessons from regional climate mitigation practices, Pakistan can identify and remove bottlenecks in existing approaches to enable the effective implementation of gender-supportive policy frameworks.

UNDP (2026) reports that higher women's participation in decision-making can improve environmental governance, strengthen community resilience, and support more effective, context-specific adaptation strategies. Empowering women through institutional

support, access to resources, and targeted training can also improve adaptive capacity at the household and community levels, while reducing vulnerability to climate-induced shocks.

Additionally, equitable resource distribution and inclusive governance frameworks that integrate women's knowledge and leadership can lead to sustainable climate outcomes. These efforts should be aligned with Pakistan's broader development agenda under the URAAN framework, especially with the second E, Environment and Climate Change.

Policy Priority 4: Mental Health and Community Resilience

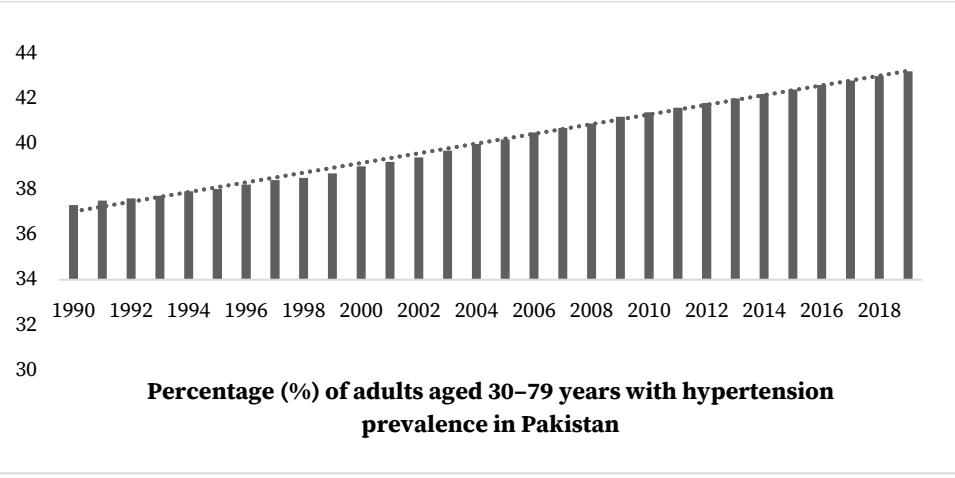
Situation Analysis and Problem Statement

Mental health remains largely absent from Pakistan's primary healthcare system and is still not fully recognised as a major public health priority. Evidence shows that around 10–15% of the population suffers from mental health disorders, while some studies suggest that nearly one-third of adults experience common mental health conditions, with women and adolescents disproportionately affected (WHO 2025; Khan and Niaz 2025). According to WHO, mental health accounts for around 4% of Pakistan's total disease burden, with a higher burden among women. Despite this, the country has fewer than 500 psychiatrists for its entire population, and mental health receives less than 1% of the national health budget. This reflects serious structural and governance neglect in Pakistan's mental health system (Alvi et al., 2023; Khan and Niaz 2025).

Climate-related disasters further increase Pakistan's mental and physical health burden. During the 2022 floods, estimates showed that one in five people in affected areas required mental health support, while the prevalence of Post-Traumatic Stress Disorder (PTSD) among disaster-affected populations ranged from 15% to 30% (MoPD&SI 2022; WHO 2022; Yousuf et al., 2023). The loss of homes and livelihoods,

prolonged displacement, and disruption of family and community networks can lead to stress, anxiety, uncertainty, and social isolation. Long-term stress and weak community support may also worsen hypertension, highlighting the link between mental and physical health. Figure IV presents the long-term trend in hypertension prevalence in Pakistan using WHO data. At the same time, more than 70% of health facilities lack emergency preparedness capacity due to weak infrastructure, which limits response systems. Despite this growing need, mental health remains largely absent from Disaster Risk Reduction (DRR) frameworks, representing a critical policy gap.

Figure IV: Hypertension Prevalence in Pakistan (1990–2019)



***Source*:** Authors' calculation based on WHO data.

Policy Landscape and Gaps in Pakistan

Pakistan has introduced several initiatives for strengthening primary healthcare and disaster response systems such as the Health National Adaptation Plan. However, mental health remains missing or minimal within these plans. Currently, Pakistan has a fragmented, reactive, and urban-centred response system. DRR frameworks have limited

outreach in rural and disaster-prone areas. The first line of support often operates without systematic training in mental healthcare.

Research highlights that family support and informal networks are the main community-based coping mechanisms. Over 40% of affected individuals rely on these community mechanisms for psychological resilience (Waqar et al., 2025). However, reliance on informal systems alone is insufficient due to stigma, lack of awareness, and information asymmetry (PILL 2024). While task-shifting approaches have been identified as scalable solutions, their implementation remains limited due to governance fragmentation, weak financing, and lack of institutional coordination. As summarised in Table III, Pakistan's mental health system is characterised by severe capacity constraints across infrastructure and workforce.

Table III: Status of Mental Health Infrastructure and Service Delivery in Pakistan

Domain	Current Status
Burden of Mental Illness	10–16% population with depression/anxiety; 1–2% severe disorders
Mental Health Infrastructure	11 psychiatric hospitals; ~2.1 beds per 100,000
Outpatient Services	~3,729 outpatient facilities; majority urban-based
Community-Based Care	~624 community-based facilities
Primary Healthcare Integration	Mental health included in EPHS but poorly operationalised
Human Resources	~500 psychiatrists (~0.24 per 100,000); majority urban
Psychologists & Allied Staff	~3000 psychologists but only ~72% practising
Treatment Coverage	~90% treatment gap

***Source*:** Dayani et al., (2024).

Regional Lessons from South Asia

Regional countries offer applicable frameworks on integrating mental health into national health priorities and disaster response systems. After the devastating 2015 earthquake, Nepal assessed the need for mental health interventions. Nepal incorporated a mental health and psychosocial support (MHPSS) model into disaster recovery by focusing on community recovery programmes. Under the MHPSS model, community frontline workers were trained and integrated into primary healthcare infrastructure. These efforts significantly enhanced recovery outcomes (Chase et al., 2018).

Bangladesh has frequently suffered from devastating cyclones. In cyclone-affected areas, NGO-led interventions have improved access to care for vulnerable populations by integrating community-based counselling and outreach services (Rahman et al., 2024). Similarly, India has embedded psychological care within primary healthcare systems at the district level by expanding mental health services through targeted interventions (Raja et al., 2014). All these mental health integration models have common features like community engagement, institutional integration and use of task-shifting. All models equip the workforce and enable scalable context-specific responses in low-resource settings.

Expected Impact and Policy Payoff

Pakistan needs to integrate mental health into primary healthcare and DRR systems to improve social resilience and disaster response outcomes. Better access to mental health services can support labour productivity, faster post-disaster recovery, and stronger community cohesion. Community-based delivery models, particularly through Lady Health Workers and women-led local networks, can expand coverage, provide culturally appropriate care, and reduce stigma and information gaps.

Moreover, strengthening resilience through mental health interventions generates long-term benefits, as psychological well-being is closely linked with adaptive capacity. Aligning mental health policy with the URAAN Pakistan sustainable development agenda, particularly under the Equity and Empowerment pillar, can support inclusive growth by protecting vulnerable populations, strengthening human capital, and building a more climate-resilient healthcare system.

Policy Priority 5: Extended Producer Responsibility (EPR) for Plastics

Situation Analysis and Problem Statement

Pakistan produces roughly 3.9 million tonnes of plastic waste annually, but only a small portion is formally collected, recycled and reused. A significant amount is instead burned in the open or ends up in open dumps, drains, and rivers (World Bank 2022; UNEP 2023). Poor handling of plastic waste increases risks to human health and environmental quality, especially in densely populated cities. Studies show that South Asia is among the regions most affected by unmanaged plastic leakage, mainly due to rapid urban expansion and weak municipal waste management systems (Jambeck et al., 2015; UNEP 2023).

In Pakistan, producers are not legally responsible for the post-consumption phase of plastic products due to the absence of a comprehensive Extended Producer Responsibility (EPR) framework. As a result, consumers and communities bear the environmental costs of plastic use rather than producers, creating a clear market failure (OECD 2016; UNEP 2023). Waste management responsibilities therefore fall heavily on local governments and informal waste pickers, who often work in hazardous conditions with limited institutional support (ILO 2021).

Additionally, the absence of producer accountability reduces incentives for eco-design, material reduction, and investment in recycling systems. Global research highlights that countries without EPR systems have lower recycling rates and higher levels of plastic leakage, while EPR-based systems can improve collection efficiency, enhance recycling rates, and promote circular product design (OECD 2016; Kirchherr et al., 2017; UNEP 2023).

Policy Landscape and Gaps in Pakistan

Pakistan has implemented several environmental and climate change policy frameworks such as the Pakistan Environmental Protection Act (PEPA 1997), the National Climate Change Policy (MoCC 2021a), and provincial solid waste management regulations, which indirectly address plastic waste. Although these frameworks focus on sustainable waste management and pollution control, their implementation and enforcement remain weak (MoCC 2021b). Municipal authorities are mainly responsible for managing plastic waste at the operational level, but they face serious capacity constraints, including limited funding, weak infrastructure, and lack of technical expertise. As a result, waste collection and segregation systems remain fragmented, and a large share of plastic waste ends up in rivers, drainage systems, and open spaces.

Despite some provincial initiatives, such as Punjab's 2023 EPR regulations for plastics, Pakistan still lacks a national EPR framework that legally requires manufacturers, importers, and brands to take responsibility for post-consumer plastic waste (Government of Punjab 2023; Naeem et al., 2025). In the absence of such a framework, municipalities continue to bear high waste management costs, ranging from PKR 7,000 to PKR 23,000 per metric tonne, without matching investment in recycling infrastructure.

Pakistan's recycling system also suffers from weak data collection, monitoring, and reporting. The Global Recycling League Table rates Pakistan's municipal recycling statistics as 'very poor,' while Yale

University ranked Pakistan 113th out of 180 countries for recycling performance in 2022, reflecting limited progress towards a sustainable recycling system (Yale University 2022). Several studies also show that Pakistan's recycling sector remains largely informal and unregulated, reducing the efficiency and quality of material recovery and exposing workers to unsafe conditions (Naeem et al., 2025; Hashmi et al., 2023; Nawaz et al., 2021).

Regional Lessons from South Asia

South Asian economies offer strong examples for reducing plastic waste through EPR and circular economy reforms. India provides one of the most advanced regional examples. It introduced Plastic Waste Management Rules (2016, amended in 2022), which formally establish EPR obligations for producers, importers, and brand owners (MoEFCC 2022).

Under this framework, companies are required to collect and recycle a committed share of the plastic they put on the market. A centralised digital EPR registry has also been implemented as part of recent reforms to enhance compliance and monitoring. Evidence indicates that EPR regulation has improved investment in recycling systems and enhanced corporate accountability, despite ongoing implementation challenges (OECD 2022; Gupta and Dash 2023).

Sri Lanka has also taken some steps towards strengthening plastic governance through bans on specific single-use plastics and emerging EPR-like initiatives linked to beverage and packaging waste. The country has also promoted partnerships between private firms and municipal authorities for collection and recycling, particularly in urban areas. Studies indicate that Sri Lanka's approach demonstrates how enforcement of EPR initiatives can reduce plastic leakage while gradually increasing institutional capacity (Dharmasiri 2019).

Expected Impact and Policy Payoff

In Pakistan, implementing an EPR system can generate significant environmental, economic, and institutional benefits by shifting the burden of waste management from public authorities to producers. First, EPR would reduce plastic pollution by improving waste collection and recycling. By holding producers legally and financially responsible for post-consumer waste, it generates incentives to reduce excess packaging, move towards recyclable materials, and invest in better product design. International evidence shows that countries with well-implemented EPR systems achieve higher recycling rates and lower plastic leakage into the environment (OECD 2016; UNEP 2023). Second, EPR can ease the burden on local governments and improve fiscal efficiency. Pakistani municipalities are currently responsible for waste management despite limited resources and capacity. Shifting part of this responsibility to producers can reduce financial pressure on local authorities (World Bank 2022). Third, EPR can help formalise the recycling sector by integrating informal waste pickers into structured collection and sorting systems. This can improve working conditions, income stability, and productivity in the recycling value chain (Gutberlet and Carenzo 2020). Fourth, EPR can promote green investment and innovation in circular product design, sustainable packaging, and recycling technologies. It can also support industrial development, expand markets for recycled plastics, and improve competitiveness in environmentally conscious export markets. Finally, stronger plastic governance can generate wider environmental and public health benefits, including reduced air pollution from plastic burning, improved urban sanitation, and lower risks of water contamination.

Conclusion

Pakistan's development challenges are increasingly interconnected and require evidence-based policy reforms that link economic growth with adaptive capacity, institutional resilience, social inclusion and environmental sustainability. In line with the 5Es framework of URAAN Pakistan, this brief identifies five practical and scalable policy areas: women-led circular economy initiatives in the textiles sector, upskilling and reskilling of human resources, gender-responsive climate leadership, mental health and community resilience, and EPR for plastics.

Evidence from South Asian countries shows that targeted reforms can improve both economic growth and resilience when supported by strong institutions, inclusive governance, community mechanisms and PPPs. Pakistan can draw important policy lessons from Bangladesh's circular textile initiatives and gender-responsive climate governance, India's EPR and digital skills systems, and Nepal's community-based mental health approaches. These regional experiences show that context-specific and scalable reforms can help Pakistan move towards a more inclusive, resilient, and sustainable development pathway.

To advance these priorities, Pakistan should concentrate on strengthening institutional coordination, improving implementation and adaptive capacity, increasing investment in green and digital infrastructure, and integrating vulnerable groups, especially women, youth and informal workers, into formal economic systems. Greater emphasis should be placed on local capacity-building, evidence-based policymaking, reliable data systems, PPPs, and long-term policy continuity.

These reforms also require clear accountability mechanisms, sustainable financing, and stronger coordination between federal, provincial, and local institutions. Collectively, they can help Pakistan address structural challenges while creating new opportunities for inclusive growth, green jobs, digital competitiveness, and climate

resilience. Aligning these efforts with each key policy area under the URAAN Pakistan national framework can support long-term competitiveness and ensure that Pakistan's development pathway is both environmentally sustainable and socially inclusive.

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Confronting Bangladesh's Triple Burden of Malnutrition: Fiscal and Trade Policy Gaps and Reform Priorities*

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Abstract

Bangladesh is navigating a triple burden of malnutrition in which undernutrition, persistent micronutrient deficiencies and a rising prevalence of obesity coexist. Progress in food security has not fully translated into nutritional security. While some deficiencies among children have declined, iron deficiency has increased, and anaemia among women remains high. These challenges are driven by underlying structural factors: one of the highest population densities in the world, declining agricultural land, increasing levels of inequality, and persistent inflation, which reduces the purchasing power of the population. Dietary

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patterns reveal a rural–urban divide: rural diets consist mainly of rice, whereas urban diets contain higher proportions of meat and processed foods. The high import tariffs on healthy fruits also contribute to the lack of access to nutritious food. There are a number of multisectoral strategies that Bangladesh has adopted but in most cases, progress is slow due to weak coordination, limited budgets, and inconsistent political commitment. Guided by the current state of the food and nutrition system and the constraints faced by stakeholders, this study provides evidence-based recommendations to strengthen national policies to bring about sustainable 'nutrition security' for all citizens.

***Keywords*:** Food Policy, Food Security, Triple Burden of Malnutrition, Nutrition Security, Bangladesh.

Introduction

Bangladesh is facing a complex nutrition challenge driven by undernutrition, widespread micronutrient deficiencies, and increasing obesity, a phenomenon widely recognised as the 'triple burden of malnutrition' (Government of Bangladesh & WFP 2019). Despite gains in agricultural production, food availability and economic growth, nutrition security remains uneven, particularly among children, women and marginalised groups. The government is therefore shifting its focus from food availability towards better nutrition outcomes (MoFood (Bangladesh) 2021).

The National Micronutrient Survey (NMS) 2019–20 found that nearly half of children had Vitamin A deficiency (43.7% mild and 7.2% moderate), down from 77% in 2011–12. Vitamin D deficiency declined from 39.6% to 21.9%, and Zinc deficiency from 44.6% to 31.0%. However, iron deficiency increased from 10.7% to 15.1%. Among non-pregnant, non-lactating women, NMS 2019–20 recorded declines in deficiencies of Vitamin A (39.7% to 7.5%), Vitamin B12 (20.2% to 1.8%), zinc (57.3% to 43.4%), iodine (42.1% to 29.6%), and, more modestly, Vitamin D (71.5% to 69.9%). In contrast, folate deficiency rose from 9.1% to 29.0%, iron deficiency increased to 14.1%, and anaemia

reached 28.9% (Naheed 2022). Other groups, such as school-aged children, pregnant mothers, adolescents (especially girls), and the elderly, often face nutritional gaps, but the absence of nationwide data limits a full assessment of their actual status.

Bangladesh's diet has traditionally centred on rice, complemented by pulses, potatoes, fish, meat, vegetables, leafy greens and a variety of seasonal and year-round fruits. Livestock production also contributes to nutrition by supplying milk and eggs as important sources of animal protein. Despite this, socioeconomic inequality and a lack of purchasing power cause considerable variation in dietary habits, leading to an unequal ability to consume fish, meat, fruits, or milk, thereby causing imbalances in diet (Bhattacharjee et al., 2007). Apart from dietary habits, food production practices, and socioeconomic inequality, several other factors are also influencing nutrition in the country. These factors include a growing demand for food from an expanding population, a reduction in the land allotted to agriculture, an increase in food inflation, non-food inflation, changing dietary preferences in urban regions, and high import taxes.

In light of the present scenario prevailing in the food and nutrition ecosystem and the challenges experienced by different stakeholders, this study aims to give evidence-based recommendations to improve national policies to ensure 'nutrition security' for all Bangladeshi citizens and provide valuable lessons for other South Asian countries. Nutrition security goes beyond merely having enough food; it is achieved when a consistent diet, that meets nutritional needs for a healthy and active life, is combined with access to appropriate caregiving, hygienic environments, and adequate healthcare services to ensure optimal nutritional status (Ghattas 2014).

Methodology

The study adopted a structured approach to assess Bangladesh's food and nutrition landscape, review existing national policies, identify key gaps, and propose actionable recommendations to address the triple

burden of malnutrition. It combined a comprehensive desk review with analysis of multiple secondary datasets and sources to examine current challenges across the country's food and nutrition system. A major component was an extensive review of all food- and nutrition-related policies and action plans of Bangladesh between 1971 and 2025, categorised by phase, assessing how each addressed nutrition and where they fell short. Additional policies such as the Good Agricultural Practices Policy 2020 (Ministry of Agriculture 2020), Salt Iodisation Act 2021 (MoInd 2021), National Agriculture Policy 2018 (Ministry of Agriculture 2018), Edible Oil Fortification Act 2013 and Food Safety Act 2013 (MoFood (Bangladesh) 2013) were also examined.

The secondary analysis drew on national and international data on consumption patterns, nutrient gaps, agricultural production and macroeconomic indicators. Sources included surveys and datasets from the Bangladesh Bureau of Statistics (BBS), World Bank, World Trade Organization (WTO), and Food and Agriculture Organization of the United Nations (FAO). The study then undertook stakeholder mapping, after which the findings were consolidated to inform policy actions and support evidence-based policy formulation.

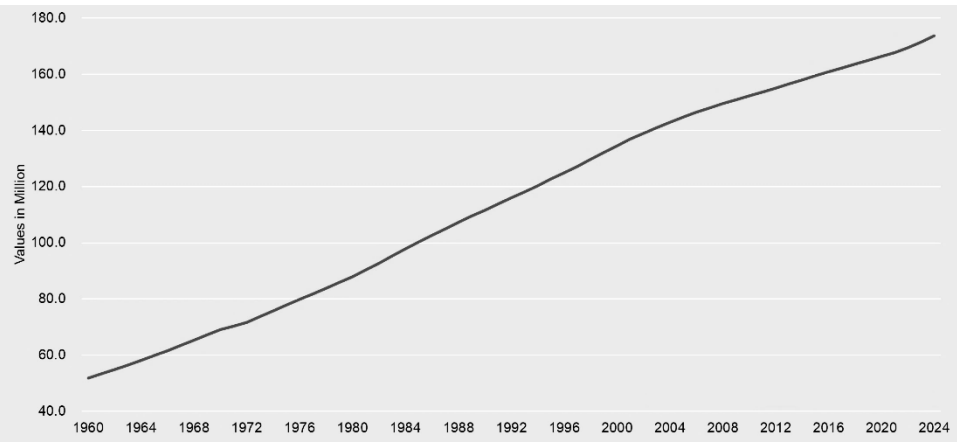
Country Profile: Food and Nutrition

For decades, food security has been one of the biggest challenges in Bangladesh. Beyond the challenge of supplying sufficient nutritious food to a growing population, Bangladesh faces land scarcity, resource constraints, limited technological and research capacity, inadequate access to modern agricultural tools, and continued reliance on traditional farming methods. Emerging threats such as climate change, global price volatility, international trade tensions, and shifting diplomatic relations with neighbouring countries have further intensified the complexity of ensuring food and nutrition security. This section examines the current state of Bangladesh's food and nutrition ecosystem and the demographic and socioeconomic pressures that shape nutrition outcomes.

Figure I shows the growth of Bangladesh's population between 1960 and 2024. By 2024, the population had reached approximately 173.6 million (World Bank n.d.). Population density also increased considerably, from 976 persons per square kilometre in 2011 to 1,119 in 2022 (BBS 2022), placing additional pressure on land, food systems and public services.

Bangladesh's demographic profile is particularly relevant to food and nutrition policy. Children under five account for around 10% of the population, while young people constitute 19.11%. Females represent approximately 50.5% of the population, around 1% belong to ethnic minority communities, and 68.49% reside in rural areas. In addition, 18.7% of the population lives below the national poverty line (UNICEF n.d.; World Bank n.d.). These characteristics highlight the importance of considering age, gender, location, ethnicity and household income when assessing disparities in food access and nutrition outcomes.

Figure I: Total Population in Bangladesh from 1960 to 2024



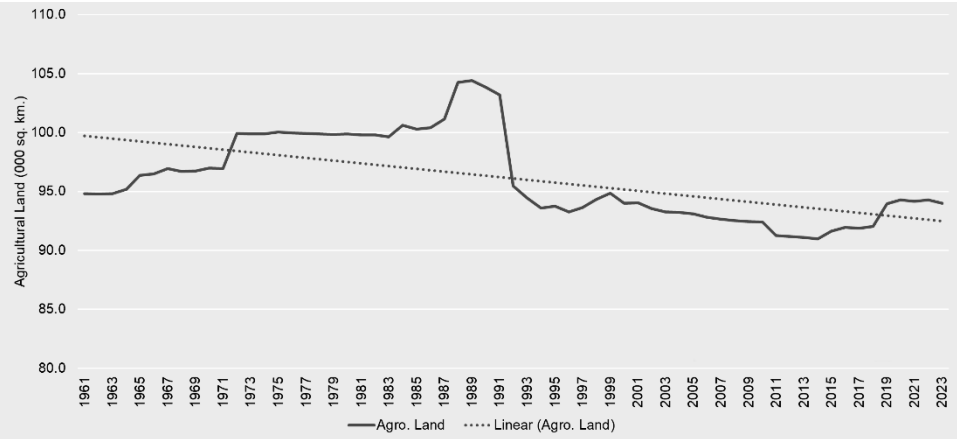
Source: Authors' own based on World Bank data.

Declining Agricultural Land

Land is a fundamental factor of production in agriculture and food systems. Agricultural land is defined as land used for agricultural production and includes arable land, permanent cropland, and permanent meadows and pastures. Arable land is used for temporary crops, permanent cropland for long-term crops, and permanent meadows and pastures for natural or cultivated forage maintained for five years or more (FAO 2025). In Bangladesh, continued population growth, urban expansion and competing land uses are contributing to a gradual decline in the area available for agriculture. In recent years, the country has been losing approximately 2,500 to 3,000 hectares of agricultural land annually to non-agricultural uses such as housing, infrastructure development, industrialisation, urbanisation, and other causes (The Daily Star 2025a). Experts have identified this continued loss of agricultural land as a serious threat to the nation's future food security.

Figure II illustrates the steady decline of Bangladesh's agricultural land since the 1990s. At present, the country has approximately 94,000 square kilometres of land for agricultural use (FAO n.d.).

Figure II: Declining Agricultural Land in Bangladesh from 1961 to 2023



Source: Authors' own based on FAO data.

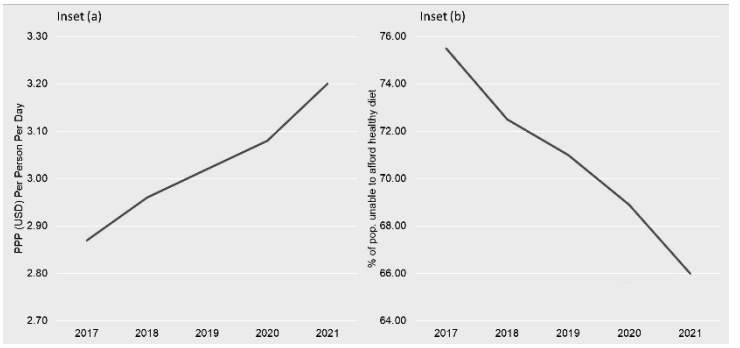
Economic Growth and Inequality

Bangladesh has sustained strong economic growth over the past two decades and has been widely recognised for its development progress. However, rising economic inequality remains a concern. Economically disadvantaged households often cannot afford a minimum-cost nutritious diet, resulting in greater reliance on carbohydrate-rich staples such as rice, potatoes and pulses, alongside inadequate intake of essential energy, protein and fats (Ahmed et al., 2022). Such a pattern indicates that the affordability of a healthy diet is closely linked with consumption patterns.

Figure III presents (inset a) the daily per capita cost of a healthy diet and (inset b) the proportion of the population unable to afford it (Barois et al., 2024). Although Bangladesh is projected to return gradually to stronger economic growth over the coming years, recent gains have been accompanied by rising poverty and concerns over the inclusiveness of growth. The national poverty rate is estimated to have increased from 18.7% in 2022 to 28% in 2025, following three consecutive years of deterioration (The Daily Star 2025b), suggesting

that a higher percentage of households will face greater vulnerability and reduced access to nutritious diets.

Figure III: (a) Cost of Healthy Diet and (b) Percentage of Population Unable to Afford a Healthy Diet



Source: Barois et al., (2024).

Rising Inflation

Another important consideration in assessing food affordability is inflation. The general price index rose to 9.73% in FY 2023–24, compared with 9.02% in FY 2022–23 (Finance Division 2024). During the same period, the food price index increased from 8.71% to 10.65%. In contrast, the non-food price index declined from 9.39% to 8.86%, while the agricultural wage index increased from 6.48% to 8.17% (Finance Division 2024).

Rising inflation is generating a dual pressure in Bangladesh: higher food prices are reducing household purchasing power, while increases in agricultural wages are raising production costs and placing additional upward pressure on food prices.

Urban-Rural Divide

In Bangladesh, urban and rural populations exhibit different consumption patterns. While the urban population prefers

convenience over nutrition and consumes more processed foods, rural residents prefer cheaper carbohydrates. Table I (see Annexure 1) shows findings from the Household Income and Expenditure Survey (HIES) 2010 and 2022, which reveal that urban households consistently consumed less rice and potatoes than their rural counterparts. In contrast, urban consumers showed higher consumption of meat, eggs and fruits, and were also more inclined to consume 'food outside the home' (BBS 2023).

Excessive Fruit Import Tax

Table 2 (see Annexure 2) presents the taxes and value-added tax (VAT) imposed by the Government of Bangladesh (GoB) on different fruit products. The applicable rates vary across imported fruit categories. An analysis of the National Customs Tariff (FY 2024–2025) indicated that the total tax incidence (TTI) ranges from approximately 50% to 114%, depending on the product category (NBR n.d.). The government periodically adjusts these rates in response to market conditions (The Business Standard 2025).

Stakeholder Mapping

Table 3 (see Annexure 3) shows the mapping of key stakeholders that was prepared as part of this study. It provides an outline of key stakeholders in Bangladesh, such as government institutions, development partners, civil society, NGOs, and INGOs, that regularly contribute, alongside other sectors, to food and nutrition strategies, keeping in mind the significance of multisectoral approaches for better nutrition policy formulation and implementation. The table highlights their roles in shaping, implementing, and supporting multisectoral nutrition strategies.

Food and Nutrition Policy Overview of Bangladesh

The food policy of Bangladesh has progressed to a great extent with emphasis on increased food production as well as food security for the nation. In the post-independence period, food aid, international relief packages and commercial imports (by the government) played a crucial role in preventing famine (Atwood et al., 2000). Over time, the government implemented various strategies to boost food production, which included subsidised inputs, increased investment in agriculture, privatisation and expansion of extension services. A key turning point was achieving self-sufficiency in food production in 2000 (IFPRI 2017). Currently, the National Food and Nutrition Security Policy aims to further strengthen food and nutrition security, aligned with national and international commitments.

An Overview of Bangladesh's Food and Nutrition Policies

Appendix Table A1 outlines the major food and nutrition policies adopted in Bangladesh since independence and traces how policy priorities have evolved over time. The study also identifies several gaps in these policies that constrained their implementation and overall effectiveness.

Early Years (1971-1980)

Immediately after independence, Bangladesh faced food shortages and relied heavily on food aid from other countries, especially in the wake of the 1974 famine (Atwood et al., 2000). The government used rationing and price controls to provide access to food. Plans were made to improve irrigation, fertiliser use, and the development of high-yielding varieties of rice in an attempt to boost rice production.

Shift towards Self-Sufficiency (1980-2000)

Bangladesh's early policy landscape reflects a gradual shift from the food security perspective towards the wider perspective of nutrition. The National Food Policy (1988) focused primarily on cereal production and distribution (MoH&FW 1988), while the New Agricultural Extension Policy (1996) strengthened interdepartmental coordination (Ministry of Agriculture 1996). A notable shift occurred with the National Food and Nutrition Policy (1997), which recognised nutrition as a human right and adopted a multisectoral approach (MoH&FW 1997b). The National Plan of Action for Nutrition (1997) extended this agenda through interventions on micronutrient deficiencies, breastfeeding and community engagement, although it lacked clear targets, adequate attention to urban nutrition and effective implementation mechanisms (MoH&FW 1997a). The introduction of high-yielding varieties of rice, especially the IR8 variety, increased rice production. There have been improvements in irrigation infrastructure, such as deep tubewells and shallow tubewells. This also played a significant role in increasing agricultural productivity (IFPRI 2017). Government subsidies on fertilisers and pesticides helped farmers a great deal in increasing their yields. By the early 2000s, Bangladesh had achieved self-sufficiency in rice production, reducing reliance on food aid (IFPRI 2017). During this period, the government also introduced various policies and action plans to address the need for improved nutrition and balanced diets. However, most of these initiatives were fragmented, lacked actionable recommendations, and did not provide clear objectives, which in turn limited their effectiveness.

Modern Policies (2000-Present)

Since 2000, Bangladesh has adopted a series of strategic approaches to food and nutrition policy. An important step towards a more comprehensive framework was the National Food Policy (2006) (MoFDM (Bangladesh) 2006), which focused on three key dimensions:

food availability, access and utilisation. This was followed by the National Food Policy Plan of Action (2008–2015) (MoFDM (Bangladesh) 2008), which translated these priorities into a framework for implementation. This plan attempted multisectoral coordination by involving ministries of food, agriculture, health, education, and social welfare. However, it focused on food availability rather than nutritional outcomes. The National Nutrition Policy (2015) brought about a major paradigm shift towards the acceptance of the multidimensional concept of nutrition (MoFDM 2015). It focused on both nutrition-specific and nutrition-sensitive interventions. It took into account the roles of agriculture, WASH (water, sanitation, and hygiene), education, and gender equity (MoFDM 2015). However, this policy did not have any operational frameworks to facilitate multisectoral cooperation, especially in the agriculture and health sectors. Furthermore, its integration with local government structures was weak, which hampered decentralisation of nutrition programming. This led to the development of the Second National Plan of Action for Nutrition (MoH&FW 2017). This plan laid out a multisectoral action plan across 17 ministries, covering areas such as food safety, dietary diversity, maternal and child nutrition, and capacity building. Despite its breadth, its efficiency in implementing these goals has been hampered by inadequate political will and a lack of budgets and capacity in line ministries. Subsequent policies, plans and legislation introduced additional goals and commitments, but many remained largely aspirational, with limited operational guidance and weak mechanisms for implementation, monitoring and accountability.

Policy Recommendations

Drawing on the findings, the study proposes several policy recommendations to strengthen Bangladesh's nutrition landscape:

More targeted approach to women and children: The government has introduced various initiatives to support vulnerable women and children and promote healthy diets among low-income households.

However, evidence suggests that some cash-based support programmes are poorly targeted or do not consistently reach intended beneficiaries. A more targeted and evidence-based approach is needed to improve beneficiary identification, delivery and accountability.

Balancing import tax on healthy fruits: Fruits remain an integral component of a balanced and healthy diet. In Bangladesh, people consume both local and imported fruits. Among imported fruits, apples, oranges, and grapefruits are popular. However, high import taxes have made many fruits less accessible. The Total Tax Incidence (TTI) currently ranges from approximately 50% to 114% (NBR n.d.). It is, therefore, recommended that a more appropriate tax structure be considered for improved affordability and access for all segments of the population. For example, the TTI on nutrient-rich fruits that are not widely produced domestically could be reduced to roughly 25–30% to improve affordability. At the same time, higher tariffs may be maintained during local harvest periods to protect domestic producers such as mango and guava farmers, while substantially lowering taxes in the off-season when local supply is limited. This approach could improve year-round access across population groups while still safeguarding local agriculture.

Increase investment in public awareness: One of the key challenges that need to be addressed is insufficient public awareness regarding healthy dietary habits. Promoting the consumption of locally grown fruits and traditional dietary diversity is essential. The Ministry of Health, in collaboration with the Ministry of Education, should expand investment in public awareness campaigns and integrate nutrition education into general, specialised and adult education programmes.

Incentives for the private sector to promote food fortification: To overcome the problem of micronutrients, food fortification appears to be one of the most effective and widely accepted approaches. The government is implementing both mandatory and voluntary food fortification schemes. Currently, fortification of salt and edible oil is mandatory. However, these efforts alone are not sufficient to

effectively tackle widespread micronutrient deficiencies. Food sources such as rice and wheat must also be covered in food fortification activities. Incentives should be provided for the involvement of the private sector. For example, Tax/VAT exemptions may be considered.

Distribution of fortified rice/wheat through government social protection programmes: GoB provides rice and wheat to the low-income households through different social safety net programmes. Given the widespread consumption of rice and wheat among low-income households, incorporating iron-fortified rice and wheat into social safety programmes could help improve micronutrient intake and nutritional outcomes among vulnerable populations.

More investment in nutrition-sensitive and diversified agriculture sectors: The state needs to increase its investment levels in nutrition-sensitive agricultural sectors, which would help increase the output of healthy food/nutritional food products. To develop such sectors, the government should establish/support SEZs, provide subsidies for basic facilities such as electricity and gas, and offer soft loans. Additionally, the government needs to develop appropriate investment strategies that would result in efficient capital mobilisation and create an enabling environment that attracts private sector participation.

Facilitating open access to equipment and technology: Being a technologically challenged nation, Bangladesh is still very reliant on the international markets for the procurement of equipment and technology. The machinery and technologies required for producing, processing and testing nutritious foods also remain largely import-dependent. Targeted tax relief and streamlined administrative procedures could reduce barriers to their import. In parallel, bilateral partnerships with technologically advanced countries could facilitate technology transfer, strengthen domestic production capacity and support the long-term development of Bangladesh's nutrition-focused food industry.

Establishing long-term bilateral trade agreements: Bangladesh imports a wide range of fresh and processed foods to meet domestic

demand. The government could identify reliable sources of nutritious foods and pursue long-term bilateral trade arrangements or supply agreements to strengthen supply security. Such arrangements could help reduce supply disruptions, improve market predictability and moderate price volatility in the domestic market.

Levy higher taxes on processed foods and sweetened drinks: The increased demand for processed foods and sugar-sweetened drinks is a major health concern, especially for people living in urban areas who consume more processed and restaurant meals. In order to tackle the problem, the government should consider levying higher taxes on such foods to make them cost-prohibitive and discourage excessive consumption.

Prioritise investment in nutrition-sensitive agro-processing zones: Bangladesh's Special Economic Zones (SEZs) could be used more strategically to support the production, processing and distribution of nutritious foods. Dedicated agro-processing zones, supported by targeted public investment, could attract domestic and foreign investment in areas such as food fortification, cold-chain infrastructure, storage, dairy, fisheries, fruits, vegetables and other nutrient-rich foods. Such investment would not only strengthen agricultural value chains and reduce post-harvest losses, but could also improve the availability and affordability of nutritious foods in the domestic market.

Conclusion

After independence, food security was a major challenge for the people of Bangladesh. The country's food system was historically characterised by traditional production methods and limited use of modern agricultural practices. Through sustained government intervention and policy support, the country was able to stabilise food production and make substantial progress towards food security. Over time, policy priorities have increasingly shifted from food availability alone towards the broader objective of nutrition security.

Despite this progress, nutrition outcomes remain uneven and require a more integrated policy response. National priorities should include greater public awareness, evidence-based targeting of vulnerable groups, particularly women and children, and stronger support for the production and consumption of locally available nutritious foods. Fiscal measures should support nutrition education, behaviour-change communication and well-targeted social protection programmes. The private sector can contribute through staple-food fortification, investment in nutritious food production and processing, and greater diversification of agricultural value chains, including through nutrition-sensitive agro-processing zones.

Trade and fiscal policies can further support nutrition objectives by reducing barriers to the import of nutrient-rich foods where domestic supply is inadequate, applying appropriate taxes to unhealthy processed foods and sugar-sweetened beverages, and developing longer-term trade arrangements to reduce supply disruptions and improve the availability of nutritious foods.

In summary, Bangladesh's progress towards nutrition security requires a comprehensive policy framework that combines public awareness, targeted fiscal measures, private sector participation and balanced, nutrition-sensitive trade policies. Through coordinated and sustained action across these areas, the country can strengthen its food and nutrition system and improve health and well-being, particularly among vulnerable population groups.

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Annexure 1

Table I: Per Capita Daily Intake (Gram) of Major Food Items by Locality from HIES 2010 and HIES 2022

	HIES 2022			HIES 2010		
Food Item	**National**	**Rural**	**Urban**	**National**	**Rural**	**Urban**
Rice	328.9	349.1	284.7	416	441.6	344.2
Wheat	22.9	18.3	33	26	23.3	33.6
Potato	69.7	71.9	65	70.3	71.5	67.7
Pulses	17.1	15.9	19.9	14.3	13.2	17.2
Vegetables	201.9	202.2	201.3	166.1	170	155
Edible Oil	30.8	30	32.6	20.5	18.3	26.6
Onion	30.2	29.1	32.5	22	20.2	27.8
Meats	40.1	35.3	50.2	18.6	14.2	30.8
Eggs	12.7	10.7	17.2	7.2	5.8	10.9
Fish	67.8	67.7	68.2	49.5	45.8	59.9
Milk & Milk Products	34.1	32.1	38.5	33.7	31.8	39.2
Fruits	95.4	90.9	105.3	44.7	42.6	50.4
Sugar/Gur & Sweets	16.4	16.7	15.6	8.4	7.4	11.3
Food Taken Outside	63.6	57.8	76.1	29.8	28	35
Miscellaneous Foods	98.2	97.7	99.3	72.8	71.4	77
Total	1129.8	1125.4	1139.4	1000	1005.2	986.6

Source: Bangladesh Bureau of Statistics (2022).

Annexure 2

Table II: Imposed Tax and VAT on Different Fruit Products

Product Group	Values in Percentage						
	CD	SD	VAT	AIT	RD	AT	TTI
Fresh Premium Fruits (Apples, Oranges, Mangoes, Apricots, etc.)	25	20	15	5	20	5	114
Tropical/Frozen/Dried Fruits (Bananas, Figs, Pineapples, Avocados, Frozen fruits, etc.)	25	0	15	5	20	5	79
Dates (Fresh or Dried)	25	0	15	5	3	5	59
Plums and Sloes (All Forms)	25	0	15	5	5	5	61
Dried Fruits and Nuts (NES Forms, Excl. Wrapped/Canned)	25	0	0	5	20	0	50

Source: National Board of Revenue.

Annexure 3

Table III: Key Stakeholder Mapping

Type	Name	Areas of Focus
Government-Led Ministries	Ministry of Health and Family Welfare	Formulates and implements health, nutrition and population policies, while coordinating with national and international partners on food and nutrition.
Government-Led Ministries	Ministry of Agriculture	Promotes agricultural production, crop diversification, and the production of safe and nutritious crops.
Government-Led Ministries	Ministry of Finance	Allocates fiscal resources for food programmes, agricultural subsidies, food safety and nutrition initiatives.
Government-Led Ministries	Ministry of Food	Ensures access to adequate, safe and nutritious food through food management, support for vulnerable groups, trade regulation and staple-price stabilisation.
Government-Led Ministries	Ministry of Fisheries and Livestock	Develops fisheries and livestock through disease control, research, improved breeds, farmer training and production support.

Type	Name	Areas of Focus
Government-Support Ministries	Ministry of Women and Children Affairs; Ministry of Local Government, Rural Development and Cooperatives; Ministry of Primary and Mass Education; Ministry of Social Welfare; Ministry of Disaster Management & Relief; Ministry of Education; Ministry of Environment and Forest; Ministry of Finance; Ministry of Industries; Ministry of Information; Ministry of Planning; Ministry of Commerce; Ministry of Religious Affairs	Support multisectoral food and nutrition policy implementation through sector-specific action and inter-ministerial coordination.
Government-Support Department	National Nutrition Services (Operates under MoHFW)	Improves nutritional status and reduces malnutrition, particularly among children, adolescents, pregnant and nursing women, older people, the poor and other disadvantaged groups.
Government-Support Department	Bangladesh National Nutrition Council (Operates under MoHFW)	Guides national nutrition strategies, coordinates policy, and promotes multisectoral action for improved nutrition outcomes.
Government-Support Department	Bangladesh Food Safety Authority	Provides scientific and technical support on food and nutrition security, including policy advice, food safety risk assessment and coordination.
Government-Support Department	National Consumer Rights Protection Directorate	Protects consumers from unsafe and mislabelled food through testing, awareness, complaint handling and enforcement.
Government-Support Department	Bangladesh Standards and Testing Institution	Sets national standards and supports compliance through certification, testing, calibration, import monitoring and consumer protection.

Type	Name	Areas of Focus
UN and Other Aid Agencies	Japan International Cooperation Agency; World Bank; UNICEF; FAO; IFAD; WFP; WHO	Provide financial, technical and policy support for food safety and nutrition, combining immediate assistance with long-term capacity development.
INGOs	World Vision International; GAVI; Global Alliance for Improved Nutrition; Plan International; Action Against Hunger; Save the Children; CARE International; SNV Netherlands Development Organisation; Helen Keller International; Concern Worldwide; Oxfam International; Abt Associates Inc	Advance sustainable nutrition outcomes through policy influence, climate-resilient and nutrition-sensitive agriculture, and stakeholder dialogue.
NGOs	BRAC; International Centre for Diarrhoeal Disease Research, Bangladesh; Uttaran; Proshika; Mastul Foundation; Nutrition For Change; SAWAB Foundation; ARK Foundation	Promote food and nutrition security through climate-smart agriculture, quality seed provision and improved food access for vulnerable communities.
Civil Society Network	Right to Food Bangladesh; Bangladesh Health Watch	Advocate for the Right to Food Act, mobilise youth, promote food and nutrition security, and engage in policy dialogue.

Appendix

Table A1: Policy Evolution, Gaps and Critique

Policy	How Policy Addresses Nutrition	Policy Critique
National Food Policy, 1988	Addresses food security primarily through cereal availability, distribution and national self-sufficiency; nutrition is not an explicit policy objective.	Adopts a narrow cereal-centred approach that gives limited attention to dietary diversity and nutrient-rich foods such as fish, meat, pulses, vegetables and oils.
New Agricultural Extension Policy (NAEP), 1996	Contributes indirectly to nutrition through increased agricultural production and stronger interdepartmental coordination.	Lacks explicit nutrition objectives, interventions and measurable nutrition outcomes, although its coordination framework supported later multisectoral policies.
National Food and Nutrition Policy (NFNP), 1997	Recognises nutrition as a human right and national priority, emphasising multisectoral action, micronutrient deficiencies, vulnerable groups, sanitation and health education.	Provides limited operational detail, institutional mechanisms and implementation guidance, constraining translation of its ambitions into action.
National Plan of Action for Nutrition (NPAN), 1997	Establishes a broad strategy to address malnutrition through food security, micronutrient interventions, breastfeeding promotion, community empowerment and protection of vulnerable groups.	Lacks clear implementation pathways and measurable targets, with limited attention to urban nutrition, overnutrition and the roles of civil society and the private sector.
National Food Policy, 2006	Integrates nutrition into food security through dietary diversification, micronutrient supplementation, nutrition education, school feeding and targeted support for women and children.	Provides broad strategic direction but lacks sufficiently defined implementation mechanisms, measurable targets and responses to gender, cultural and local barriers.

Policy	How Policy Addresses Nutrition	Policy Critique
National Food Policy Plan of Action (PoA), 2008-2015	Translates food policy into nutrition-related actions covering balanced diets, supplementation, maternal and child nutrition, breastfeeding, food safety, water, sanitation and nutrition education.	Implementation is constrained by ambitious targets, weak accountability, fragmented institutional coordination and limited attention to cultural and gender barriers.
National Nutrition Services (NNS) Operational Plan, 2011-2016	Integrates micronutrient supplementation, growth monitoring, breastfeeding support, behaviour change communication, fortification and nutrition education within health service delivery.	Gives insufficient attention to adolescent nutrition, non-communicable diseases, urban dietary challenges, cultural barriers and monitoring of key nutrition indicators.
Second National Plan of Action for Nutrition (NPAN2), 2016-2025	Adopts a life course and multisectoral approach, combining nutrition-specific interventions with agriculture, education and sanitation while setting measurable goals for stunting, anaemia and low birth weight.	Gives limited consideration to ultra-processed foods, chronic disease risks, urban dietary change and the cultural determinants of food consumption.
National Nutrition Policy (NNP), 2015	Positions nutrition as a national priority across age groups, linking breastfeeding and micronutrient interventions with agriculture, education, sanitation, dietary diversity and coordinated action.	Does not adequately address emerging nutrition challenges, particularly ultra-processed foods, chronic diseases, urban dietary transitions and cultural food practices.
National Food and Nutrition Security Policy Plan of Action, 2021-2030	Adopts a life-cycle and food systems approach encompassing sustainable production, food safety, dietary diversity, health and sanitation, social protection, resilience and institutional accountability. It also assigns responsible institutions and measurable indicators.	Provides limited operational attention to obesity, non-communicable diseases, ultra-processed food consumption, urban dietary risks and cultural food practices.
Bangladesh Advocacy Plan for Nutrition, 2019-2025	Promotes nutrition as a development priority through policy advocacy, resource mobilisation, strategic communication and multisectoral collaboration in support of NPAN2 implementation.	Gives limited attention to grassroots advocacy, digital outreach and systematic assessment of advocacy outcomes.

Policy	How Policy Addresses Nutrition	Policy Critique
National Food Safety (Contaminants, Toxins and Harmful Residues) Regulation, 2017	Protects food safety by establishing controls and legal limits for contaminants, pesticide residues, toxins and other harmful substances.	Addresses chemical safety rather than nutrition, with little consideration of dietary quality, nutrient intake, dietary diversity or nutrition-related disease.
Bangladesh Good Agricultural Practices Policy, 2020	Promotes safe and environmentally responsible agricultural production through improved input use and reduced chemical contamination for domestic and export markets.	Does not explicitly connect agricultural practices with dietary diversity, nutrient quality or wider public health nutrition outcomes.
National Agriculture Policy, 2018	Promotes the production and marketing of safe, nutritious food, crop diversification towards nutrient-rich products and nutrition-oriented agricultural research.	Gives limited attention to consumer behaviour, cultural food practices, urban food systems and emerging obesity and processed-food risks, while linkages with national nutrition frameworks remain weak.
Food Safety Act, 2013	Establishes a regulatory framework for the production, processing, import and distribution of safe food.	Focuses on food safety rather than nutritional quality, with no direct treatment of nutrient content, dietary quality or broader public health nutrition strategies.

4

Green Industrialisation, Circularity and Regenerative Development

Accelerating Green Industrialisation: Opportunities and Challenges

Arfa Ijaz and Ayesha Naeem

Circular Economy: A Pathway to Prosperity

Djaheezah Subratty

Pakistan: A Regional Leader in Circularity

Dr Shezra Mansab Ali Khan Kharal

Comparative Analysis of Plastic Waste Mitigation Strategies in Pakistan and Indonesia: Policy Frameworks to Circularity

Noor Ul Ain and Qurat Ul Ain

Regenerative Humane Development: Sustainability Beyond 2030

Dr Tariqullah Khan

Accelerating Green Industrialisation: Opportunities and Challenges*

*Arfa Ijaz and Ayesha Naeem***

Abstract

Green industrialisation has emerged as a structural imperative for economies navigating the convergence of climate governance, carbon-conditioned trade, and intensifying industrial competition. For Pakistan, where industry contributes nearly one-quarter of Gross Domestic Product (GDP) and exports are concentrated in energy-intensive sectors such as textiles, this transition is both urgent and consequential. The country's industrial base faces compounding structural vulnerabilities: heavy dependence on imported fossil fuels, thermal-dominated electricity generation, transmission and distribution losses exceeding 17%, and energy tariffs nearly double those of regional competitors, all of which collectively constrain competitiveness and impede decarbonisation. At the same time, changing global trade frameworks and tightening sustainability requirements from international buyers are progressively reshaping conditions for market access, particularly for textile exporters. This study argues that green industrialisation is not merely an environmental obligation but a core economic strategy for Pakistan's industrial resilience and long-term competitiveness. It identifies the principal barriers to transition — financing gaps, weak Measurement, Reporting and Verification (MRV) systems, policy misalignment and

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* This chapter has been approved as a *Policy Brief/Policy Paper* by the referee.

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limited institutional capacity — and presents policy recommendations across interconnected thematic areas.

Keywords: Green Industrialisation, Industrial Decarbonisation, Energy Competitiveness, Climate Finance, Carbon-Conditioned Trade, Pakistan.

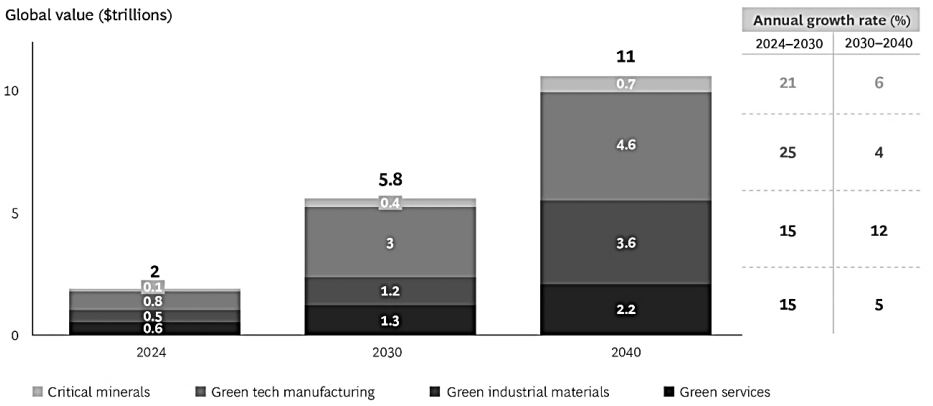
Introduction

Contextual Setting

Green industrialisation has moved from a peripheral concern to a central pillar of economic strategy across multilateral forums, reflecting a growing recognition that the scale and pace of decarbonisation required cannot be achieved without fundamental structural transformation of industrial systems. This transformation depends on coherent policy frameworks, long-term planning, and sustained international cooperation, and its urgency is increasingly reflected in the ambition of both national industrial strategies and global climate commitments (Dev and Goswami 2025).

The scale of the economic opportunity this transition represents is substantial. As illustrated in Figure I, the global green economy is projected to grow from USD 2 trillion in 2024 to USD 11 trillion by 2040, led primarily by green technology manufacturing and industrial materials, which together are forecast to account for over USD 8 trillion of total value by 2040 (Tan et al., 2025). For developing economies, positioning within this emerging green industrial order will be a defining determinant of long-term competitiveness.

Figure I: Global Green Growth Opportunities



Sources: International Energy Agency; industry reports; BCG analysis.

Note: Because of rounding, the numbers may not add up to the totals shown. Estimates are based on the IEA's Net Zero Emissions by 2050 Scenario. Values are nominal, including 2.1% annual average inflation from 2024 to 2040, which is the long-run US inflation rate implied by the average ten-year TIPS spread in August 2024 and September 2024.

***Source*:** Tan et al., (2025).

This shift is increasingly visible across political declarations, development frameworks, and policy discourse, where green is no longer treated as an add-on dimension but as a defining feature of future industrialisation. The reconfiguration of global supply chains, localisation of clean technology production, and acceleration of energy transitions have placed industrial policy at the centre of how states are simultaneously framing decarbonisation pathways and future economic competitiveness. The United Nations Industrial Development Organization (UNIDO)'s renewed emphasis on the centrality of sustainable industrialisation and the G20's growing attention to resilient, low-carbon supply chains and strategic sectors such as critical minerals and clean technologies further reflect this reorientation (UNIDO 2026; Abdenur et al., 2025).

Yet global climate governance has not fully absorbed the implications of this industrial transition. Negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) and its annual Conference of the Parties (COP) meetings continue to operate largely in

parallel to developments in industrial and trade policy. As industrial strategy increasingly determines the real pathways for emissions reduction, this institutional separation risks creating a widening mismatch between climate governance and the actual drivers of economic transformation. The Belém Declaration on Global Green Industrialisation, adopted at COP30, represents a meaningful step towards bridging this divide, explicitly linking climate ambition with industrial supply chains while underscoring the imperative to avoid deepening global disparities (UNIDO 2025). Nevertheless, persistent structural constraints, encompassing trade rules, investment agreements, intellectual property regimes, and global financial architectures, continue to determine which countries can pursue green industrial strategies and on what terms, with developing economies bearing a disproportionate share of these limitations.

Why Pakistan needs Green Industrialisation

Pakistan's industrial sector, contributing 23.4% of GDP and underpinning employment and exports through textiles, cement, and chemicals, faces a structural imperative to transform. Manufacturing alone accounts for 66.86% of industrial activity, with large-scale manufacturing comprising 45.05% of that share, while the sector as a whole recorded growth of 3.51% in FY 2026 (Finance Division 2026; CEIC 2026). Manufacturing, construction, mining, and utilities collectively form the backbone of economic output globally and domestically (Our World in Data 2024), yet the foundations on which Pakistan's industrial economy rests are under increasing strain. As global markets progressively embed carbon performance into trade and investment decisions, Pakistan's industrial emissions are no longer solely an environmental concern: they represent a growing economic and competitive liability.

The industrial sector in Pakistan is burdened by a set of deep, interconnected structural weaknesses that collectively undermine its competitiveness and resilience. Chief among these is the heavy reliance

on imported fossil fuels, particularly LNG and refined petroleum products, which exposes industry to chronic price volatility and geopolitical supply risks. Electricity generation remains overwhelmingly thermal-dependent, while transmission and distribution losses stand at 17.55% against a regulatory benchmark of 11.43%, bleeding an estimated PKR 265 billion annually from the system. Industrial consumers face some of the highest energy tariffs in the region, with electricity averaging 13–15 cents/kWh compared to 6–9 cents in India, 9 cents in Bangladesh, and 8 cents in Vietnam, while gas prices at USD 15.38/MMBtu similarly exceed those of regional competitors (The News International 2025). Compounding these challenges is outdated refining infrastructure misaligned with domestic fuel demand, declining domestic gas production, and mounting circular debt in the energy sector. Together, these vulnerabilities do not merely elevate operational costs: they systematically affect Pakistan's ability to compete in increasingly carbon-conscious global markets, decarbonise its production base, and attract the climate-aligned investment that a sustainable industrial future demands.

Building upon this backdrop, it is important to reflect on how Pakistan's energy sector continues to face structural inefficiencies that directly elevate the carbon intensity of industrial output. As of March 2026, total installed electricity generation capacity stood at 49,651 MW, with thermal sources still accounting for 49.2% of installed capacity, though this represents a meaningful decline from 56.7% in the same period last year. Of the 92,835 GWh generated during July-March FY 2026, hydel, nuclear, and renewable sources collectively contributed 53.1%, reflecting a gradual but ongoing transition towards cleaner generation (Finance Division 2026). Transmission and distribution losses, however, remain a critical structural drag, averaging 17.55% against a regulatory benchmark of 11.43%, resulting in an estimated annual financial loss of PKR 265 billion (NEPRA 2025). Together, the residual dependence on thermal generation and persistent system inefficiencies

continue to elevate the embedded carbon content of industrial output, compounding Pakistan's exposure to carbon-linked trade risks.

Market Access and Carbon-Conditioned Trade

Global trade systems are gradually integrating environmental responsibility within the business environment. One such system is the Carbon Border Adjustment Mechanism (CBAM), which applies a carbon price to imported products such as iron and steel, cement, fertiliser, aluminium, electricity, and hydrogen, based on embedded carbon content (OECD 2025). Similar signals are surfacing through the Inflation Reduction Act in the United States (USEPA 2025) and EU-US clean energy cooperation frameworks, which incentivise low-carbon manufacturing and green supply chains (Held and Pastukhova 2023).

CBAM's expansion trajectory and the broader shift towards carbon-conditioned trade present a near-term and growing risk for Pakistan's export base. Textiles, the country's largest export sector, are particularly exposed, as major buyers in the European Union (EU) and other developed markets are increasingly demanding carbon transparency, supply chain traceability, and verified sustainability credentials as conditions of procurement. Pakistan's trade relationship with the EU reflects the critical importance of maintaining and strengthening market access. The EU is Pakistan's second largest trading partner, accounting for 14.1% of total trade in 2025, with bilateral goods trade reaching €12.2 billion, reflecting a significant and growing commercial relationship. Pakistan also holds a privileged position as the largest beneficiary of the EU's GSP+ arrangement, which provides preferential market access contingent on the implementation of international standards on human rights, labour, environment, and good governance. Over 85% of Pakistani exports, predominantly textiles and clothing, enter the EU duty and quota free, representing nearly 20% of Pakistan's total global exports (European Commission 2025). As the EU progressively embeds carbon performance and sustainability requirements into its trade frameworks, this relationship represents both a major opportunity and a key driver for Pakistan's

green industrial transition. However, the convergence of regulatory and market pressures risks translating into reduced market access, higher compliance costs, and diminished export competitiveness if structural reforms are not pursued proactively.

Ongoing Industrial Transition and Regional Cooperation

Green industrialisation is being gradually embraced in Pakistan, reflected in a growing number of institutional initiatives aimed at embedding sustainability within industrial and financial frameworks. However, implementation remains fragmented across the region. South Asia broadly faces intersecting challenges of energy insecurity, carbon-intensive industrial bases, limited green finance, and weak institutional capacity for technology adoption, constraints that no single country can fully address in isolation. Coordination gaps between policy, finance, and industry continue to hinder progress, while international compliance pressures mount without corresponding domestic readiness.

This shared vulnerability also presents a collective opportunity. Countries across the region–Pakistan, India, Bangladesh, Sri Lanka, and Nepal–stand to benefit significantly from structured South-South cooperation on industrial decarbonisation, clean technology transfer, renewable energy trade, and climate-aligned supply chain standards. Strengthening regional frameworks for knowledge exchange and harmonised green standards can also enhance collective engagement with partners in Europe, North America, and East Asia that are actively scaling green investments across the Global South.

Climate Risk and Financial System Alignment

Climate vulnerability further reinforces the urgency of transition. Financial institutions are increasingly integrating environmental risk into lending decisions, making sustainability compliance a prerequisite for industrial financing. In recognition of this, the State Bank of Pakistan (SBP) has moved from planning to implementation:

the Pakistan Green Taxonomy was formally notified in December 2025 (SBP 2025), providing a science-based classification framework for sustainable economic activities and anchoring the financial system's shift towards climate-aligned investment.

Objectives and Methodology of the Study

Green industrialisation is important in tackling the growing interconnection between climate change control measures and the international trade regime. From the standpoint of Pakistan, which is a developing economy where the industrial sector is a significant driver of economic growth but at the same time a source of greenhouse gas emissions, green industrialisation offers a challenge as well as an opportunity. In order to examine the changing dynamics, this study applies a qualitative, policy-oriented approach based on a review of secondary sources. These sources include research papers, international development reports, policy documents from governments, trade and emission data sets, and media coverage. They also include insights from multilateral policy debates and global frameworks on green industrial policies, industrial decarbonisation, and carbon-linked trade regulations.

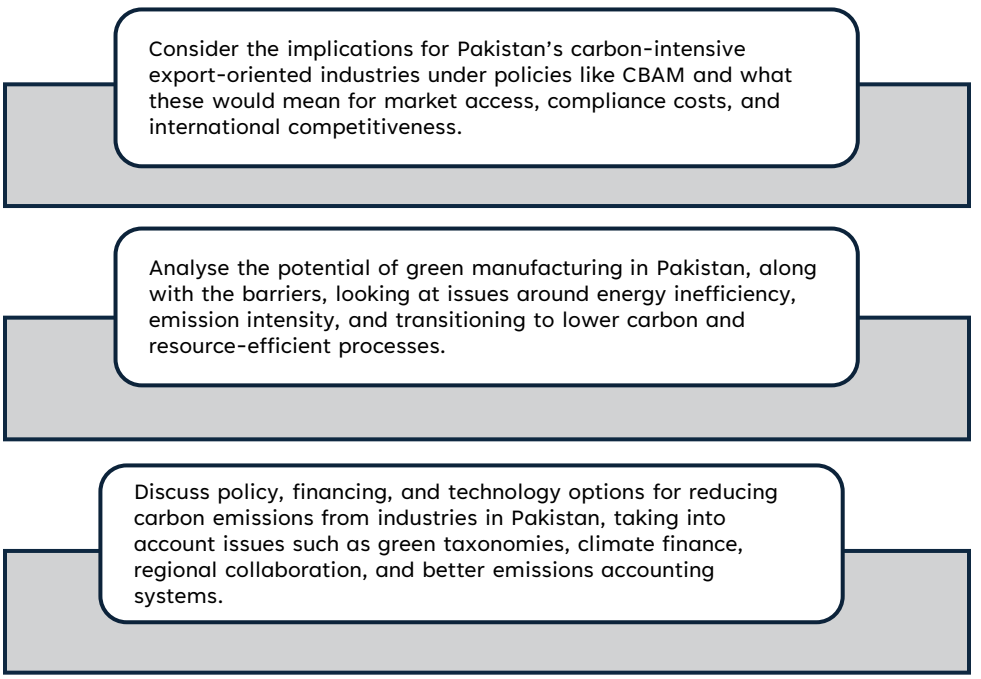
The analysis is further informed by the 'Regional Dialogue on Accelerating Green Industrialisation: Policy Pathways, Opportunities and Challenges'[1] hosted by the Sustainable Development Policy Institute (SDPI) during its 28th Sustainable Development Conference (SDC), in November 2025 (SDTV Pakistan 2025). It included expert inputs from industrial practitioners, financial sector representatives, and policy specialists engaged in Pakistan's ongoing transition towards green industrial frameworks. It also drew upon findings related to industrial decarbonisation, green taxonomy development, and CBAM readiness, where key issues such as emissions measurement gaps, financing constraints, and compliance readiness were extensively

[1] SDTV Pakistan (2025).

discussed. Moreover, the discussion is situated in light of the wider context of international trends, the growing focus on sustainable supply chains, and new industrial policy models in developed countries that consider the impact of climate change in their trade and investment systems.

Based on the scope and approach outlined above, this chapter aims to address the following key objectives:

Figure II: Key Objectives of the Study



Green Industrialisation, Trade Pressures and Policy Responses

The structural bottlenecks associated with green industrialisation such as lack of fiscal space and high debts restrict the ability of developing countries to compete with advanced economies in terms of

implementation of green industrial policies. On the other hand, increasing trade pressures via channels such as CBAM and others, which are tied to sustainability concerns, mean that carbon performance becomes a crucial factor when it comes to gaining market access, forcing nations to change their industrial structure or face loss of competitiveness in the export markets. Such developments illustrate how structural imbalances remain prevalent within the global economy. For instance, advanced economies traditionally used subsidies and other protectionist approaches during the process of their industrialisation. However, the contemporary framework of trade and investments reduces the scope available to developing nations, hence widening the subsidy gap and putting Emerging Market and Developing Economies (EMDEs) at a disadvantage when it comes to transitioning towards green development. Simultaneously, the increasing geopolitical importance of critical minerals and green supply chains means that new inequalities have emerged within the global economy (CSE 2025).

While Pakistan's direct exposure to CBAM remains relatively limited in the short term due to the composition of its exports mainly rooted in textiles, the mechanism signals a broader shift towards carbon-based competitiveness in global markets. As climate-related trade measures expand, the competitiveness of Pakistani exports will become increasingly linked to their emissions intensity and decarbonisation trajectory. Emerging evidence suggests that South and Central Asia could face significant trade impacts under future carbon-border regimes, with estimated export declines of up to 10.52% for crude steel products in South Asia and 7.03% for chemical products in Central Asia (Mortha and Arimura 2024). For Pakistan, the challenge is compounded by structural constraints. The country's electricity grid remains nearly twice as carbon-intensive as the European average (EMBER 2026; Umer et al., 2024), while persistent energy shortages and outdated gas-sector policies continue to limit industrial decarbonisation efforts. With thermal sources accounting for 49.2% of installed capacity and transmission losses standing at 17.55% against a benchmark of 11.43%,

the embedded carbon intensity of industrial output remains high. As carbon-linked trade frameworks tighten and EU buyers increasingly demand sustainability credentials, this presents a direct and near-term risk to Pakistan's textile exports, which account for nearly one-fifth of total export earnings and currently benefit from duty-free access under GSP+. Major export-oriented industries, particularly textiles, have raised concerns about falling into a carbon trap, whereby firms face growing pressure to reduce emissions while lacking adequate access to affordable low-carbon energy and technology.

Recognising these risks, policymakers and industry stakeholders have begun exploring preparedness measures. Efforts have emerged around the introduction of a domestic carbon pricing mechanism, either through a carbon tax or an Emissions Trading System (ETS), to ensure that carbon-related revenues remain within Pakistan rather than being transferred abroad through border adjustment mechanisms. At the institutional level, the Ministry of Commerce and Pakistan's Embassy in Brussels have engaged with European counterparts to better understand CBAM compliance requirements and advocate for the concerns of developing economies during implementation (MoFA 2024). While these efforts represent important first steps, a more comprehensive response will be required, including industrial decarbonisation strategies, renewable energy deployment, emissions monitoring and reporting systems, and targeted support for export-oriented sectors. In this context, CBAM should not be viewed solely as a compliance challenge, but also as a catalyst for accelerating Pakistan's broader green industrialisation agenda and strengthening long-term export competitiveness.

Box I: Captive Power Plants Levy and its Impact on Industrial Competitiveness

Faced with some of the highest electricity tariffs in the region and chronic grid unreliability, Pakistan's industrial sector increasingly turned to captive power generation as a practical means of cost management and supply security. The Off-Grid Captive Power Plants Levy Act, 2025, imposing PKR 1,243/MMBtu on gas supplied to captive plants, effectively closes this escape route (Iqbal 2026). Industries that invested in self-generation to insulate themselves from grid inefficiencies now find that relief being systematically taxed away. The levy does not redirect industry towards cleaner alternatives: it simply raises the cost of the only viable buffer available to many manufacturers, pulling them back into dependence on a grid that remains expensive, loss-ridden, and fossil fuel-intensive. For export-oriented sectors such as textiles, already struggling against regional competitors with far lower energy costs, this represents a compounding competitive disadvantage. Rationalising this levy is not merely a matter of industrial relief, it is a prerequisite for any credible green industrialisation strategy that seeks to incentivise cleaner self-generation rather than penalise it.

Industrial Emissions Exposure and Corporate Transition Dynamics

As carbon-linked trade frameworks increasingly influence market access, the emissions profile of Pakistan's exports is becoming an important determinant of competitiveness. Addressing this challenge requires progress on two interconnected fronts: adoption of greener manufacturing processes and meaningful improvements in energy efficiency across industrial operations. Green manufacturing, including cleaner production technologies, waste heat recovery, process electrification, and circular material flows, offers a pathway to reducing emissions intensity while enhancing productivity. Energy

efficiency, in particular, represents one of the most cost-effective opportunities for Pakistani industry, given the substantial scope for improvement across existing processes and energy systems. Complementing these measures, the integration of renewable energy through onsite solar, wheeling arrangements, and off-grid clean energy solutions can further lower the carbon footprint of manufactured goods while strengthening long-term cost competitiveness.

Notwithstanding these structural constraints, certain segments of the private sector have begun to respond. Large firms and multinationals operating in Pakistan are increasingly adopting lifecycle emissions accounting and aligning with internationally recognised frameworks such as the Science Based Targets initiative and ISO 14040/14067 standards to measure and manage Scope 1, 2, and 3 emissions across their supply chains (Velasquez 2025; Soorty Enterprises 2024; TUV Austria n.d.). However, this transition remains uneven. Small and Medium Enterprises (SMEs) continue to face considerable barriers, including limited technical capacity, inadequate data systems, and high compliance costs, underscoring the importance of targeted policy support to broaden and accelerate industrial decarbonisation across the sector.

MRV Systems, Standards and Institutional Readiness

Another issue is the dire necessity to improve MRV systems in a manner that connects voluntary corporate disclosures with the upcoming compliance-based carbon accounting frameworks. Although Pakistan has started ESG disclosure through the SECP and the introduction of green taxonomy through the SBP, there is an acute dearth of institutional capacity and enforcement in these areas.

An important gap identified is the lack of localised emissions factors and a country-wide database of emissions. As things stand now, industries in Pakistan have to depend on international proxies for carbon calculations, which do not take into account the unique energy mix or production conditions in Pakistan, thereby causing

discrepancies in carbon calculations. Not only does this increase the uncertainty of compliance, but it also makes the sustainability claims made by local organisations suspect in the eyes of international business communities.

Need for Green Finance

Financing remains one of the most significant structural constraints to green industrialisation in Pakistan. While the SBP has introduced green taxonomy principles and climate-aligned financing guidelines, these have yet to be fully embedded into mainstream commercial lending practices, where credit allocation continues to be governed largely by conventional risk metrics with limited consideration of environmental performance or transition pathways. This gap is particularly acute for energy-intensive industries and SMEs, where the upfront capital requirements for cleaner technology adoption remain prohibitive. Emerging instruments, including climate finance mechanisms, sustainability-linked loans, blended finance, and green foreign direct investment, represent critical pathways for accelerating industrial decarbonisation, though their deployment at scale remains nascent.

More broadly, Pakistan's green industrialisation trajectory remains in its formative stages, characterised by growing policy recognition but limited institutional integration across the energy, industry, finance and environmental governance sectors. Without concurrent progress in energy transition, MRV capacity, and climate-aligned finance, the country risks facing compounding trade-related constraints in global markets while forgoing the economic opportunities that the emerging green industrial economy presents.

Box II: Fossil Fuel Trap & Why Pakistan Must Keep the Momentum for Renewables Strong

It has become clear that Pakistan is highly vulnerable to fossil fuels after the 2026 global energy polycrisis (Power 2026), where reliance on oil and LNG from Qatar, which cannot be guaranteed amid conflicts in the region, and oil prices at more than USD 100 per barrel have created a critical energy security problem for Pakistan. The macroeconomic effects are dire as the inflation rate is expected to increase twofold to 11–13%, while GDP growth could fall under 3%, and the cost of imports would increase by USD 6.2 billion (Javed 2026). On the industrial side, energy costs are among the largest expenditures, with electricity tariffs at 13 cents to 15 cents per kilowatt-hour, compared with 6 cents to 9 cents per kilowatt-hour in India and 8 cents per kilowatt-hour in Vietnam and Bangladesh (The News International 2025). What is particularly worrying about this is that the problem is systemic, not cyclical. Strict LNG take-or-pay agreements mean that Pakistan faces an expected surplus of 177 shipments until 2031, amounting to a debt of USD 5.6 billion, despite declining domestic consumption due to the increasing use of solar energy (Isaad 2026). Circular debt in the gas sector has already surpassed PKR 3 trillion (Profit 2026). T&D losses cost PKR 265 billion annually (Ahmadani 2026). IMF-mandated reforms, while crucial, have driven up prices in industry without increasing productivity. This is the inevitable result of constructing an economy from volatile imports. There is an alternative that can be leveraged right away to change the game. The solar revolution on rooftops in Pakistan has saved the country from spending more than USD 12 billion on imported fuels, which speaks volumes about the viability of the model (Nasir 2026). By increasing renewable generation, electrifying manufacturing and transportation, and modernising power grids, the nation would sever its reliance on foreign fuels, reduce tariffs down to regional competitiveness, and protect its economy against future disruptions.

Policy Recommendations and Way Forward

The recommendations presented below are informed by perspectives shared by stakeholders from industry, government, finance, and civil society who convened at SDPI's 2025 SDC to examine the opportunities, constraints, and policy priorities shaping Pakistan's green industrialisation agenda.

Institutional and Governance Reform: **Establish a singular and time-bound National Green Industrialisation Taskforce within the Ministry of Industries and Production (MoI&P), responsible for coordinating policies, standards, finance, and reporting at the national, provincial, and district tiers. Quarterly dashboards on progress should be mandated, with provincial allocations based on green Key Performance Indicators (KPIs). Each recommendation must have a responsible agency, budget allocation, target, and timeline, as well as an enforceable district-level scorecard system.**

Unified Policy Framework: **Develop an Integrated Green Industrial Policy Note, ensuring the incorporation of sustainability within sectoral policies, defining the institutionally-owned roles by ministry and agency, and establishing a demand stabilisation strategy for critical value chains, including textiles, cement, and agro-processing.**

Green Finance Architecture: **Establish a dedicated Green/Climate Bank Window/Facility within the DFIs/SBP that will provide loans on concessional terms for energy efficiency, process heat electrification, renewable power generation, and zero- or low-carbon fuel production with a project pipeline created in collaboration between the government, universities, and banks. Implement green banking through the issuance of SBP climate-risk guidelines, compulsory disclosure by banks of their green financing targets and environmental risk management procedures, and linkage of reserve relief/refinancing facilities to green loan disbursements.**

Scale Renewable Energy Integration for Industry: **Accelerate industrial renewable energy adoption by establishing standardised**

power purchase agreements, streamlining grid-access and wheeling frameworks, and enabling open-access regimes that allow industries to procure clean energy directly from renewable generators. Onsite and offsite solar deployment should be incentivised through targeted measures such as concessional financing and de-risking instruments including credit guarantees and first-loss facilities through Development Finance Institutions (DFIs) to reduce perceived lending risk on industrial renewable energy projects, particularly for SMEs with limited balance sheet strength.

Policy Certainty: Policy certainty is, perhaps, the most critical enabler of all. Frequent reversals in energy policy have been a primary deterrent to industrial investment in renewables. A stable, long-term policy framework with clear rules and consistent enforcement is a prerequisite for any of the above instruments to function effectively.

Taxonomy, MRV and Disclosure: A green taxonomy framework along with the MRV system in compliance with international practices needs to be adopted, alongside the creation of an open-source greenhouse gas emissions database that would allow firms to easily compute their carbon footprints. This needs to be done in conjunction with the requirement for corporations to disclose their carbon footprint on an annual basis in relation to scope 1–3 emissions, with verification by an independent auditor for the largest carbon emitters.

CBAM and Export Competitiveness: Develop CBAM-ready plans in export sectors including textiles, leather, cement, and steel in areas such as energy audits, heat recovery measures, fuel switching strategies, supplier data gathering, and product-based Environmental Product Declarations (EPDs). It becomes all the more important considering the EU market challenges faced by Pakistan.

Energy Efficiency and Industrial Decarbonisation: Kick-start a national-level campaign called 'save a megawatt before you generate one' through mandatory audits of large electricity consumers and retrofitting their systems via performance-based contracts while offering rapid depreciation and credit facilities to them for energy

efficiency improvements having high ROI. Develop renewable energy solutions for industries through solar panels both on-site and off-site coupled with power purchase agreements and grid connection policies, including green hydrogen pilot projects.

Carbon Pricing: Initiate carbon pricing pilot projects and credits or fee/rebate systems within energy-intensive sub-sectors, reinvesting the proceeds into export competitiveness awards towards sustainable technologies and small business renovations. Encourage Public-Private Partnerships (PPPs) for waste-to-energy, industrial water reuse, and renewable energy heating to facilitate private investments.

Skills and Workforce Development: Build local green-skills pipelines by updating National Qualifications Frameworks for energy managers, GHG accountants, and process engineers. Tie technical grants to firms that hire trainees on live decarbonisation projects.

SME Support and Localisation: Transition costs should be localised by developing local emission factors, toolkits, and financial support mechanisms for SMEs through audit vouchers and credit guarantee schemes, since they have greater challenges with transitioning towards greener operations without adequate support.

South-South and Regional Cooperation: Strengthen South-South cooperation on technology transfers, standardisation and joint carbon market infrastructure.

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Circular Economy: A Pathway to Prosperity

Djaheezah Subratty[*]

Islamabad is a city that stands at the confluence of resilience and renewal, very much like the South Asian region itself. I wish to extend my appreciation to the organisers for hosting this dialogue on our shared economic future.

Our economies have relied for far too long on a linear model.

'Extract, use and discard' has driven prosperity for some, but at the cost of our natural capital, our health, and our shared future.

This relentless resource use destroys nature, warms the climate, and deepens inequality. Yet, we know a different model is possible, one that grows economies, reduces poverty, and regenerates the planet. That model is the circular economy–one where approaches respond to national and regional circumstances.

Use of resources has tripled over the past 50 years, growing by over 2% each year. High income countries consume six times more materials and cause ten times more climate impacts than low-income countries. Without change, the goals of the Paris Agreement and the Kunming-Montreal Global Biodiversity Framework will remain out of reach, but solutions exist.

We can ensure that economic growth is sustainable, just and resilient and does not harm people and planet. We can design systems where what goes out comes back in, where what goes in goes in wisely and

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where value is retained in economies for as long as possible. This is the essence of circularity.

On the one hand, design products for circularity and avoid and reduce waste and pollution. On the other hand, recover, reuse, recycle and circulate products and materials. And thirdly, regenerate nature.

While compromises will need to be made, it is not a sacrifice. It is a trillion-dollar opportunity for new markets, innovation and jobs, including SMEs, goods and services sectors. Globally, circularity could unlock around USD 4.5 trillion in economic gains and create over 6 million new jobs, many right here in developing countries.

Across South Asia, we are already seeing inspiring examples.

In Pakistan, pioneering work is underway to strengthen waste management and introduce Extended Producer Responsibility to reduce plastic pollution. Its textile industry, a cornerstone of Pakistan's economy, has historically embodied traditional practices of resale, repair, and recycling. With industrialisation, this is now being taken to the next level by exploring circular models at scale that can reduce emissions and retain value locally. In India, for example, the LiFE initiative is showing how lifestyle change through a simple yet powerful collective. Bangladesh's public sector is emerging as a global leader in green manufacturing. Sri Lanka is piloting circular tourism. Nepal is advancing circular construction for resilience in its rebuilding efforts.

These are not isolated efforts. These are the seeds of a regional transformation. Yet we must move faster and further.

Globally, circularity today is only at 8% and material consumption continues to rise. To bend this curve, we must tackle key barriers: access to finance for circular innovations, transparency in supply chains, and consumer awareness. We must also ensure that circularity delivers a just and inclusive transition, one that supports workers, protects communities, and shares benefits fairly.

The United Nations Environment Programme is working closely with partners to support these shifts through the global alliance on circular economy and resource efficiency and through regional initiatives that bring together governments, business and civil society. We focus on high-impact sectors including plastics, electronics, textiles, buildings, mobility, finance as well as mining and mineral value chains, and promote eight circular actions: *Refuse, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose and Recycle*.

South Asia, with its entrepreneurial energy, young population and growing digital economy can become a global hub for circular innovation by embedding circular principles in industrial policy, trade and investment. The region can unlock growth that is not just faster but fairer and cleaner.

Globally, if we act together by aligning policies, investing in circular infrastructure, empowering citizens, and adopting ambitious industry standards, we can reduce material use by about 30%, cut emissions by over 80% and increase global GDP by 3%. All the while building resilience against climate, nature and pollution shocks.

This is not only an environmental imperative.

It is an economic opportunity and a moral responsibility.

The world is watching how regions like South Asia redefine progress for the 21st Century–not as growth at any cost, but as sustainable development built around material sufficiency, equity and dignity for all. Let us seize this moment to make circularity not a niche but the norm, not a pilot but a policy, not a promise but a pathway to prosperity.

Pakistan: A Regional Leader in Circularity

Dr Shezra Mansab Ali Khan Kharal *

It gives me immense pleasure to join the high-level policy dialogue for 'Circular Economy in South Asia' co-organised by the Sustainable Development Policy Institute (SDPI) and the Institute for Global Environmental Strategies (IGES), Japan.

This dialogue is not only timely but also deeply symbolic and very important because it is the first time that a South Asia Circular Economy Forum is being launched in this region. It reflects our collective commitments to move from a linear to a regenerative development pathway, one that strengthens resilience, reduces waste and promotes sustainable growth. It is, therefore, extremely important for the region to work together, as we share so much. By working collaboratively, we can make real progress.

The Ministry of Climate Change and Environmental Coordination, with the valuable technical support of IGES and SDPI as our national implementation partners, is in the final stages of developing Pakistan's first *'National Circular Economy Policy.'* We have worked very hard to bring this policy to this stage, and I would like to express my sincere appreciation to both the SDPI and IGES teams for their dedication, expertise, and support throughout the process. The draft policy is now under review, and we hope to finalise it very soon. It will be a major milestone in operationalising 'SDG 12: Ensuring Sustainable Consumption and Production Patterns.'

The policy covers a wide range of sectors that are critical to Pakistan's sustainable transition, including solid waste—covering e-waste,

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plastics, and organic waste—as well as used textiles and construction and demolition waste. It also addresses water use in agriculture and industry, and the energy sector, with a particular focus on the management of solar PV waste.

Importantly, the policy introduces 'Extended Producer Responsibility (EPR)', marking the first time such a framework has been introduced in the region. This is because circularity does not begin only at the point of production; it must also be embedded at the level of consumption. Without transforming consumption behaviours, the loop of sustainability remains incomplete. Pakistan's position at INC-5.2 in Geneva reaffirmed this principle: achieving a truly global circular economy, and a plastics treaty that works for everyone, requires us to address consumption as well as production.

Developed economies consume plastics at significantly higher levels and rates than developing countries like Pakistan. While we must strengthen our waste management systems, developed economies must also take responsibility for reducing excessive consumption, changing consumption patterns, and addressing the environmental impacts associated with their higher levels of plastic use.

In fact, our experience has shown that Pakistan has often been a dumping ground for unrecyclable plastic materials, and mixed waste streams that our local recycling systems cannot cope with. This burden is unfair. We have raised our voice about this and hope that other countries, our partners in the region, will also raise their voices about it as they did at the INC-5.2 in Geneva, especially since our national consumption rates are minimal compared to high-income economies.

That said, Pakistan's response remains responsible, characterised by innovation and resilience in the used textile sector. For example, the sector demonstrates over 99% circularity, largely driven by mechanical and informal recycling processes. Textile waste imported under the label of second-hand clothing is efficiently managed within export processing zones, where materials are repurposed, re-stitched, and re-exported.

It would not be wrong to say that a denim jacket, for example, that arrives in Pakistan as waste can be recycled, recrafted, and repurposed, and eventually return to the global market as a new product. I believe this is a significant achievement and a powerful testament to how circularity can generate both climate and economic value, particularly when supported by skilled labour and small enterprises.

Our 'National Circular Economy Policy' seeks to formalise and upscale such practices by involving the informal sector, introducing material recovery standards and aligning incentives for industries and consumers. We also recognise that many of our traditional and indigenous practices, from repair culture and reuse to low material construction, were already circular. So, the policy aims to revive these approaches and combine modern standards with our cultural wisdom that we have inherited.

Pakistan is now emerging as a regional leader in circularity not by rhetoric but through concrete actions. The establishment of this 'South Asia Circular Economy Forum' is itself a manifestation of that leadership. It provides a platform to exchange experiences, harmonise policies, and build a regional narrative on how circular economy can contribute to climate action, resource security, and trade competitiveness.

I wish to thank IGES-Japan for their steadfast partnership, SDPI for their evidence-based policy leadership, and UNEP for providing valuable technical guidance throughout this journey. I am also delighted to see active participation from our regional partners, which reflects a shared recognition that circularity is not just an environmental agenda: it is an economic and diplomatic opportunity for South Asia.

As we move forward, let us view circular economy not only as a framework for waste reduction but as a transformative tool for regional diplomacy, green innovation, and economic resilience. South Asia's vibrant ecosystem of SMEs [Small and Medium-sized Enterprises], startups, and youth innovators is already proving that sustainability

can drive prosperity. Together, through collaboration, policy coherence, and shared ambition, we can make this region a model for circular and climate-resilient development.

Comparative Analysis of Plastic Waste Mitigation Strategies in Pakistan and Indonesia: Policy Frameworks to Circularity*

*Noor Ul Ain and Qurat Ul Ain***

Abstract

Plastic pollution has become a global crisis, with more than 400 million tonnes of plastic produced annually and significant environmental, economic and health impacts. Rooted in the linear 'take-make-dispose' model, the crisis requires a transition towards more circular approaches. This study analyses plastic waste reduction policies in Indonesia and Pakistan by comparing policy frameworks, recycling practices, and environmental performance. The findings indicate that effective plastic-waste mitigation in developing economies requires a hybrid approach that combines Indonesia's regulatory maturity with Pakistan's experience in green microfinance to formalise and strengthen grassroots recycling networks.

Keywords: Plastic Waste, Circular Economy, Plastic Waste Mitigation Policies, PLEASE Project, Extended Producer Responsibility (EPR).

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Introduction

Globally, plastic pollution is a growing threat. It is severely affecting Pakistan's ecosystems and the country's economy in particular, with 400 million tonnes of plastic waste produced annually and estimated 11 million tonnes of it ending up in the ocean, threatening more than 800 marine species (UNEP 2021, p. 60). The primary cause of plastic pollution is a linear consumption model that involves inefficient and unsustainable resource extraction, production, and product disposal. Other causes include excessive use of disposable/non-reusable plastics due to their affordability and durability, a poor waste management system, and reliance on single-use containers. Reducing demand for virgin plastic production and minimising plastic waste requires sustainable economic policies, including circular economy models and national level plastic mitigation measures, to protect the environment and promote long-term sustainability.

The European Union, for example, has moved beyond a linear economic model towards circular economy principles by focusing on innovation, entrepreneurship, and government support, while developing economies, particularly those in Asia, are lagging in the transition away from plastic pollution. This chapter provides a comparative analysis of plastic waste policies and their socioeconomic challenges in Pakistan and Indonesia, assessing the effectiveness of policy measures in reducing plastic waste and controlling pollution in both countries.

Literature Review

The following literature review examines the different dynamics of plastic waste management in Pakistan and Indonesia through existing theoretical frameworks, system dynamics and the socioeconomic dimensions of waste management.

Global Approaches to Plastic Waste

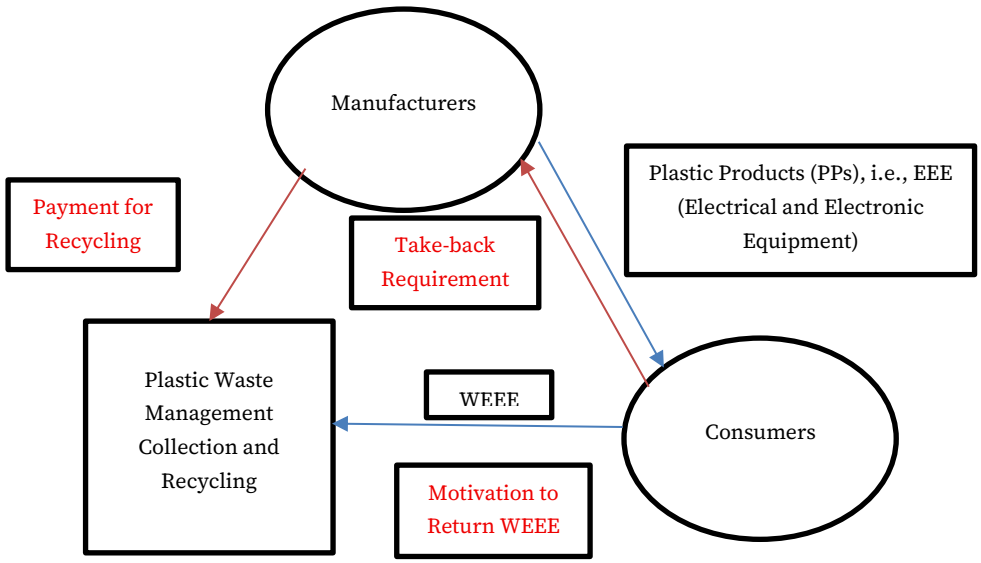
With the overall increase in population and urbanisation, studies have shown that global plastic production has increased exponentially since the mid-20th Century, reaching approximately 400 million tonnes per year, of which approximately 40% is for single-use items. However, inadequate production and supply management exacerbate plastic pollution; 79% of all plastic generated is primarily dumped in landfills or the natural environment, with only 9% recycled. In addition, aquatic ecosystems currently receive 19–23 million tonnes of plastic waste annually, contributing to an estimated ocean accumulation of 75–199 million tonnes. Without meaningful intervention, these emissions are projected to nearly triple by 2040, severely intensifying pollution across lakes, rivers and seas (UNEP 2021, p.14). Furthermore, plastic waste and disposal are unevenly distributed by countries, with the majority sent to developing countries. Poor waste management and population density contribute significantly to the marine plastic pollution of Asian nations such as Indonesia and Pakistan, where plastic waste has a 'very high' impact on the terrestrial environment and allows the entry of microplastics into aquatic organisms (Lebreton et al., 2017). Similarly, affluent nations export plastic garbage to low-income countries, thereby shifting most of the environmental and social costs of disposal to the Global South (Brooks et al., 2018). Moreover, the production and conversion of fossil fuels into new plastic products account for 90% of plastic-related emissions and up to 3.4% of total GHG emissions (OECD 2022, p.14). With global population growth, this trend will increase plastic production.

Circular Economy: Theory and Practice

In response to the inadequacies of the linear model, the Circular Economy (CE) model aims to eliminate waste and decouple economic activities from the consumption of finite resources by focusing on three fundamental (3R) principles: waste and pollution removal (reduce), reuse, and the circulation of products and materials (recycle). In

developing countries, the shift to the CE is not only an environmental responsibility but also an economic opportunity. This transition is increasingly being supported by corporate initiatives across Asia that aim to decrease reliance on fossil-based virgin raw materials and mitigate anthropogenic emissions. In Pakistan, waste collection is being formalised by the CoRe (Collect and Recycle) Alliance which includes companies like Lucky Core Industries, which recycled more than 28,000 tonnes of PET bottles into polyester fibre and offset more than 49,000 tonnes of carbon dioxide emissions in 2023–24. Efforts such as the introduction of 100% rPET brands are crucial to reduce millions of tonnes of mismanaged plastic waste in the country each year (CoRe Alliance 2023). Furthermore, PepsiCo has taken a leading circular economy initiative by gathering more than 32,000 tonnes of plastic waste with partners such as WWF Pakistan (PepsiCo Pakistan 2023). Simultaneously, in 2024, the company switched Mountain Dew bottles to light green so that they would meet local recycling standards, retain higher market value, and be suitable for use in a wider range of new products. Likewise, multinationals like Unilever in Indonesia have rolled out holistic sustainability strategies to fulfil national roadmaps, such as the rollout of refill stations (e.g., QYOS) to get rid of single-use sachets and investment in recycling infrastructure (Unilever Indonesia 2022).

Figure I: Outline of a Holistic Policy for Plastic Products



Source: Wiesmeth (2012).

Waste Management System Dynamics

To examine the non-linear behaviour of complex waste management systems over time, System Dynamics (SD) is used. In the context of plastic waste, SD models can be used to model the long-term effectiveness of different interventions (bans, fees, and recycling subsidies) in advance (Apriadi et al., 2024). For instance, a single ban on plastic bags shifts consumers' preference towards alternative disposable methods without regulation, indicating that uncoordinated policy interventions can be ineffective due to systemic outflow. In contrast, mixed policy scenarios, i.e., integration of market-based instruments (such as putting a higher price on buying plastics), with

regulatory bans and infrastructure development, are much more effective in reducing plastic waste.

Microfinance in the Informal Sector

One of the critical gaps identified in the literature on waste management is the underestimation of the role of the informal sector and small and medium-sized enterprises (SMEs). In countries like Pakistan, less than half of municipal solid waste is collected through formal waste management infrastructure, while the rest is collected through an informal system of waste collectors and small-scale recyclers. According to recent research, these organisations obtain notable recycling returns, i.e., up to 84% in mechanical recycling processes (Farooq et al., 2025). However, operating in a grey area of regulations and the high cost of capital discourage technological modernisation. There is an increasing stress in waste management research on integration of Microfinance Institutions (MFIs) as an empowering factor in this sector. Through tailored financial services, MFIs can support the formalisation and efficiency of the recycling ecosystem, transforming waste management from a municipal liability into a source of economic empowerment.

Study Methodology

This research adopted a qualitative comparative case study design to examine and compare plastic waste reduction practices in Pakistan and Indonesia. The two countries were selected to develop a policy typology within the Asian context, contrasting Indonesia's relatively state-regulated approach with Pakistan's predominantly informal and market-driven recycling system.

The study relied on secondary data drawn from a purposive selection of documents published between 2017 and 2025. Data sources included national policy documents, legislation, and strategic roadmaps, including Indonesia's Jakstranas (Presidential Regulation No. 97/2017)

and Pakistan's National Plastic Action Plan (2025); reports and datasets from the World Bank, including the PLEASE Project (2024), the United Nations Environment Programme (UNEP), and the World Economic Forum on marine plastic leakage and pollution indicators; and peer-reviewed studies on System Dynamics (SD) modelling of waste management and Life Cycle Assessment (LCA) of recycling processes in developing economies.

A thematic content analysis was conducted across three key dimensions:

1. **regulatory architecture, particularly bans versus policy roadmaps;**
2. **circular economy integration, including Extended Producer Responsibility (EPR) and recycling rates; and**
3. **socioeconomic impacts, particularly the inclusion of the informal sector.**

The analysis combined quantitative indicators, including recycling rates and waste-reduction targets, with qualitative policy analysis to assess the relative effectiveness of linear and circular economy interventions in the two countries.

Findings and Analysis

The Case of Pakistan

Over the years, plastic waste reduction policies in Pakistan were characterised by fragmented and largely provincial-level initiatives. With nearly 2 million tonnes of plastic waste generated annually and an estimated mismanagement rate of at least 86.4%, Pakistan has been identified as one of the world's major contributors to plastic pollution (Business Recorder 2024). In recent years, however, the policy landscape began to shift towards a more coordinated and unified national approach.

National Policy Architecture

The strategic shift towards a unified national framework marks an important transformation in Pakistan's policy environment, with federal ambitions aligned with provincial implementation.

National Plastic Waste Mitigation Plan (Ten-Year Strategy): In 2023, the Government of Pakistan (GoP) initiated a ten-year 'National Plastic Waste Mitigation Plan' to reduce the use of disposable plastics, increase recycling facilities, and reduce waste volume (Masood 2023). The strategy was linked with the National Climate Change Policy (NCCP) to ensure that all federal and provincial governments use the 3Rs (Reduce, Reuse, Recycle) and encourage alternative plastic use.

Single-Use Plastics (Prohibition) Regulations 2023: In the same year, the 'Single-Use Plastics (Prohibition) Regulations' established a national regulatory framework restricting the production, import, supply, sale, and consumption of a wide range of single-use plastic products, including polythene bags, drinking straws, cutlery, and food containers. These regulations are being implemented in the Islamabad Capital Territory (ICT) but can serve as a model for other provinces. Moreover, by integrating circular principles, the city is projected to produce beverage containers containing at least 50% recycled content by August 2028 (Rahman 2023). This approach provides recycling businesses with greater long-term demand certainty by promoting the market transition towards recycled feedstock.

Public-Private Initiatives and Collaboration for Plastic Waste Reduction

Alongside regulatory measures, local initiatives have demonstrated alternative approaches to plastic waste utilisation. At the federal level, implementation has increasingly combined regulation with public awareness and behavioural interventions. In April 2024, the Ministry of Climate Change and Environmental Coordination (MoCC&EC), in collaboration with the Pakistan Environmental Protection Agency

(Pak-EPA), launched an awareness and enforcement campaign for the 'Single-Use Plastics (Prohibition) Regulations 2023.' Linked with Earth Day 2024, the initiative sought to promote behavioural change while advancing the development of a national 'Roadmap for Plastics Action' (Pak-EPA 2024). Plastic waste can also be used to build roads that help sequester the waste, locking it up and making the road more durable. For instance, in Islamabad, shredded plastic waste has been incorporated into road construction through collaboration between the Capital Development Authority and environmental organisations (Khwaja and Rana 2022). Such initiatives illustrate the emergence of circular and technology-based responses; however, their limited scale also highlights the broader challenge of translating isolated innovations into systematic national practice.

Recent plastic mitigation policies have also increasingly been aligned with regional and international initiatives for cooperation and collective action. For instance, the Plastic Free Rivers and Seas for South Asia (PLEASE) project, implemented in association with the South Asia Co-operative Environment Programme (SACEP), addresses marine plastic pollution across South Asia. The project supported eco-innovation technologies and assisted member states in strengthening their regulatory frameworks. The five-year project (2020–2025) received USD 50 million in funding from the World Bank to address marine plastic pollution. By 2025, approximately USD 37 million had been utilised to support regional innovations, helping prevent up to 10 million kilograms of plastic waste from entering South Asian seas and facilitating the recycling of an additional 626,000 kilograms of plastic. The programme reached more than 177,000 individuals and engaged 6,667 informal waste workers across the region (SACEP 2025).

In Pakistan, Davaam Life received an Innovation Grant under PLEASE to deploy 90 automated units in Karachi, comprising 60 refill stations and 30 sanitary napkin dispensers, with the aim of encouraging consumer behaviour towards reuse. The project focused on the Parley AIR themes of 'Avoid' and 'Redesign' to reduce waste at source while

enabling hygienic, single-unit purchases (PLEASE Project 2024). The initiative leveraged Davaam Technologies' expertise to promote a shift from conventional waste management practices towards proactive, market-based sustainability solutions. Furthermore, the project supports national projects such as the 'Plastic Waste: A Journey down the Indus' roadmap, which assesses leakage points within the Indus River basin–a significant route through which plastic reaches the Arabian Sea (World Bank 2022).

Pakistan became a member of the Global Plastic Action Partnership (GPAP) in 2022, which initiated pilot programmes, including Zero Plastic Waste Cities along the Indus. The project will focus on large cities such as Karachi, Lahore, and Faisalabad, by duplicating effective models of partnership between the government and the private sector to achieve zero plastic waste by investing in infrastructure and involving the community (WEF 2025).

Provincial Implementation Gaps: An Example of Sindh

Given the decentralisation of environmental governance, the implementation of plastic waste policies has varied considerably across Pakistan. Sindh was among the first provinces to prohibit the manufacture, sale, and use of polythene bags through the 'Sindh Prohibition of Manufacture, Sale and Use of Polythene Bags Act 2006.' However, the effectiveness of this regulatory approach has been constrained by weak enforcement and the limited availability of viable alternatives. Subsequent institutional reforms, including the establishment of waste management structures under the 'Sindh Solid Waste Management Act 2021,' sought to strengthen implementation, although operational and coordination challenges have persisted.

SMEs in Plastic Recycling: Contributions, Constraints and Financing

The Small and Medium-sized Enterprises (SMEs) sector is an important but often overlooked component of Pakistan's plastic mitigation

ecosystem. SMEs perform a substantial share of recycling activities, processing much of the plastic material collected within the country (Farooq et al., 2025).

i. **Operational Efficiency: SME-driven mechanical recycling in Pakistan demonstrates relatively high operational efficiency, with material recovery rates reaching up to 84%. According to LCA estimates, such low-technology mechanical recycling processes generate 70–80 times lower greenhouse gas emissions than virgin plastic production. This suggests that informal and semi-formal recycling enterprises contribute not only to waste recovery but also to climate change mitigation.**

ii. **Financial Exclusion: Despite their contribution, these enterprises face acute liquidity and financing constraints. Technological upgrading is particularly difficult because of the high upfront costs of essential machinery, such as shredders and extruders, which are estimated to range from PKR 1 million to PKR 20 million. Yet, only an estimated 12% of enterprises in the sector have access to financing from traditional banks, largely because they are perceived as high-risk borrowers and often lack sufficient collateral (Farooq et al., 2025).**

iii. **The Microfinance Catalyst: Microfinance Institutions (MFIs) could help address financing constraints by providing tailored financial services to recycling SMEs. An estimated cost-benefit analysis suggests that supporting just 200 recycling SMEs could generate more than PKR 1.1 billion in annual social and environmental benefits, with a Benefit-Cost Ratio (BCR) of 4.07 (Farooq et al., 2025). In practical terms, this implies that every PKR 1 invested in these enterprises could generate approximately PKR 4.07 in social and environmental returns.**

Technological Interventions

Pakistan has also experimented with several technological approaches to managing plastic waste:

i. **Oxo-biodegradable Technology:** The government introduced requirements for certain plastic products to contain pro-degradant additives intended to accelerate degradation. In Khyber Pakhtunkhwa, for example, the Environmental Protection Agency was authorised to issue certification following prescribed testing of pro-degradant additives by independent, accredited third-party laboratories in accordance with ISO/IEC 17025 standards (EPAKP 2021). Oxo-biodegradable technology was initially viewed as a potential short-term response to plastic waste. However, concerns emerged regarding its environmental safety, particularly because such plastics may fragment into microplastics rather than biodegrade completely. Consequently, policy attention increasingly shifted away from oxo-degradable solutions towards restrictions on non-degradable plastics and other waste-reduction measures.

ii. **Plastic Road:** Constructing roads using plastic waste blended with bitumen is also becoming an increasingly popular form of disposal. Projects such as Atatürk Avenue in Islamabad and Zafar Ali Road in Lahore have demonstrated the potential application of this approach. Plastic-modified roads are reported to offer greater durability and water resistance while also diverting plastic waste from landfills and waterways.

The Case of Indonesia

As the second-largest source of marine plastic pollution in the world, Indonesia has implemented a multi-layered policy framework. The strategy adopted by the government of Indonesia has a significant impact on controlling the domestic waste production and imported waste after the global changes in the waste trade.

National Policy Architecture

Indonesia's waste management framework is primarily guided by Presidential Regulation No. 97/2017, known as the 'National Policy and Strategy on Household Waste Management (Jakstranas).' The policy set specific and measurable national targets: a 30% reduction in waste generation and 70% waste handling by 2025 (WWF-Indonesia 2022, p. 15). Jakstranas also required local governments to develop corresponding regional strategies (Jakstrada), thereby establishing a decentralised but coordinated framework for implementing waste reduction objectives across the archipelago.

To operationalise these reduction targets, Indonesia's Ministry of Environment and Forestry issued 'Regulation No. P.75/2019,' commonly referred to as the 'Extended Producer Responsibility (EPR) Regulation,' and developed a Waste Reduction by Producers roadmap aimed at achieving a 30% reduction in waste by 2029. The regulation was designed to guide producers in reducing plastic, paper, aluminium, and glass waste generated from their products, packaging, and services (WWF-Indonesia 2022). Importantly, the regulation shifted greater responsibility upstream by requiring brand owners, manufacturers, and retailers to minimise waste generation through the application of the 3Rs: reduce, reuse, and recycle. Producers are expected to redesign packaging to improve recyclability and reusability and encouraged to introduce take-back schemes.

Policy Scenario Modelling and Intervention Effectiveness

System Dynamics (SD) modelling has been used in research on Indonesia to assess alternative policy combinations and account for the complexity of plastic waste management systems. These simulations suggest that single-policy interventions may have limited effectiveness because of substitution, behavioural responses, and leakage effects, whereas integrated policy packages can produce substantially greater reductions in plastic waste.

i. **Effectiveness of Combined Policy Instruments: SD simulations indicate that standalone interventions, such as a plastic bag ban or fee implemented independently, may have limited effectiveness because of substitution and leakage effects. In contrast, integrated policy packages combining plastic bag bans, user fees, and the establishment of recycling centres were found to produce substantially stronger waste-reduction outcomes.**

ii. **Plastic-Specific Policy Scenarios: The effectiveness of interventions also varied by type of plastic. For plastic bottles, simulations indicated that combining recycling centres with Extended Producer Responsibility (EPR) could reduce waste by more than 72% by 2029. For plastic bags, the combination of bans and fees produced a synergistic effect, with projected reductions of up to 94.84% (Apriadi et al., 2024).**

Climate Co-benefits of Plastic Waste Management

Indonesia's waste management strategy is increasingly linked to its broader climate objectives. Integrated policy interventions that improve recycling rates can contribute to reductions in greenhouse gas emissions by decreasing reliance on virgin plastic production and reducing waste disposal through incineration and open burning. The expansion of recycling infrastructure therefore offers potential carbon emission benefits while supporting Indonesia's commitments under its Nationally Determined Contribution (NDC) to the Paris Agreement. Higher recycling rates can also reduce the cumulative environmental externalities associated with plastic waste, including greenhouse gas emissions from landfills, incineration, and other forms of inappropriate disposal.

Public–Private and Community-Based Initiatives for Plastic Waste Reduction

Indonesia has integrated community-based and private-sector approaches into its waste management system, creating distinctive socio-economic mechanisms for plastic waste recovery and recycling.

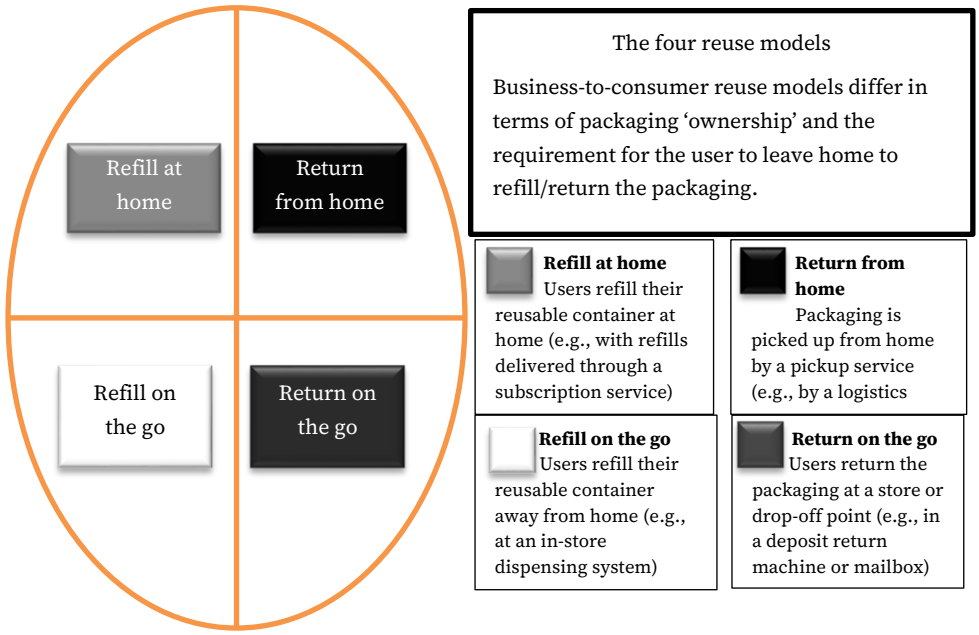
i. **Waste Banks (Bank Sampah): Waste banks are an Indonesian community-based model that encourages households to separate waste at source. Residents deposit recyclable materials at local waste banks, where the materials are weighed and assigned a monetary value based on prevailing market prices. The accumulated value can either be withdrawn as cash or used to pay selected household bills. The system creates economic value from waste while also providing a relatively clean and segregated stream of recyclable materials for further processing.**

ii. **Surabaya Bus: In Surabaya, the municipal government introduced a scheme allowing residents to exchange plastic bottles for bus fares. The initiative linked access to public transport with plastic waste collection, thereby encouraging households to separate plastic bottles from the general waste stream. More broadly, the scheme demonstrated how discarded plastic could be assigned an exchange value while simultaneously promoting recycling and public transport use.**

iii. **Corporate Sustainability: Large multinational companies operating in Indonesia, including Unilever, introduced sustainability initiatives aligned with the producer waste-reduction roadmap. These included refill systems, such as QYOS, aimed at reducing reliance on single-use sachets, alongside investments in collection and recycling infrastructure. In Indonesia, refill stations enabled consumers to purchase products using reusable containers, thereby**

reducing the consumption of single-use plastic packaging, as shown in Figure II.

Figure II: Indonesia's Circular Economy Principles-Reuse Models



Source: Business Coalition for a Global Plastics Treaty (2024).

Comparison of Plastic Waste Management Strategies: Pakistan and Indonesia

Table I presents a comparative assessment of the plastic waste management strategies adopted in Pakistan and Indonesia, highlighting key differences in regulatory approaches, implementation mechanisms, and circular economy interventions.

Table I: Comparative Overview of Plastic Waste Management Strategies

Feature	Pakistan	Indonesia
Core Strategy	Ten-Year National Plastic Waste Mitigation Plan; Single-Use Bans (ICT)	*Jakstranas* (Presidential Reg. 97/2017); Producer Waste Reduction Roadmap
International Collaboration	PLEASE Project (SACEP); GPAP	Basel Convention Compliance (Import bans); GPAP
Recycling Focus	SME-led mechanical recycling; Plastic roads	Waste Banks; RDF/Co-processing; Industrial recycling
EPR Status	Conceptual/voluntary; Lacks binding fiscal mechanism	Roadmap (P.75/2019); Producers mandated to reduce waste
Role of Community	Awareness campaigns ('No to Plastic'); Informal waste pickers	Institutionalised Waste Banks (*Bank Sampah*); Payment-for-services (Surabaya Bus)
Key Challenges	Provincial fragmentation; Financial exclusion of SMEs	Import of hazardous waste; Landfill capacity; Enforcement consistency

Source: Authors' own.

Recommendations

Based on the country-level findings, and to bridge the gap between policy intent and implementation on the ground, the following recommendations draw on lessons from Pakistan and Indonesia, System Dynamics (SD) modelling, and the principles of the circular economy.

Regulatory Harmonisation and Producer Accountability

Pakistan should accelerate the harmonisation of provincial regulations with the 'National Plastic Waste Mitigation Plan' to reduce inconsistencies in implementation. Establishing common minimum regulatory standards across provinces would help prevent regulatory arbitrage and strengthen enforcement. Indonesia, in contrast, should further strengthen implementation of the Producer Roadmap by

ensuring that compliance requirements extend beyond large multinational corporations to include medium-sized domestic producers, supported where necessary by technical and financial assistance to meet prescribed targets.

EPR Enforcement and Sustainable Financing

Pakistan should move towards a mandatory Extended Producer Responsibility (EPR) framework, while Indonesia should strengthen enforcement and compliance under its existing EPR system. Producer obligations should be legally binding, with levies differentiated according to the recyclability and environmental impact of packaging. Revenues generated through these levies should be ring-fenced to finance recycling infrastructure, support technological upgrading, and facilitate the inclusion of informal waste workers. In Pakistan, applying the polluter-pays principle could provide a sustainable financing mechanism to address persistent funding gaps in plastic waste management.

SME Financing and Microfinance Integration

In Pakistan, the government and financial regulators should promote the participation of MFIs in the waste management and recycling sector. Green financing products, including concessional or low-interest loans for recycling machinery and technological upgrades, could help SMEs expand their operations and improve efficiency. LCA could further guide such financing by directing investment towards recycling processes that offer the greatest environmental and climate benefits.

Community-Based Model Replication

Pakistan should consider adapting Indonesia's Waste Bank model to local conditions. Localising this approach could help bridge the gap between households and informal waste collectors while promoting

source segregation and improving the quality of recyclable materials entering the waste stream. Indonesia, in turn, should scale successful community-based initiatives, such as the Surabaya Bus scheme, to other cities and sectors to sustain public participation and strengthen behavioural incentives for recycling.

Digital Traceability and Data

To ensure transparency in digital waste-tracking systems, blockchain or digital registries can be used to track waste flows from generation to recycling, verifying companies' EPR claims and identifying any leakage points, which can be fundamental to the calculation of CO2 offsets.

Implications for South Asia

The comparative analysis highlights two distinct approaches with broader relevance for South Asia. Indonesia represents a more state-led formalisation model, structured around the Jakstranas roadmap, with clearly defined national targets of a 30% reduction in waste generation and 70% waste handling (WWF-Indonesia 2022, p. 15). Pakistan, by contrast, reflects a more informal and market-driven recycling model, in which SMEs and informal actors achieve relatively high material recovery rates despite persistent financial and institutional exclusion.

For South Asia, where informal waste collection remains widespread, these findings suggest that policy should not simply replicate highly formalised waste management models. Rather, formal regulatory frameworks should be designed to recognise, integrate, and strengthen existing informal recycling systems. Pakistan's potential use of green microfinance to support recycling SMEs offers a model that could be adapted in other South Asian countries, including India and Bangladesh, to facilitate gradual formalisation without disrupting existing livelihoods. Similarly, Indonesia's Waste Bank model demonstrates how community-based source segregation can help connect households with formal recycling value chains.

Conclusion

The comparative analysis of Pakistan and Indonesia shows that both countries are pursuing similar environmental goals, but their approaches reflect their different socioeconomic contexts. Indonesia has developed a decentralised regulatory framework through *Jakstranas* and systemic producer responsibility, and community integration models such as waste banks. In contrast, Pakistan is trying to consolidate various policies to reduce plastic waste, including the ten-year national strategic plastic mitigation plan, SME empowerment, technological interventions (plastic roads), and restrictions on single-use plastic. The study findings indicate that regulatory bans and market-based incentives are unlikely to be effective when implemented in isolation. Integrating circular economy principles of reduce, reuse, and recycle can help reshape producer and consumer behaviour towards plastic waste reduction, while reframing waste from an economic burden into a recoverable resource. Such an approach can support the long-term sustainability of both ecosystems and economies.

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Regenerative Humane Development: Sustainability Beyond 2030*

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Abstract

This study introduces Regenerative Humane Development (RHD) as a next-generation sustainable development paradigm post-2030 timeline for the United Nations Sustainable Development Goals (SDGs). The SDGs showed us the challenge but failed to overcome the conflict between society and nature. RHD aspires not merely to 'do no harm' but to generate net-positive outcomes for both nature and society by integrating ethical principles, financial realism, and regenerative science. RHD is developed as a domain application of Dynamic Prescriptive Economics (DPE), a general decision-science meta-framework that provides the analytical architecture — measurement instruments, diagnostic tools, and prescriptive pathways — within which RHD operates. To measure RHD and transition to its ideal space, this chapter draws on the DPE two-dimensional model based on Normalised Balanced Coordinates (NBCs) — a four-quadrant system where the x-axis represents ecological regeneration and the y-axis represents socioeconomic empowerment.

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Quadrant I is the ideal, III the collapse and II and IV the trade-offs. The framework offers prescriptive strategies designed to shift projects and systems from degenerative states towards the ideal, in which both environmental and human systems thrive. The chapter further proposes a convex optimisation model to maximise RHD outcomes within financial constraints, enabling decisionmakers to pursue policies that are both ethical and economically viable. Using SDGs and SDG spillover data, the paper provides empirical evidence for robustness of the RHD model.

Keywords: Post-2030 Sustainability, Regenerative Humane Development (RHD), Sustainable Development, Normalised Balanced Coordinates, Substitutions-Transformations-Offsets (STOs).

Introduction

Humanity faces a profound development paradox: nations that attain a high Human Development Index (HDI) often do so at the expense of ecological integrity (high ecological footprint), while countries living within planetary limits tend to have lower HDI (UNDP 2024; Spaiser et al., 2017). As the 2030 deadline for the United Nations SDGs approaches, focus is increasingly turning towards broader and more fundamental systemic transformation. The current UN Decade on Ecosystem Restoration calls for ambitious strategies that go beyond sustainability and actively regenerate both environmental and human systems; it is understood that this will remain the pivotal narrative beyond 2030 (UNSD 2018; UNSD 2024).

In this context, the chapter introduces Regenerative Humane Development (RHD) as a paradigm that not only minimises harm but creates net-positive impacts on ecological integrity and socioeconomic well-being. RHD is conceived as a domain application of Dynamic Prescriptive Economics (DPE) — the overarching meta-framework that supplies the general analytical architecture used throughout this study, including Normalised Balanced Coordinates (NBCs) as the measurement instrument, the four-quadrant diagnostic model, and Substitutions, Transformations, and Offsets (STOs) as the prescriptive

toolkit (Khan 2025). DPE thus provides the methodological foundation; RHD is its instantiation for the sustainability domain. This section outlines the four key parameters of the global sustainability dilemma that motivates RHD, examining the conflict between human development and ecological limits, the breaching of planetary boundaries, the depletion of Earth's biocapacity, and the intergenerational inequities in climate impacts.

HDI vs Ecological Footprint

The negative correlation between human development and ecological sustainability is among the most structurally important, and most persistently ignored — empirical regularities in development data. European Environment Agency analysis of 2024 data confirms that countries with a HDI above 0.8 almost universally maintain per-capita Ecological Footprints exceeding approximately 1.7 global hectares — Earth's estimated per-capita biocapacity benchmark (EEA 2019; 2024). The high HDI, sustainable footprint quadrant — the space where both conditions are simultaneously satisfied — is empirically near empty. EU member states cluster tightly in the high HDI, high footprint zone; low and medium HDI nations occupy the lower left region with adequate ecological standing but insufficient human development. No large high-income economy currently operates within biocapacity limits while maintaining an HDI above 0.8. This absence is not incidental or transitional: it represents the structural coupling between material throughput and welfare provision that five decades of green economy policy have failed to dissolve (Parrique et al., 2019; Haberl et al., 2020). In the NBC framework later, this empirically empty quadrant defines the QI target space — the space that regenerative development must make inhabitable.

Planetary Boundaries

The progressive transgression of Earth's biophysical limits provides the ecological boundary condition within which all development

frameworks must operate. The Planetary Boundaries framework, first proposed by Rockström et al. (2009), identifies nine Earth system processes whose disruption beyond safe thresholds risks destabilising the Holocene-like conditions under which human civilisation developed. At the framework's inception in 2009, three boundaries had been crossed: climate change, biodiversity loss, and the nitrogen cycle. By 2015, a fourth land system change — had been added (Steffen et al., 2015).

The most recent assessment, published in 2023, found that six of nine boundaries had been transgressed: climate change, biosphere integrity, land system change, freshwater change, biogeochemical flows, and novel entities including synthetic chemicals and plastics (Richardson et al., 2023). The remaining three — ocean acidification, atmospheric aerosol loading, and stratospheric ozone depletion — are under intensifying pressure. The trajectory is one of monotonic deterioration across 15 years of measurement, despite the parallel pursuit of green growth, circular economy, and SDG frameworks across the same period. This trajectory is the ecological emergency that motivates RHD's prescriptive rather than descriptive orientation: diagnosis without prescription has demonstrably failed to halt boundary transgression.

Earth Overshoot Day

Earth Overshoot Day — the calendar date on which humanity's annual resource consumption exceeds Earth's annual regenerative capacity — provides a single, widely understood indicator of the aggregate ecological deficit. Global Footprint Network (GFN 2024) data show the date advancing from late December 1971, when humanity's consumption was approximately in balance with regenerative capacity, to 1 August 2024 — implying that humanity now requires the equivalent of approximately 1.75 Earths to sustain its current level of resource consumption and absorb its waste streams for a full year. The advance

has been monotonic across five decades, with no sustained reversal attributable to any sustainability policy initiative.

High income nations have consistently been the primary drivers of overshoot, with per capita footprints in QII countries typically requiring between three and five planet equivalents if generalised globally. The acceleration of Overshoot Day represents the aggregate expression of the ecological coordinate deficit that the NBC framework makes explicit at the country level: the near universal negative x-coordinates of OECD nations in Table I are the country level manifestation of the global overshoot trend. Reversing Overshoot Day — moving it towards or past 31 December — is the operational meaning of achieving positive x-coordinates across the distribution of high income nations.

Intergenerational Climate Burden

The intergenerational dimension of the ecological crisis adds to a normative urgency that cross-sectional analyses tend to obscure. IPCC's Sixth Assessment Report synthesis data show that lifetime warming exposure varies dramatically across birth cohorts under current emission trajectories (IPCC 2023, p. 7): cohorts born in 1950 will experience lifetime warming in the range of 1°C above pre-industrial baselines; those born in 1980 face exposure in the range of 1.5 – 2°C; cohorts born in 2020 face potential warming exceeding 3°C above pre-industrial levels by late in their lifetimes under high emission scenarios — more than three times the exposure of the 1950 cohort. This intergenerational asymmetry is compounded by distributional inequity: Oxfam International (2023) documents that the wealthiest 1% of humanity emits more greenhouse gases than the bottom 66%, meaning that the cohorts bearing the greatest future exposure are disproportionately located in lower income nations that have contributed least to the stock of atmospheric emissions. In formal terms, this pattern constitutes an axiomatically unjust allocation under Chichilnisky's (1995) framework for sustainable development, which

requires that no generation holds a privileged claim on natural capital at the expense of those who follow. It motivates directly the near zero discount rate on ecological investments formalised in this study: standard discounting at 3 – 7% effectively treats the welfare of the 2020 cohort as worth a small fraction of current welfare, embedding the intergenerational inequity into the finance architecture rather than correcting it.

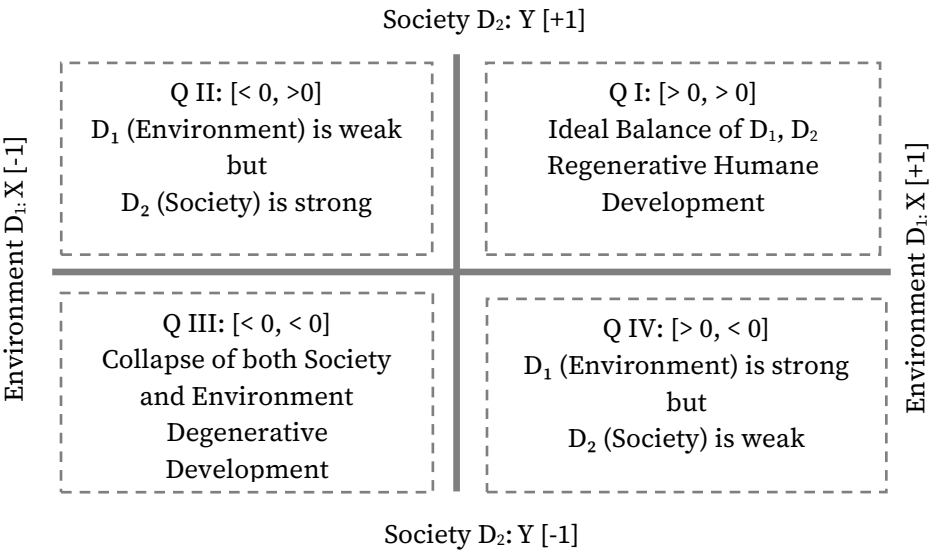
In summary, the above challenges frame a core dilemma: how can societies achieve and sustain human dignity and prosperity within the regenerative capacity of one Earth, without compromising the rights of future generations (Chichilnisky 1995)? RHD is proposed as a next generation paradigm to address this dilemma. Building on the shortfalls of the current sustainability approach, RHD is conceived as a dynamic, ethics-driven, and analytically grounded framework for advancing human well-being in harmony with a thriving natural environment. The following sections detail the components of this framework — its conceptual structure, strategic pathways for transformation, and an optimisation-based approach to operationalise regenerative development under real world constraints.

RHD Framework

Quadrant Model and NBCs

At the heart of the RHD framework is a two-dimensional decision plane defined by NBCs (Khan 2024; Khan 2025). This plane is a Cartesian coordinate system in which Dimension D_1 the x-axis represents the state of ecological health or regeneration, and Dimension D_2 the y-axis represents the state of human or socioeconomic well-being (such as social equity, health, and empowerment). Both axes are normalised (e.g., from –1 to +1) so that zero denotes a neutral state, positive values indicate regenerative or positive outcomes, and negative values indicate degenerative or harmful outcomes.

Figure I: Quadrant Mapping of Sustainability Performance



Source: Author's own.

Dimensional Rubrics: The two dimensions D_1 and D_2 must be based on robust comprehensive (multistakeholder) rubrics. As an example from SDGs *x, y* dimensional rubrics will be as in the following:

X-axis (Environment D_1) Rubrics would include:

SDG 6: Clean Water and Sanitation

SDG 7: Affordable and Clean Energy

SDG 13: Climate Action

SDG 14: Life Below Water

SDG 15: Life on Land

Plus, other environmental indicators.

Y-axis (Society D_2) Rubrics would include:

SDG 1: No Poverty

SDG 2: Zero Hunger

SDG 3: Good Health and Well-being

SDG 4: Quality Education

SDG 5: Gender Equality

SDG 8: Decent Work and Economic Growth

SDG 10: Reduced Inequalities

SDG 11: Sustainable Cities and Communities

SDG 16: Peace, Justice and Strong Institutions

SDG 17: Partnerships for the Goals.

By plotting development outcomes on this plane, the four-quadrant model of Figure I is obtained that serves as a diagnostic and planning tool:

Quadrant I (Top Right): Both x and y are positive, indicating regenerative ecological outcomes and positive social outcomes. This is the ideal 'win–win' scenario RHD strives for: high human development achieved in a way that restores or enhances natural systems. Quadrant I corresponds to societies that are truly sustainable and regenerative, where human prosperity coexists with a healthy environment.

Quadrant II (Top Left): x is negative (environmental degradation) while y is positive (social well-being). This quadrant includes cases where human development is achieved at the cost of nature, reflecting an imbalance where economies and societies thrive in the short term but degrade their ecological foundations. Many industrialised countries today fall here: high HDI but unsustainably high footprints (as illustrated in Figure I).

Quadrant III (Bottom Left): Both x and y are negative, a degenerative scenario where development is neither socially equitable nor environmentally sustainable. This could describe contexts of poverty coupled with severe environmental degradation: a vicious cycle RHD

seeks to break by simultaneous regeneration of ecosystems and improvement of human well-being.

Quadrant IV (Bottom Right): x is positive (environment improving or intact) but y is negative (social outcomes poor). This represents situations where environmental integrity is maintained (often due to low economic activity) but human development is lacking, for example, communities with low carbon footprints but also low access to education, healthcare, or infrastructure. Here the challenge is to raise living standards without eroding natural capital.

Qs II and IV are Green Economy quadrants to minimise harm within the existing linear system QII or enhanced circular system QIV. A Regenerative Humane Economy is a paradigm shift that seeks to redesign the system so that both nature and humanity continuously regenerate and thrive together.

By diagnosing the current state of a project, community, or nation in one of these four quadrants, the NBC framework highlights the specific imbalances that need to be addressed. The goal of RHD is to guide all systems towards Quadrant I (positive on both axes). Importantly, the NBC coordinates are a *balanced, normalised and unified measure* such that movement along one axis does not inherently guarantee movement along the other — this prevents the traditional blind spot where economic growth was assumed to eventually 'trickle down' to environmental benefits or vice versa. Instead, NBCs require explicit accounting of both dimensions. The quadrant approach thus removes blind spots in sustainability planning by making trade-offs and co-benefits between human and ecological well-being clearly visible and measurable.

To operationalise NBCs, the ideal point as (+1, +1) is defined, representing maximised human development in a fully regenerative economy. Real-world systems can be scored on each axis relative to defined benchmarks (for example, an HDI of 0.8+ might map to a high positive y-value, while an ecological footprint at or below 1.7 gha per capita maps to a high positive x-value). Likewise, negative values

indicate shortfalls: e.g., a high ecological deficit or overshoot would be a strongly negative x, and low social indicators (high poverty, low life expectancy, etc.) yield a negative y. The NBC scoring provides a quantitative state description: it can diagnose where a country or project lies (which quadrant, how far from the ideal) and track progress over time as policies are implemented. This diagnostic capability is vital for tailoring strategies to context, as described next.

Prescriptive Strategies: Substitutions, Transformations and Offsets (STOs)

Achieving movement towards Quadrant I from any starting quadrant requires deliberate interventions. The RHD framework organises these interventions into three categories: Substitutions (S), Transformations (T), and Offsets (O) — collectively termed STOs. These represent a comprehensive toolkit for regenerative development:

Substitutions (S): **Replacing harmful inputs, practices, or technologies with regenerative and sustainable alternatives: Substitutions address the *means* of production and consumption. For example, in energy systems, this could mean replacing fossil fuels with renewable energy sources (solar, wind, geothermal) in a way that also creates local jobs and democratises energy access. In agriculture, it might involve substituting chemical-intensive farming with regenerative practices (e.g., agroecology, organic inputs, cover cropping) that build soil health and improve farmer livelihoods. In materials and manufacturing, substitutions include switching from extractive virgin materials to recycled or bio-based materials, thereby reducing resource depletion while spurring new green economic opportunities. Even in finance and transportation, substitution can play a role: shifting from extractive investment models to regenerative finance (e.g., community wealth-building funds) or replacing car-centric urban planning with integrated mobility and public transit solutions. Substitutions generally yield relatively quick wins by directly cutting negative impacts through better alternatives.**

Transformations (T): Redesigning and fundamentally reconfiguring systems or institutions to change their structure, purpose, and operating logic: Transformations address the *deep structure* of society and economy. Examples include governance transformations – introducing participatory decision-making, inclusive institutions, and multistakeholder governance that centre ecological and social well-being. Economic transformations might involve shifting from a singular focus on GDP growth to alternative metrics of success (such as a well-being economy or Raworth's Doughnut Economics model) that prioritise environmental health and human flourishing over output alone. Land use transformations could entail redesigning cities as 'sponge cities' or 'forest cities' that integrate green space, urban agriculture, and circular resource flows, thus blending human settlements with nature. Educational and corporate transformations are also vital: education systems can be overhauled to cultivate regenerative mindsets and skills, and business models can be changed from shareholder-centric to stakeholder-oriented (for instance, adopting benefit corporation structures or cooperative ownership). Transformations take longer and require overcoming institutional inertia, but they yield systemic change that embeds RHD principles into the fabric of society.

Offsets (O): Compensating for any residual negative impacts that cannot be eliminated by undertaking positive actions elsewhere to achieve a net-positive balance: Offsets in RHD are not a license to pollute but rather a strategy to address unavoidable harm while longer-term solutions mature. Moreover, RHD emphasises 'regenerative offsets' that go beyond neutrality. For example, a *carbon plus* approach invests in carbon sequestration projects (such as reforestation, regenerative ocean initiatives, or soil carbon programmes) that remove more CO_2 than one's emissions, while also supporting indigenous land rights or local communities. Biodiversity offsets could involve funding conservation or habitat restoration more than the biodiversity lost, with co-benefits for local livelihoods (e.g., paying communities to steward forests). Other examples include water stewardship offsets

(restoring watersheds beyond the water one's operations consume) and social development offsets (investing in community well-being and infrastructure in areas affected by development, to ensure they come out ahead overall). Offsets are used as a *transitional* mechanism: a way to address damage in the interim while S and T measures are scaling up. In RHD's ideal end-state (Quadrant I), reliance on offsets would diminish because core activities themselves become net-positive; however, in the near term, offsets play a critical role in moving systems in a positive direction despite legacy issues or hard-to-avoid impacts.

These STO strategies are complementary.

An effective RHD transition plan will often deploy all three in concert. For instance, a country in Quadrant III (both environment and society in deficit) will need intensive substitutions (to immediately reduce pollution and resource depletion), deep transformations (to change the developmental model causing those deficits), and strong offsets (to remediate damage and support communities during the transition). On the other hand, a country in Quadrant IV (good environment, poor social outcomes) might emphasise transformations in governance and economic structure to improve equity, along with substitutions that create new green jobs, and perhaps some offsets focusing on social investments (e.g., education, healthcare) to compensate communities as industries adjust.

RHD builds on the strengths of earlier sustainability paradigms while addressing their fragmentation. From the Circular Economy, it inherits the logic of closed-loop material and energy systems; from Doughnut Economics, the dual imperative of staying within ecological ceilings while upholding social foundations; from the Regenerative Economy (Elkington 2020), the emphasis on restoring degraded socioecological systems to net-positive states; from the SDGs, the broad, integrated agenda linking human and planetary well-being; and from ESG frameworks, the experience of measurable disclosure and accountability. RHD synthesises these diverse contributions into a unified, measurable, and dynamic framework, operationalised

through STOs, tracked via NBCs, and reinforced by adaptive feedback loops. In doing so, RHD transcends the limitations of each paradigm in isolation, providing a comprehensive pathway towards regenerative outcomes that are simultaneously ecological, social, and economic.

Furthermore, RHD's STO approach can be tailored to the quadrant diagnosis of a particular system. For each quadrant (QI through QIV), a distinct mix of policies emerges: In Quadrant II (social prospering, environment suffering), emphasis is on ecological substitutions and transformations (like renewable energy, circular economy practices) (Ellen MacArthur Foundation 2013) to reduce the environmental footprint, alongside *social* offsets to ensure that shifting to greener practices does not harm livelihoods. In Quadrant IV (environment okay, social lagging), strategies focus on social transformations and substitutions (e.g., investing in education, clean industry, and inclusive finance) to raise human well-being without undermining ecological gains, possibly using *environmental* offsets such as technology transfer to maintain low emissions. Quadrant III, as noted, requires a comprehensive overhaul: transformative governance (to break corruption/inequity and unsustainable resource use), massive substitutions (clean technology, sustainable agriculture) to address both deficits, and offsets as temporary support (like international climate finance or development aid targeted at regenerative projects) to stabilise the situation.

The STO framework, thus, provides a practical transition blueprint. It recognises different starting points and uses targeted interventions to systematically shift systems towards Quadrant I. Organisations or governments can use STO examples to diagnose their current quadrant and craft a customised mix of substitutions, transformations, and offsets suited to their challenges. For example, a corporation might determine it is in Quadrant II (profitable but polluting) and therefore implement green supply chain substitutions, undertake a business model transformation towards circular practices, and purchase high quality offsets for any remaining emissions in the short run.

The strength of this approach is its flexibility and scalability – the same principles can guide a small community project or a national development strategy, adjusting the scope and scale of STOs accordingly. By providing a systematic yet adaptable pathway, RHD's STO framework addresses the 'how' of moving from current reality to a regenerative future.

Optimisation Model for RHD Maximisation

Translating RHD from concept to implementation also benefits from a formal optimisation framework. This study proposes a convex optimisation model that identifies the optimal allocation of resources to maximise regenerative outcomes subject to financial and other constraints. In this model, the objective function is to maximise RHD, represented abstractly as a function $f(X, Y)$, where X is a quantitative index of natural capital (environmental quality or regenerative capacity) and Y is an index of social capital or human development. Both X and Y increase as we move towards Quadrant I. The function $f(X, Y)$ is taken to be increasing and convex, reflecting the idea that investments in sustainability can have synergistic gains – for instance, improvements in X and Y together produce compounding benefits for society and ecosystems. A simple form could be a Cobb–Douglas style function (e.g., $f(X, Y) = X^{\alpha} Y^{\beta}$ with $\alpha, \beta > 0$), which ensures that increases in either dimension raise the overall RHD value, and doing well in both has multiplicative effects.

We impose a financial constraint on this optimisation: resources available for sustainability interventions are limited. Let C represent the cost of implementing a chosen set of Substitution and Transformation measures (and any supporting Offsets) that achieve levels X and Y. Then $g(X, Y, C) \leq B$ is a constraint where B is the total budget or investment available. This constraint ensures that the strategy for improving X and Y is financially feasible. In essence, decisionmakers must maximise the RHD outcome $f(X, Y)$ *within* a budget B.

The optimisation problem can be summarised as:

Maximise f (X, Y)
Subject to g (X, Y, C) ≤ B,
X, Y ≥ 0 (assuming we focus on moving into positive territory).

This is a constrained convex optimisation problem. Convexity is advantageous because it guarantees that any local optimum is a global optimum, simplifying the search for the best solution. Intuitively, convexity here might stem from diminishing marginal costs or increasing returns of scale in regeneration: initial investments yield big gains (low-hanging fruit), and there is an optimal balance in allocating resources between X and Y improvements.

To solve this, one can employ the method of Lagrange multipliers. We construct a Lagrangian:

$L(X, Y, \lambda) = f(X, Y) - \lambda [g(X, Y, C) - B]$,

Where λ is the Lagrange multiplier associated with the budget constraint. Setting the partial derivatives $\partial L/\partial X = 0$, $\partial L/\partial Y = 0$, and $\partial L/\partial \lambda = 0$ yields the conditions for optimality. These conditions essentially balance the marginal benefit of investing in X or Y (in terms of improving the objective *f*) with the marginal cost in terms of budget usage. The solution gives the optimal levels (X, *Y*) and the shadow price λ *(which indicates how much additional RHD value could be gained per extra unit of budget). The interpretation is powerful: if* λ is high, it means the budget is a tight binding constraint and extra funding would significantly improve outcomes; if λ* is zero, it suggests the constraint is non-binding (plenty of resources to achieve the optimum).

This optimisation framework reinforces that financial sustainability is treated as a constraint, not the objective itself. Traditional development models often treated economic growth or cost minimisation as primary objectives, with social and environmental goals as side constraints (if considered at all). In RHD, this is inverted: maximising regenerative development is the objective, and staying within budgets (and other limits) is a constraint. This reflects an ethical stance that economic

resources are a means to achieve sustainable well-being, not an end in themselves.

One can further refine the model by incorporating the dynamics of STO implementation. For example, the decision variables could be the levels of specific substitutions, transformations, and offsets (S_i, T_j, O_k), each with associated costs and effectiveness on X and Y. The function *f* would then map the resulting X and Y (which in turn depend on the combination of STO interventions) to an RHD outcome. The constraint *g* would sum the costs of chosen STOs. Solving the optimisation would tell us the optimal portfolio of STO initiatives under a given budget. This approach could be used by policymakers to allocate limited sustainability funds across various programs (renewables, reforestation, education, healthcare, etc.) to maximise the overall regenerative impact.

The convex optimisation model is particularly useful in a planning context. It provides a quantitative decision support tool for RHD: policymakers or planners can input their budget and the cost-benefit data of various interventions to compute the best strategy. Because the model is general, it can accommodate additional constraints as well. For instance, a carbon emissions cap or a social equity target can be introduced as extra constraints to ensure the solution also meets those criteria. The outcome of the optimisation is a roadmap for achieving the highest possible RHD score (greatest combined improvement in human and ecological well-being) without overspending. It is a way to rigorously identify efficient frontiers in sustainable development: where resources are best spent for maximum gain.

Finally, it is worth noting that this model assumes a steady state or comparative static optimisation. RHD is a dynamic process; investments made now in education or ecosystem restoration will have long-term payoffs and feedback loops. A truly dynamic optimisation (e.g., using optimal control theory) could extend the model to multiple time periods, maximising an intertemporal objective (like the present value of RHD over a horizon) subject to accumulating constraints (like

carbon budget over decades). Such complexity is beyond this paper's scope, but the key message stands: *by reframing development planning as a constrained optimisation problem where the objective is regenerative well-being, we align analytical tools with the ethical goals of sustainability*. This helps ensure that RHD is not just an abstract ideal, but a quantitatively guided strategy for action.

Empirical Relevance of RHD

To complement the conceptual and analytical development of the RHD framework, Table I provides an empirical application using the SDGs and SDG International Spillover Index. By translating spillover and SDG performance data into normalised RHD coordinates, the study demonstrates how countries can be diagnosed within the RHD quadrant model and how their distance from the regenerative ideal can be quantitatively assessed. This empirical extension strengthens the operational validity of the framework and illustrates its usefulness for evidence-based policy design. In this formulation, the two coordinates capture different but complementary dimensions of development.

The X-coordinate (ecological regeneration) reflects a country's contribution to global natural capital, measured through transboundary environmental spillovers embedded in its trade, consumption, and supply chains.

The Y-coordinate (socioeconomic regeneration) reflects the country's internal human development condition, based on its SDG performance.

This distinction is pivotal: X measures how a country treats the planet, while Y measures how a country treats its own people. A country may therefore have high X but low Y (low global harm but low domestic development) or high Y but low X (strong domestic development but high global externalisation).

By normalising both indices to a 0–1 scale, each country can be positioned within the four RHD quadrants. The distance (d) from the regenerative ideal (+1, +1) is computed to assess overall alignment.

Quadrant I represents the most desirable development pattern: high internal socioeconomic well-being combined with positive or low harm global ecological spillovers. QI thus captures national development that does not externalise environmental damage.

The results reveal three structural patterns.

First, several advanced economies fall into Quadrant II, where their own high domestic welfare is achieved through significant negative spillovers. For these countries, STOs serve as essential transition levers to reduce externalised ecological harm: such as through green imports, circular supply chains, and high integrity nature-based offsets.

Second, many natural capital-abundant but lower income countries appear in Quadrant IV, where universal ecological integrity coexists with domestic socioeconomic stagnation. Here, STOs enable upward movement by converting natural capital strength into regenerative development pathways through cleaner production substitutions, governance and industry transformations, and climate finance offsets.

Third, a smaller group of countries approach Quadrant I, indicating emerging alignment between internal development and universal ecological responsibility. Their trajectories illustrate the effectiveness of coordinated STO transition levers in jointly improving X and Y.

Overall, this empirical integration demonstrates how spillover data can operationalise the RHD framework and how STOs provide a structured, evidence-based set of levers for guiding countries towards regenerative development trajectories.

Table I: Selected countries SDGs Spillovers and Distance to the Ideal Quadrant I

Country	X	Y	d	RHD Quadrant Insight	Suggested STOs (Substitutions–Transformations–Offsets)
Sierra Leone	0.98	0.52	0.50	QIV: Ecological strength; socioeconomic stagnation	S: Green agriculture tools T: Institutional reforms for value-addition O: Climate finance for rural livelihoods
Trinidad & Tobago	0.98	0.68	0.45	QI Leaning: Balanced but inequality persists	S: Substitute fossil-based energy with green hydrogen T: Diversify from petrochemicals O: Marine restoration
Madagascar	0.98	0.48	0.54	QIV: Biodiversity-rich; weak human development	S: Sustainable forestry T: Eco-tourism and conservation economy O: REDD+ forest offsets
Maldives	0.98	0.72	0.40	QI: Emerging regenerative synergy	S: Renewable desalination T: Circular tourism infrastructure O: Blue carbon restoration
Zambia	0.98	0.55	0.48	QIV: Natural capital abundant; low Y	S: Cleaner mining tech T: Local processing of copper O: Land rehabilitation funds
Brazil	0.97	0.72	0.39	QI: Strong synergy potential	S: Zero deforestation soy/beef systems T: Bioeconomy transformation of Amazon region O: Global forest offset partnerships
Indonesia	0.95	0.70	0.41	QI: Improving balance	S: Certified palm oil T: Blue economy transformation O: Peatland restoration
China	0.90	0.74	0.36	QI: High performance but pressured spillovers	S: Green supply chain T: High-tech circular manufacturing O: Global biodiversity offsets
Mexico	0.90	0.73	0.37	QI: Balanced but vulnerable	S: Cleaner transport T: SME industrial upgrading O: Reforestation offsets in hotspots
South Africa	0.91	0.65	0.44	QII: Inequality, moderate spillovers	S: Renewable energy substitution T: Structural reforms in mining & industry O: Just transition funds

Country	X	Y	d	RHD Quadrant Insight	Suggested STOs (Substitutions–Transformations–Offsets)
Japan	0.75	0.79	0.39	QII: High Y, high embodied spillovers	S: Green procurement for imports T: Circular manufacturing systems O: International forest offsets
Canada	0.70	0.78	0.45	QII: Strong Y, high ecological spillovers	S: Decarbonised oil & gas T: Clean transport transformation; O: Indigenous-led conservation offsets
Germany	0.65	0.78	0.51	QII: High trade-embedded emissions	S: Low carbon steel & chemicals T: Circular EU value chains; O: Global supply chain restoration funds
United States	0.64	0.75	0.51	QII: High welfare, high spillovers	S: Green imports & clean tech T: Reindustrialisation with circularity O: High-integrity biodiversity offsets
Sweden	0.63	0.82	0.53	QII: Nordic paradox	S: Sustainable food & textile imports T: Circular consumption systems O: Global nature-based offsets
United Kingdom	0.56	0.76	0.57	QII: Supply chain externalisation	S: Clean trade rules T: Regenerative agriculture O: Climate restoration partnerships
Norway	0.55	0.80	0.57	QII: Fossil export dependence	S: Green shipping T: Economic diversification beyond oil O: Ocean-based carbon offsets
Netherlands	0.44	0.77	0.65	QII/QIII: Extreme externalisation	S: Sustainable logistics T: Reforms in port & re-export systems O: Global land use restoration
Singapore	0.27	0.82	0.85	QII: Severe spillover intensity	S: Green maritime fuels T: Circular hub transformation O: Large-scale regional ecosystem offsets

Source: Calculated by author using data from Sachs et al., (2024).

Table I reveals a structurally bifurcated global development landscape when countries are mapped onto the RHD coordinate space using SDG performance scores (Y) and international spillover indices (X).

The first cluster comprises high income nations — Sweden, Norway, the Netherlands, the United Kingdom, Germany, the United States, Canada, and Japan — all occupying Quadrant II, where strong internal

socioeconomic performance (Y ≥ 0.75) coexists with significantly negative or low ecological spillover scores (X ≤ 0.75). The most extreme case is Singapore (X = 0.27, Y = 0.82), whose distance from the regenerative ideal (d = 0.85) exposes a severe structural decoupling between domestic welfare and transboundary ecological impact. This pattern confirms the core diagnosis of RHD: current high development pathways are architecturally incompatible with global ecological regeneration because they externalise environmental costs across international supply chains rather than eliminating them. The high d-values of Nordic countries (Norway d = 0.57, Sweden d = 0.53) are particularly instructive, revealing that even economies with strong domestic sustainability credentials impose substantial ecological burdens on other nations through trade-embedded emissions and resource consumption.

The second cluster, comprising biodiversity-rich but lower income nations — Sierra Leone (X = 0.98), Madagascar (X = 0.98), Zambia (X = 0.98), and to a lesser extent Brazil (X = 0.97) and Indonesia (X = 0.95) — occupies Quadrant IV or the QI-leaning zone, where near-maximum ecological preservation (X ≥ 0.95) coincides with moderate to low socioeconomic development (Y ranging from 0.48 to 0.72). The distribution of d-values within this cluster is instructive: Madagascar (d = 0.54) and Sierra Leone (d = 0.50) remain furthest from the ideal despite their outstanding ecological coordinates, because their Y-deficits are severe, confirming that ecological preservation alone does not constitute regenerative development in the RHD sense. Conversely, the Maldives (X = 0.98, Y = 0.72, d = 0.40) and Brazil (X = 0.97, Y = 0.72, d = 0.39) approach QI because their ecological strengths are paired with comparatively higher human development, illustrating the compounding proximity gains that result when both NBC dimensions are simultaneously strengthened. China (X = 0.90, Y = 0.74, d = 0.36) records the lowest distance among all sampled countries, suggesting that coordinated industrial-ecological policy at scale can generate the most favourable proximity to the regenerative ideal, even when absolute spillover levels remain non-trivial.

The policy implications of these findings are significant and directional. For Quadrant II nations, the empirical data make clear that domestic sustainability commitments are necessary but insufficient: reducing d-distance requires targeted interventions in the X-dimension through green import standards, supply chain decarbonisation, and high-integrity international offsets rather than further improvements in already-high Y scores. For Quadrant IV countries, the priority is precisely the reverse — protecting ecological coordinates that are already near-maximum while deploying STOs that raise Y through regenerative industrialisation, conservation-linked livelihoods, and climate finance. For countries approaching QI, the data signal that continued convergence depends on maintaining the joint improvement of both axes, since any regression on X (for instance, through deforestation-linked commodity expansion) would erode proximity gains already achieved.

Taken together, Table I supports the foundational claim of the RHD framework that sustainable development policy must be two-dimensional, diagnostically quadrant-specific, and strategically coordinated across the full STO toolkit if the post-2030 agenda is to produce genuinely regenerative outcomes at the global scale.

A limitation of the current empirical exercise is that the d-gap captures how far each country lies from the regenerative ideal but cannot distinguish whether the pathway being taken to close that gap is structurally sound or ethically coherent - a high-X country reducing its d through financial offsets alone would score identically to one achieving the same reduction through deep governance transformation. Future extensions of this framework should incorporate the Tau Index (τ) as a second order evaluative layer alongside the d-gap, measuring the qualitative integrity and ethical alignment of each country's transition pathway, so that the full two-dimensional performance space —distance to the ideal and quality of the journey — can be jointly assessed within the RHD quadrant model.

Conclusions and Implications

In the face of converging ecological crises and deepening social inequities, this chapter has proposed RHD as a comprehensive paradigm for redefining progress in the post-2030 era. RHD moves beyond the incrementalism of current sustainability efforts, advocating for a *net-positive* approach that actively regenerates ecosystems while uplifting human societies. The RHD framework is operationalised through DPE, the meta-framework that supplies its analytical architecture and provides both a conceptual lens and a practical toolkit for implementation. By using NBCs, decisionmakers can diagnose where their system stands in terms of environmental and social performance, ensuring that blind spots (such as sacrificing nature for growth, or vice versa) are made explicit. The quadrant-based model, coupled with STOs, offers a structured pathway to transition any project, organisation, or nation towards the ideal state where both people and planet thrive.

A key implication of this work is that achieving sustainability is not a unidimensional problem — it requires *simultaneous excellence* in human development and ecological stewardship. The RHD framework operationalises this by demanding strategies that address both axes of development. Traditional sustainable development often framed the challenge of finding a balance or trade-off between economic, social, and environmental goals; RHD instead calls for synthesis: solutions in which economic and social advancements are inherently regenerative for the environment. This is a higher bar, but one that is increasingly feasible due to technological innovations and evolving societal values (for example, renewable energy now often outcompetes fossil fuels economically, making substitution a win–win). RHD provides the language and metrics to aim for this higher goal.

The introduction of a convex optimisation model for RHD demonstrates that governments and businesses can approach sustainability with the same rigour as financial management – maximising returns (here,

regenerative benefits) on investments under constraints. This helps integrate RHD into mainstream decision-making: budgeting processes, cost-benefit analyses, and policy design can all be informed by the objective of maximising RHD. Importantly, this flips the narrative that sustainability is a costly obligation; instead, it becomes a *maximisation problem*: given available resources, how can the greatest social and environmental benefit be achieved? In practice, this approach can reveal 'no regret' moves (high benefit, low cost interventions) and highlight where additional resources would have the greatest impact, thereby guiding funding priorities (e.g., investing in education might show a very high synergistic return for both axes, justifying protection of education budgets even under fiscal constraints).

Future research could operationalise the distance gap (d-gap) — the Euclidean distance between a country's current NBC coordinates and the regenerative ideal of (+1, +1) - as a dynamic performance metric that tracks the pace and trajectory of transition across time, enabling longitudinal benchmarking of national RHD progress beyond the static snapshot presented here. The Tau Index (τ) offers a complementary measurement instrument by assessing the ethical and qualitative integrity of the development pathways through which countries reduce their d-gap, distinguishing transitions driven by genuine structural transformation from those achieved through accounting offsets or superficial substitutions. The interaction between d-gap and τ thus constitutes a two-dimensional evaluation space for sustainability performance, where d-gap measures *how far* a system is from the regenerative ideal and τ measures *how well* the journey is being made. By providing a rigorously grounded, ethically informed diagnostic framework, RHD equips policymakers and practitioners with the tools to transform sustainability from a distant aspiration into a measurable, actionable trajectory ensuring that human and ecological flourishing advance together in the post-2030 era.

Declaration on the Use of Generative AI and AI-Assisted Technologies: *The author developed the core content of this paper, including the DPE and RHD frameworks, analysis, and arguments, during the MBA course on Sustainability Management at INCEIF University in Summer 2023. Generative AI tools, including ChatGPT, were subsequently used to support research and improve language and presentation. The author reviewed, verified, and edited the resulting content and takes full responsibility for the final manuscript.*

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Epilogue

A Development Compact for an Age of Disorder

Sarah Siddiq Aneel

Introduction

Development policy is being tested by pressures that no longer fit neatly within conventional sectoral boundaries. Climate shocks are increasingly becoming fiscal shocks. Water scarcity is affecting agriculture, food security, public health and relations between states. Energy transitions are reshaping industrial competitiveness and labour markets, while digital technologies are creating new opportunities and divides along with new demands for infrastructure, skills and regulation. At the same time, debt constraints have narrowed the fiscal space available for human development, even as geopolitical fragmentation has weakened many of the cooperative mechanisms through which shared challenges were once expected to be managed.

Against this backdrop, the deliberations held during the Sustainable Development Policy Institute's 28th Sustainable Development Conference (SDC) on *'Sustainable Development in the Emerging World Dis|Order'* revealed a striking degree of convergence across otherwise diverse discussions.

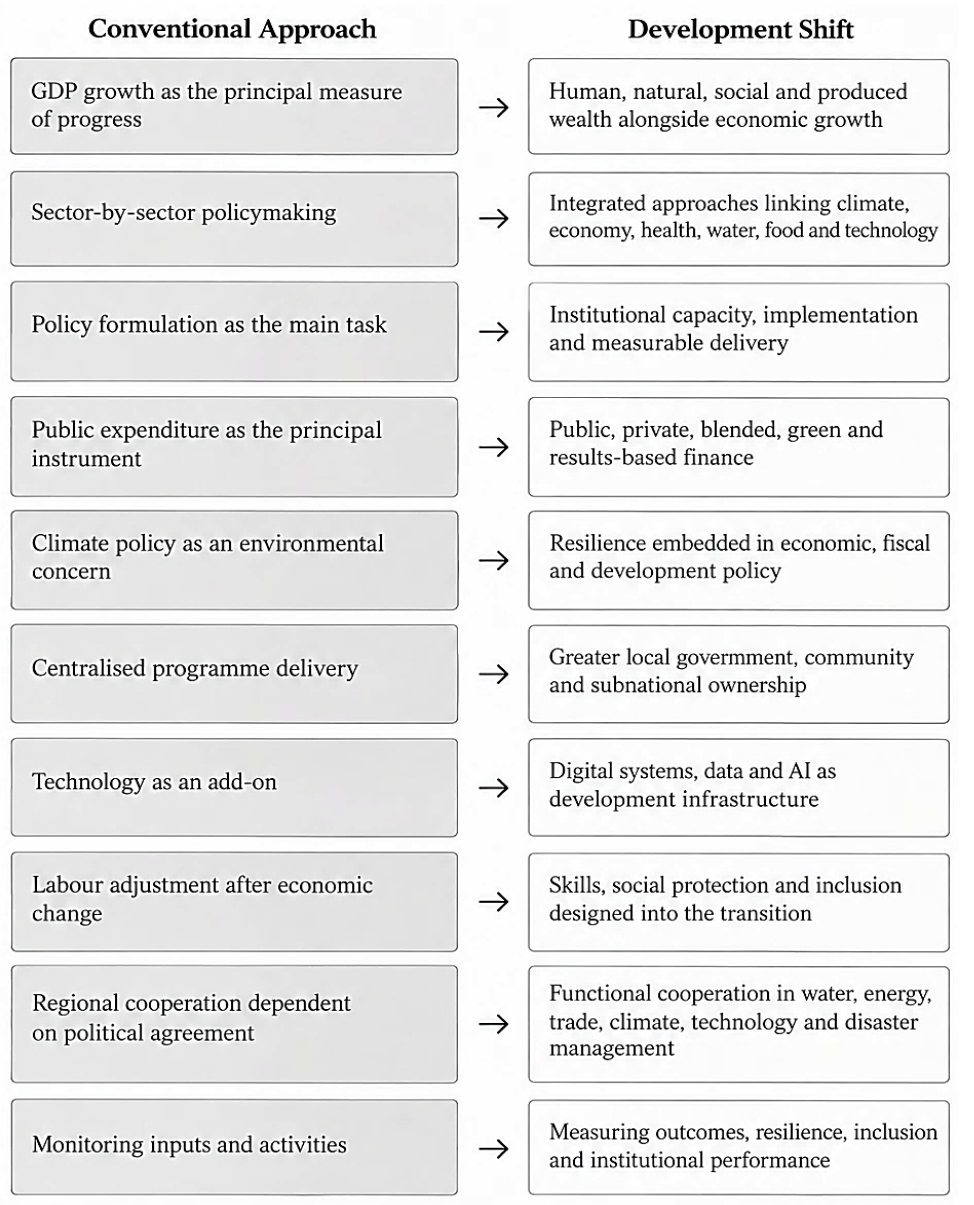
Whether the subject was climate finance, trade, education, poverty, Artificial Intelligence, energy, cities, water, health or the circular economy, several concerns surfaced repeatedly: the need to build resilience into development planning; strengthen institutional delivery; diversify development finance; connect technological change with human capability; place communities and subnational institutions closer to implementation; and rebuild regional cooperation around practical areas of shared interest.

In fact, what emerged was more than a collection of sector-specific proposals. Taken together, the deliberations pointed towards a broader reconsideration of how development should be conceived, financed and delivered in Pakistan and South Asia.

This epilogue does not reproduce those proposals and recommendations session by session. Instead, it draws together the principal strands that emerged from them and considers the larger development architecture they collectively suggest.

Several core transitions stand out: from sectoral policy to systems thinking; from projects to institutions; from dependence on external finance to diversified and accountable financing; from centralised delivery to stronger local ownership; and from measuring expenditure and activity to measuring outcomes, resilience and wealth.

Figure I: The Development Shift Emerging from the 28th SDC



From Growth to Resilience and Shared Prosperity

One of the clearest strands running through the conference was dissatisfaction with development models that equate progress too narrowly with aggregate economic expansion. Growth remains essential, particularly for countries facing employment pressures, fiscal constraints and large development deficits. Yet growth that depletes natural capital, excludes large sections of the population or repeatedly collapses under climate and economic shocks cannot provide a sufficient foundation for long-term prosperity.

This shifts the question from how much an economy produces to what capabilities and assets it builds in the process.

The recommendations on inclusive wealth made this particularly clear. They called for human, produced and natural capital to complement GDP in national planning and for wealth accounting to inform fiscal policy, public investment and assessments of regional disparities. Other propositions placed poverty reduction, nutrition, education, health, social protection and ecological sustainability within the same development frame.

This broader conception matters because the sources of economic strength are changing. Healthy populations, educated girls, digitally capable workers, functioning ecosystems, reliable water systems, clean energy, institutional trust and resilient infrastructure are not secondary social or environmental concerns. They are productive assets, and for this reason the policy distinction between economic development and resilience becomes increasingly artificial. A road repeatedly destroyed by flooding is not productive infrastructure simply because it appeared in a development budget. An energy system that cannot absorb renewable power efficiently imposes economic costs even when installed generation capacity expands. Agricultural growth achieved through unsustainable groundwater extraction can increase current output while weakening future productive capacity. Similarly, economic growth accompanied by severe learning poverty or

malnutrition may raise measured income without building the human capital required for sustained transformation.

The proposals consequently pointed towards a model of development in which resilience becomes part of productivity and inclusion becomes part of economic capability.

That also changes how public investment should be evaluated. Cost-benefit analysis must account for climate exposure, resilience, social outcomes and longer-term depletion of natural assets. Development expenditure should not be considered successful simply because money was released or infrastructure completed. In fact, the relevant question to ask is whether that expenditure increased economic, social and ecological capacity over time.

A broader measure of development would also improve policy discipline. Governments are often rewarded politically for launching projects, not for maintaining assets, strengthening institutions or preventing losses that never become visible because a crisis was successfully avoided. Resilience investment challenges this bias. Flood protection, early warning systems, preventive health, groundwater management, girls' education and energy efficiency frequently generate returns through costs that do not occur. Conventional expenditure frameworks can undervalue such investments precisely because their success is expressed in avoided damage.

Hence, a development model suited to an age of disorder must value the ability to absorb shocks, adapt and continue producing welfare. Growth remains the objective, but its quality, distribution and durability become equally important.

The Delivery Deficit: When Policy Is Not the Main Constraint

Perhaps the strongest institutional message to emerge from the SDC was that the development problem is not always the absence of policy. Pakistan and other South Asian countries already possess numerous

strategies, frameworks, plans and commitments. What was repeatedly shared were concerns about overlapping mandates, weak coordination, inconsistent implementation, inadequate local capacity, fragmented data and the inability to scale successful initiatives.

This points towards a different diagnosis: the development deficit is actually a delivery deficit.

The implications of this are substantial. If the binding constraint is implementation rather than policy formulation, producing another strategy document may add little unless it clarifies institutional responsibility, allocates financing, establishes measurable targets and creates mechanisms for follow-through.

Several SDC sessions called for precisely this shift. Review processes should feed directly into planning and budgets rather than becoming static reporting exercises; proven programmes should be scaled rather than repeatedly replaced by small pilots; subnational authorities require stronger data and implementation capabilities; and public programmes need clearer performance and accountability mechanisms.

The same institutional concern appeared across very different policy fields. Urban sustainability requires agencies to work across administrative silos. Energy transition requires coordination among finance, energy and climate institutions. Climate finance requires project preparation and credible pipelines, not simply access to international funding windows. Circular economy strategies require federal, provincial and municipal synchronisation. Digital policy requires regulators, industry, academia and government to operate within coherent rules.

What emerged was an argument for moving from policy proliferation towards institutional integration.

This does not necessarily mean creating a new council, authority or taskforce for every issue. In fact, excessive institutional creation can reproduce the very fragmentation that the deliberations sought to

correct. New coordinating mechanisms are valuable only when they possess clear authority, defined responsibilities, access to data, links to budgets and a means of holding implementing agencies accountable.

The harder institutional reform is often less glamorous: clarifying who does what; making datasets interoperable; connecting planning with budgeting; strengthening procurement; building project management capacity; improving technical expertise at provincial and district levels; maintaining policy continuity; and publishing performance information that makes failure visible.

Local government also emerged as an important part of the delivery architecture. Climate adaptation, waste management, urban services, disaster preparedness, water conservation and social inclusion are ultimately experienced locally. A national policy may establish direction, but a municipal waste system, district health response or community water project succeeds or fails at the point of delivery.

It was due to this that the SDC delegates suggested a principle of subsidiarity with accountability: decisions and implementation should move closer to the level at which problems are experienced where this improves responsiveness, while national institutions provide standards, financing, data systems and oversight.

Localisation, however, cannot mean transferring responsibilities without resources. Districts and municipalities require predictable finance, professional capacity, access to data and legal authority. Otherwise, decentralisation merely moves responsibility downward while keeping capability at the centre.

The policy lesson is straightforward. Future reform should ask not only what government should do, but also which institution should do it, at what level, with what budget, using what information and against which measurable outcome.

From Funding Gaps to Financial Architecture

The deliberations revealed another important change in development thinking.

For those who have spent years watching NGOs move from one short grant cycle to the next, the fragility of aid-dependent development is hardly an abstract concern. Seen from the vantage of the 28th SDC, that concern has become even more tangible. Changes in foreign assistance priorities, alongside wider donor retrenchment, have placed considerable pressure even on major UN agencies.

The issue is no longer simply how to secure more external resources. It is how to build a financing architecture in which domestic public finance, private capital, development finance and international climate funding reinforce rather than substitute for one another.

This is partly a response to fiscal reality. Developing economies must finance climate adaptation, energy transition, human development and infrastructure while carrying debt burdens and facing shrinking access to concessional resources. The old model in which governments identify development needs and then seek donor or sovereign borrowing to finance them is increasingly inadequate.

The shift was visible not only in the conference sessions but also next door at SDPI's Sustainability Investment Expo (SIE), where bankers, investors and businesses shared the same space with researchers, development practitioners, innovators and environmental advocates.

> ***The conversations there were not simply about who should provide more climate money, but about how an idea becomes investable: who absorbs the first risk, what makes a project bankable, how returns are measured, and how environmental and social outcomes are protected.***

Against that practical backdrop, green bonds and *sukuk*, blended finance, credit guarantees, green taxonomies, climate funds and project preparation facilities appeared less as isolated financial instruments and more as parts of a holistic financing architecture.

The recurring push by delegates was not only how much capital could be mobilised, but what would make that capital credible, accountable and capable of producing measurable development outcomes: from finding money for projects to building markets and institutions that continuously mobilise capital for development.

A country may have access to climate funds yet still fail to attract investment if it lacks credible projects. It may issue a green bond but produce limited developmental value if the underlying projects are poorly designed or if reporting systems cannot demonstrate environmental outcomes. Private capital may be available but remain unwilling to invest where regulatory uncertainty, political risk or weak contractual enforcement raises expected costs.

Project preparation becomes as important as project financing and this is particularly relevant for Pakistan. An effective sustainable finance architecture would need to connect national taxonomies, financial sector regulation, project pipelines, risk-sharing mechanisms, public investment criteria and transparent reporting. Rather than treating the Ministry of Finance, development partners, banks, provincial governments and investors as separate financing worlds, the objective should be to create a coherent investment ecosystem.

The SDC's collective insights also challenged the assumption that climate finance must be predominantly international. External concessional finance remains necessary, particularly for adaptation and climate justice. Yet domestic resource mobilisation, green financial products, public procurement, targeted taxation and the mobilisation of institutional and private capital can reduce dependence on uncertain donor flows.

This is not an argument for shifting public responsibilities wholesale to private investors. Many socially valuable investments will never generate commercial returns sufficient to attract private finance. Basic education, preventive health, adaptation for vulnerable communities and ecosystem protection require public or concessional funding. However, the appropriate financing instrument should follow the

economic character of the intervention: commercially viable renewable energy may attract private finance. Projects with partial commercial returns may need guarantees or blended finance. Pure public goods may require taxation or grants. Catastrophic risks may call for insurance, contingent finance or sovereign risk instruments. Development finance works best when these instruments are differentiated rather than treated as substitutes.

The financing debate must consequently move beyond asking whether an initiative is 'public' or 'private'. The more useful question is how risk, return, social value and accountability should be distributed.

The deliberations also made an important connection between financing and measurement. Proposals for sustainability-linked lending, impact reporting and outcomes-based public expenditure reflected growing concern that the volume of finance alone tells little about development performance.

This can become one of the most consequential reforms for a country like Pakistan: shifting budgetary and financing systems from rewarding allocations towards rewarding verified outcomes.

Resilience as Economic Policy

Climate resilience is often located institutionally within ministries dealing with environment, climate change or disaster management. The 28th SDC challenged this separation.

Climate risk increasingly enters virtually every major economic system. Floods damage infrastructure and create fiscal liabilities. Heat reduces labour productivity and affects health. Water scarcity alters agricultural output and electricity generation. Extreme weather disrupts supply chains and schooling. Climate-induced disease places additional burdens on health systems. Food prices respond to droughts, floods and changing agricultural productivity.

Climate resilience is not a specialist environmental agenda. It is part of macroeconomic management, public investment, human development and national economic security.

One of the strongest recurring directions at the 28th SDC was the integration of risk assessment into ordinary planning rather than waiting for disasters to trigger emergency responses. Risk should shape infrastructure design, agricultural policy, urban planning, health systems, fiscal planning and social protection before shocks occur.

This changes disaster management from an emergency response function into a development function.

Early warning systems illustrate the distinction. A warning is valuable not because information exists, but because institutions, communities and financing arrangements are capable of acting on it. Forecasting needs to be connected to predefined thresholds, local response capacity, evacuation systems, health preparedness, agricultural decisions and, where possible, anticipatory financing.

The same principle applies to health. Climate-sensitive health systems require more than emergency medical relief after floods or heatwaves. They require disease surveillance, resilient supply chains, climate-health data, preventive protocols, cold chain protection and community-based health systems capable of responding before local services become overwhelmed.

Water exposes the same systems problem. Treating water only as an allocation issue misses its connections with agriculture, energy, ecosystems, urbanisation, public health and regional relations.

The recommendations favoured integrated basin management, data sharing, technology, community participation and a shift from dividing and weaponising water to managing shared water systems. This provides an important principle for South Asia: resilience should be designed across systems, not administered within sectors.

A resilient agriculture policy cannot ignore water. A resilient city cannot separate drainage from land use, housing, transport and solid waste. A resilient energy transition must consider grid stability and affordability. A resilient health system must account for heat, disease and disrupted access. A resilient fiscal framework must prepare for contingent liabilities created by climate disasters.

Transforming Production: Energy, Industry and Circularity

The policy directions that emerged also pointed towards a transformation of the productive economy itself. Sustainability cannot be achieved solely by compensating for environmental damage *after* production has taken place. It increasingly requires changes in how energy is generated, how goods are designed, what materials are used, how resources move through supply chains and what happens at the end of a product's life.

The energy transition is central to this change, but the SDC delegates who spoke on the subject treated it as more than a shift from fossil fuels to renewable electricity. They called for grid modernisation, energy efficiency, storage, distributed systems, local manufacturing, green finance, regional power trade, skills and protection for communities affected by structural change. This wider conception matters.

> ***Installing renewable generation without investing in transmission, system flexibility and market design can create new constraints. Importing all clean technologies may reduce emissions while reproducing industrial dependence. Closing carbon-intensive activities without supporting affected workers can convert an environmental gain into a social and political backlash.***

A successful transition must be simultaneously technological, industrial and social. For Pakistan, this opens an opportunity to connect decarbonisation with industrial development. Renewable energy technologies, energy efficiency services, battery systems,

recycling, low-carbon construction, climate-smart agriculture and environmental services can become sources of employment and investment rather than merely compliance costs.

The circular economy carried this argument further. Across the conference, and especially at the connected Expo, waste was increasingly reframed as a resource flow. Plastics, agricultural residues, packaging, textile waste, organic material and electronic products should be redesigned, recovered, reused or recycled rather than simply discarded.

Yet this is also where the distance between the language of sustainability and Pakistan's ground reality becomes particularly visible. Circularity sounds convincing from behind a microphone; outside the conference hall, formal systems for segregation, collection, recycling and material recovery remain thin, fragmented and heavily dependent on informal waste workers and *'kabarias.'*

In many places, valuable materials are recovered not because a circular economy has been designed, but because an informal economy has found value in what the formal system throws away.

This distinction matters. Pakistan does not need simply to 'introduce' circularity; elements of it already exist in everyday repair, reuse, resale and informal recovery. The policy challenge is to turn these scattered practices into a functioning economic system. It requires changes across product design, procurement, producer responsibility, consumption, logistics and industrial standards. The proposed policy response was correspondingly broad, bringing together Extended Producer Responsibility, green public procurement, material recovery systems, digital traceability, incentives for repair and reuse, and fiscal and regulatory measures to support circular production and regional standard-setting.

The state can play an important market-making role here. Public procurement can create demand for recycled and sustainable products. Tax incentives can encourage cleaner technologies. Producer-responsibility rules can shift waste costs back towards manufacturers. Standards can reduce uncertainty for investors. Finance can help small firms adopt new technologies.

The circular transition also reveals why sustainability and inclusion should not be separated. South Asia's waste economy contains large informal workforces. Formalisation that ignores these workers risks destroying livelihoods; maintaining informality leaves workers exposed to unsafe conditions and economic insecurity. Therefore, there was a significant push for integrating informal workers into municipal systems, social protection and formal recycling value chains rather than designing circular systems around them. A green transformation that creates cleaner production but deeper exclusion would remain incomplete.

Putting People at the Centre of Transition

Transitions look very different from the ground. For a policymaker, an energy transition may mean megawatts replaced, emissions avoided or investment mobilised. For a coal worker in Tharparkar, it can mean uncertainty about the next wage. For a girl in a remote district, development may come down to whether there is a functioning toilet at school, whether the journey there is safe, and whether the teacher in the classroom can actually help her learn. For a woman collecting recyclable material on the streets of Kathmandu or Dhaka, the circular economy is not an emerging economic model; it is already her livelihood.

That human reality gave some of the 2025 deliberations their greatest force. Discussions on girls' education, nutrition, green skills, informal work and social protection kept returning to essentially the same question: who is actually able to participate in the transition, and who risks being left to absorb its costs?

Pakistan's education discussion exposed the problem particularly starkly. Building more schools matters, but the conversation quickly moved past bricks and enrolment numbers. Safe transport, functional WASH, teacher quality, foundational learning, community oversight and continuity during climate shocks matter more because these determine whether a girl who enters school actually remains there and learns. Hence, there was a strong push for district level attention to learning poverty, school management data, community participation and protection of education financing rather than treating enrolment alone as success.

The distinction between schooling and learning is more than semantic. A child can spend years inside an education system and still emerge without the literacy, numeracy or confidence needed to participate in a changing economy. Equally, handing a school tablet or connecting it to the internet cannot compensate for weak teaching. Technology can extend a good education system; it cannot by itself repair a weak one.

Experiences elsewhere in South Asia suggested that inclusion also becomes more meaningful when people move from being beneficiaries to economic actors. Nepal's experience with women-led energy cooperatives was raised as one way of placing women inside the renewable energy economy rather than merely extending electricity to them. In Kathmandu, efforts to connect informal waste collectors with formal municipal routes, identification, safety protection and payments offered another lesson. In Dhaka, waste worker cooperatives linked collection efficiency with access to welfare and social protection. These may appear to be small institutional changes, but to the worker concerned the difference between being 'informal labour' and a recognised economic participant can mean income security, dignity, healthcare and a voice in the system being redesigned around them.

There is an uncomfortable lesson here for Pakistan as well.

Much of what is now described in policy language as circularity, reuse or resource recovery has long been performed by waste pickers, repair

workers and small informal businesses. A transition that formalises the sector by displacing these workers would be environmentally cleaner on paper but socially poorer in practice.

The same human question arises in the shift from fossil fuels to clean energy. It is relatively easy to announce a coal phase-down from a podium. It is much harder to answer the worker who asks what happens to his family when the plant or mine closes. That is why the recommendations on Pakistan's coal transition paired renewable investment with retraining, alternative livelihoods and social protection for coal-dependent communities.

Then there is the issue of traditional skills policy. Training programmes have too often been designed around what institutions know how to teach rather than what economies are beginning to demand. The 2025 deliberations instead called for modular credentials, stronger industry-TVET partnerships, green entrepreneurship and programmes accessible even to people who never completed formal education. They also recognised that green skills are not confined to solar engineers or environmental scientists. They include technicians, farmers using water-saving technologies, energy managers, recycling workers, construction trades, digital specialists and entrepreneurs working across emerging value chains.

The deliberations pointed towards a common principle: People should not enter a transition only at its compensation stage. If workers are considered only after a mine closes, women only after a programme has been designed, young people only when unemployment rises, informal workers only when new regulation threatens their livelihoods, and vulnerable communities only after a climate disaster, inclusion has arrived too late.

A genuinely just transition begins earlier. It asks where jobs are likely to disappear and where new ones might emerge. It identifies which skills can travel between the two. It asks whether a rural woman can access the finance attached to a new green value chain, whether an informal worker can enter the formal system without losing a

livelihood, whether a girl completing school possesses skills valued in the economy she is entering, and whether communities affected by climate and industrial change have a meaningful role in decisions that will reshape their lives.

This also changes how success should be measured. The number of solar panels installed says little about whether displaced workers found new livelihoods. The number of training certificates issued says little about whether trainees found work. School enrolment does not tell us whether children learned. A climate project cannot be called inclusive simply because women attended a workshop.

The more demanding measures are also the more human ones: Who gained capability? Who gained income? Who acquired voice? Who became more secure? And who still remained outside?

Inclusion should not merely be a social add-on to economic transformation. It is a test of whether that transformation has actually worked. This is not only a normative argument. Excluding large groups from education, finance, technology and productive employment wastes economic capacity. Human development needs to be seen as one of the principal foundations of economic policy rather than a social counterpart.

Technology, Data and Responsible Innovation

A further strand running through the SDC was the growing role of technology and data across almost every development domain.

Discussion revolved around how digital systems in Pakistan are being used in school management, urban planning, climate monitoring, agricultural forecasting, financial services, disaster warning, trade, and AI applications for predictive analysis and risk management. This breadth indicates how digital capability should be treated in much the same way as other forms of development infrastructure.

But digital transformation requires more than applications. It depends on connectivity, interoperable data, institutional capacity, cybersecurity, regulation, skills and public trust. The proposed directions on AI and telecom combined investment in fibre and connectivity with data protection, responsible AI, reskilling, technology-neutral regulation and multi-stakeholder governance. This created a useful distinction between 'digitalisation' and 'digital capability.'

An institution can digitalise an inefficient process without improving it. A dashboard can display poor quality data more attractively without making decisions more accurate. AI can accelerate analysis while also accelerating bias or error if underlying data and governance are weak.

The policy objective advocated was not just adoption-centric. It was the creation of trustworthy digital systems that improve decisions, access and productivity.

Data is particularly important because so many of the SDC recommendations depend upon it. Climate finance requires measurement. Early warning systems require timely environmental data. Inclusive wealth requires national statistical capacity. AI depends on data quality. Outcome-based financing requires credible indicators. Local government needs disaggregated information to identify service gaps.

Data infrastructure needs to be a part of institutional infrastructure. The same principles apply to emerging digital finance. Innovation can reduce transaction costs and widen access, but digital assets and new payment systems also create risks relating to consumer protection, cybersecurity and illicit finance.

Collective wisdom favoured gradual experimentation within clear regulatory and supervisory frameworks rather than either blanket rejection or uncontrolled adoption. The underlying approach is valuable beyond digital currencies: Innovate, Test, Regulate, Learn and then Scale.

Rebuilding Regionalism through Functional Cooperation

No theme reveals the tension between development need and political reality more clearly than regional cooperation.

South Asia shares river systems, airsheds, climate risks, ecosystems, energy opportunities, trade routes and disease risks. Yet regional cooperation remains weak. Traditional calls for regional integration frequently founder on geopolitical disagreements.

The exchanges with regional counterparts pointed to a more pragmatic route: build cooperation around concrete functions where mutual gains are identifiable. This is functional regionalism.

Water management can focus on basin data, flood management and shared benefits. Energy cooperation can develop through power trade and renewable corridors. Trade cooperation can begin with standards, customs systems and selected value chains. Climate cooperation can concentrate on project finance, early warning and technology transfer. Public health cooperation can address disease surveillance. Circular economy cooperation can work through common producer standards and knowledge exchange.

The logic is not that political differences become irrelevant. It is that cooperation need not wait for all political differences to be resolved.

This reverses the usual sequence. Rather than assuming trust must precede cooperation, repeated functional cooperation may itself help create trust.

The conference recommendations recurrently called for stronger regional energy systems, climate finance mechanisms, research networks, trade cooperation, technology exchange and shared approaches to water and resilience.

There was consensus that regionalism should become more modular. Not every initiative needs every country. Bilateral, trilateral, subregional and wider South Asian arrangements can coexist. The relevant criterion should be whether cooperation solves a shared problem and creates benefits that are difficult to achieve nationally.

Trade policy provides an important economic dimension. A more fragmented global economy increases the value of diversified markets, stronger regional value chains and more capable trade institutions. But regional trade strategies must also connect with domestic competitiveness. Improved diplomacy cannot substitute for productivity, standards compliance or higher value exports.

The same is true of geoeconomics more broadly. Connectivity produces value only where infrastructure is matched by trade facilitation, commercial capability, stable regulation and investable opportunities.

Regional cooperation works best when domestic reform and external engagement reinforce one another.

From a 'Talk Shop' to a Development Compact

The breadth of the discussions and proposals that came out of the 28th SDC creates a risk: when everything is important, prioritisation becomes difficult. A concluding vision should not try to convert every 'recommendation' into a national programme. Instead, these have been condensed into a development compact built around eight mutually reinforcing commitments.

Table I: A Development Compact for Pakistan and South Asia

Commitment	Pakistan: Priority Direction	Regional Dimension
Measure what matters	Integrate resilience, human capital and natural wealth into planning and public investment assessment	Develop comparable regional indicators, data standards and knowledge platforms
Close the delivery gap	Clarify mandates, link budgets to outcomes and strengthen provincial, district and municipal capability	Share implementation models and institutional learning
Finance transformation	Develop credible project pipelines, green taxonomies, blended finance instruments and stronger impact reporting	Explore regional climate, energy and circular economy financing facilities
Build resilience before shocks	Integrate risk into fiscal planning, health, infrastructure, agriculture, water and urban policy	Coordinate early warning, river basin management, disaster information and climate adaptation
Transform production	Accelerate renewable energy, resource efficiency, green industry, circularity and local clean technology value chains	Build energy corridors, harmonise standards and deepen green value chains
Invest in people	Prioritise learning, girls' education, nutrition, health, skills, living standards and social protection	Promote skills recognition, knowledge exchange and regional human capital initiatives
Govern technology responsibly	Expand digital infrastructure, data capability and responsible AI while strengthening privacy and cybersecurity	Cooperate on research, digital standards, data governance and technology transfer
Build functional regionalism	Align domestic competitiveness with economic diplomacy	Start with practical cooperation in water, energy, trade, health, climate and technology

A final distinction is necessary between what should be done immediately and what requires longer institutional transformation. Some reforms can begin relatively quickly: integrating climate screening into project appraisal; establishing clearer outcome

indicators; strengthening project preparation; harmonising data; expanding green and digital skills; adopting producer-responsibility rules; and improving local participation. Other reforms require sustained institutional change: modernising grids, rebuilding urban governance, restructuring development finance, creating effective regional energy systems, institutionalising inclusive wealth accounting and changing the incentives through which public organisations are judged.

The distinction matters because development reform frequently fails when governments announce distant transformations without identifying the institutional steps that make them possible. Equally, concentrating only on incremental measures can produce activity without structural change. Implementation requires sequencing.

Conclusion: Development after the Age of Checklists

For many years, sustainable development has been organised through goals, targets, strategies and sectoral frameworks. These have played an important role in defining ambition. But the recommendations emerging from the SDC suggest that the next phase must focus more heavily on the machinery through which ambition becomes reality.

The challenge is not simply to produce another generation of plans. It is to build institutions that can act across sectors, finance investments differently, use evidence intelligently, empower local actors, manage risk before crises occur and cooperate across borders where interests converge.

This requires a change in the grammar of development policy.

Climate resilience should no longer appear as an appendix to economic planning. It belongs inside it. Human development should not be treated as expenditure that competes with growth. It creates the capabilities upon which growth depends. Technology should not be equated with devices or applications. Its value depends upon connectivity, data, institutions, skills and trust. Private finance should

not be viewed as a substitute for government. It should be mobilised where appropriate within public frameworks that protect social objectives and accountability. Regional cooperation should not be postponed until political relations become ideal. It can begin with problems that countries cannot efficiently solve alone. And sustainability should not be assessed by how many projects carry a green label. It should be judged by whether economies become more productive, societies more inclusive and institutions more capable of withstanding shocks.

Seen in this way, the recommendations that came out of each session at the conference point towards a development compact rather than a conventional policy list. The compact begins with a recognition that economic, environmental and social systems are now too interconnected to be governed separately.

A water problem becomes an agricultural problem, a fiscal problem, an energy problem and sometimes a regional security problem. A technology opportunity can become an inequality problem when access and skills are uneven. A climate investment can fail when institutions cannot prepare projects or measure outcomes. An energy transition can lose legitimacy when workers and communities bear costs they were never prepared to absorb. Systems thinking should no longer be an analytical preference. It is a requirement of effective government.

The conference also carried a clear warning against confusing 'activity' with 'transformation.' Pilot projects, new platforms, strategies, targets and financing announcements have value only when they build institutional capability and can be translated into scale. The test of development policy should increasingly be whether successful ideas survive beyond individual projects, political cycles and donor programmes.

This is why the recurring focus on coordination, local ownership, data systems, implementation capacity and measurable outcomes matters

so much. These may appear less dramatic than announcing new initiatives, yet they determine whether initiatives endure.

The central choice facing Pakistan and South Asia is not between growth and sustainability, or between national development and regional cooperation. The more consequential choice is between maintaining fragmented systems designed for yesterday's development problems and constructing institutions suited to an era of interconnected risks and opportunities. The conference deliberations pointed firmly towards the latter.

In an age of disorder, resilience cannot mean retreat. It must mean the capacity to adapt without abandoning development; to absorb shocks without transferring their costs to the most vulnerable; to use technology without surrendering human judgement; to mobilise capital without compromising future generations; and to cooperate where shared interests make cooperation rational.

The task ahead is to move from ambition to architecture: from stating what sustainable development should achieve to constructing the institutions, financing systems, productive capabilities and partnerships through which it can actually be delivered. That may ultimately be the most important recommendation of all.

Annexures

I. *About the Sustainable Development Policy Institute*

II. *About the Sustainable Development Conference Series and Anthologies*

III. *Acknowledgements*

IV. *Conference Agenda*

Annexure I

About the Sustainable Development Policy Institute

Charting the Course of Research Excellence

Established on 4 August 1992 in the heart of Islamabad, the Sustainable Development Policy Institute (SDPI) started from humble beginnings within a modest office space, nurtured by a committed group of visionaries. Fast forward to today, and it is heralded as one of Asia's premier non-partisan policy research entities, amplifying the voice of Pakistan and the surrounding region on the global development stage. For more than three decades, SDPI's dedication to its foundational mission has remained steadfast, championing the cause of sustainable development:

> *To catalyse the transition towards sustainable development, defined as the enhancement of peace, social justice and well-being, within and across generations.*

Registered under the Societies Registration Act, XXI of 1860, SDPI has long been recognised as one of Pakistan's leading policy research institutions, consistently ranked among the country's top think tanks in the now-retired Global Go To Think Tank Index, most recently in its final 2020 edition (released in 2021).

Its global credibility was further affirmed in 2022 when the United Nations Economic and Social Council (ECOSOC) granted SDPI Special Consultative Status, acknowledging its substantive contributions to shaping sustainable development discourse at both regional and international levels. In 2025, SDPI achieved another milestone, becoming the first organisation from Pakistan to be accredited as an Observer Organisation of the Commonwealth, cementing its role as a trusted voice in global policy dialogues.

Where We Come From

The Institute's genesis lies in Pakistan's National Conservation Strategy (also known as Pakistan's Agenda 21), which approved by the Federal Cabinet in March 1992, outlined the need for an independent non-profit organisation in the country to serve as a source of expertise for policy analysis, evidence-based research and training services.

What We Do and How We Do It

For more than three decades, SDPI has actively shaped Pakistan's policy landscape through a richly multifaceted portfolio. Its work is not just rooted in conventional themes like governance reform, inclusive economic growth, and sustainable industrial development; it also extends into emerging areas such as the Fourth Industrial Revolution, the circular economy, digital transformation, green finance, and the open data movement.

At its core, SDPI serves as a bridge between research and policy. It provides high-level policy advisory services, drives cross-sector capacity building and training, and catalyses sustained advocacy and public education. Its research agenda spans climate resilience, water-food-energy nexus, trade and regional connectivity, urban sustainability, education, health, gender equality, social protection, peacebuilding, and human security.

Driven by a philosophy of inclusive policy discourse, SDPI regularly convenes local-to-global dialogues from media engagement, seminars, and curricula development to high-profile flagship conferences. The Institute publishes a wide array of outputs like reports, policy briefs, working papers, an annual journal, and compendiums, making research accessible and actionable. SDPI also hosts its own digital media platform, SDTV, showcasing an extensive library of original content, including documentaries, podcasts, interviews, and expert analyses. This channel serves as a dynamic space for sharing research insights, policy debates, and stories that inspire change. Through

partnerships with international institutions, SDPI translates research into practice, helping institutionalise the use of evidence in policymaking systems.

In essence, SDPI is more than a think tank: it is a platform for innovation, advocacy, and impact, where rigorous, multidisciplinary research meets strategic partnerships, data infrastructure, and policy engagement across emerging and enduring challenges.

Why We Do It

The Institute remains steadfast in its vision to become a Centre of Excellence for sustainable development policy research, capacity development and advocacy in Pakistan and across Asia. It seeks to generate knowledge that strengthens the state's capacity to make informed policy decisions while engaging civil society and academia on issues of public interest, with the ultimate aim of improving the well-being of present and future generations.

How We Reach Out

The Sustainable Development Conference (SDC) Series has become a flagship event of the Institute that not only provides a forum for highlighting SDPI's own research, but also offers space to other academics from South Asia in particular and across the globe in general, to share their work and engage in constructive dialogue with fellow intellectuals, movers and shakers from the public and private sectors, students, and the general public. Through shifting political landscapes, global economic shocks, financial meltdowns, pandemics, and even the shadow of war, SDPI's resolve has never wavered. Since 1995, its dedicated team has delivered the SDC: an enduring platform where ideas converge, partnerships are forged, and solutions take shape. Over decades, the conference has become a testament to institutional resilience and a beacon of thought leadership in ever-changing times.

Annexure II

About the Sustainable Development Conference Series and Anthologies

Introduction

Since 1995, the Sustainable Development Policy Institute (SDPI) has convened the Sustainable Development Conference (SDC) as a platform for high-impact dialogue, collaborative problem-solving, and the exchange of transformative ideas.

As SDPI's flagship annual forum, the SDC brings together researchers, policymakers, practitioners, and academics from across Asia and beyond to engage in evidence-based discussions that address the world's most pressing sustainable development challenges. Over nearly three decades, it has evolved into one of South Asia's leading convenings for regional and global thought leadership on sustainability.

The conference's distinctive value lies in its multi-stakeholder approach facilitating mutual learning, generating critical analyses, and spotlighting replicable best practices. Each conference culminates in the publication of a peer-reviewed book that captures the research presented, the depth of debate, and the innovative solutions shared, serving as both a historical record and a resource for policymakers, practitioners, and scholars worldwide.

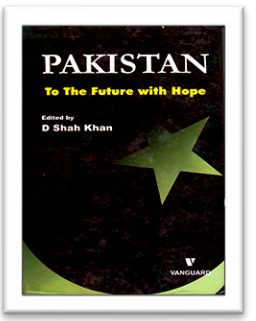
The legacy of the SDC is reflected not only in the breadth of topics explored but also in the actionable knowledge it generates, shaping discourse, informing policy, and inspiring collaborative action across borders:

First SDC (1995)



The inaugural SDC, *The Green Economics Conference*, explored the critical intersection between economics and the environment, featuring research on trade, fiscal policy, Environmental Impact Assessments (EIAs), green accounting, forestry, energy, industry, and the urban environment. Its peer-reviewed anthology, published under the same title, captured the research and insights presented.

Second SDC (1996)



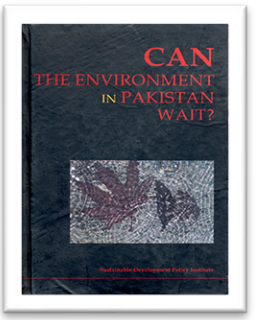
The second SDC centred on the broad theme of sustainable development, addressing issues such as pollution abatement, resource management, biodiversity conservation, technology transfer and utilisation, trade and the environment, human development and poverty alleviation, as well as social capital and governance. The conference successfully highlighted key challenges facing Pakistan and showcased the latest thinking and analysis to inform practical solutions.



The proceedings were captured in the peer-reviewed anthology *Pakistan–To the Future with Hope* followed by *Sustainable Development in Pakistan*, the second in a series of books published by Vanguard on behalf of SDPI. This volume spans a wide spectrum of themes from economic policies and environmental governance in the Pakistani context to national environmental quality standards, sustainable agriculture, biodiversity, and forestry; from clean energy solutions to

stratagems for combating marine pollution; and from tackling urban management challenges to advancing sustainable city planning.

Third SDC (1998)

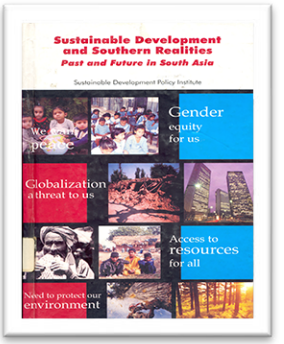


The third SDC, themed *A Dialogue on Environment and Natural Resource Conservation*, aimed to foster constructive discussion on practical policy options for addressing Pakistan's most pressing environmental challenges. The programme was structured around two broad thematic areas—Urban Environment and Natural Resources—covering topics such as urban pollution, water resource management, deforestation, and sustainable agriculture. Experts from Pakistan and across South Asia contributed research, case studies, and policy recommendations. The resulting peer-reviewed anthology, *Can the Environment in Pakistan Wait?*, captured the insights, analyses, and actionable proposals emerging from the conference.

Fourth SDC (2000)

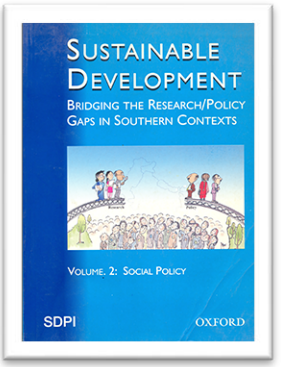
The fourth SDC, titled *Discourse on Human Security*, focused on advancing policy and practice in Pakistan through the lens of human security. The conference sought to build awareness among senior policymakers, key federal and provincial government officials, and civil society actors, including media representatives and non-governmental organisations, on the evolving nature of security challenges and the need for integrated, people-centred solutions.

Fifth SDC (2002)



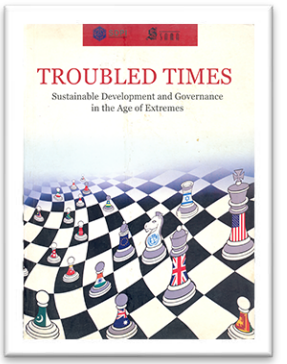
The fifth SDC, *Sustainable Development and Southern Realities: Past and Future in South Asia*, revisited the conceptualisation and implementation of sustainable development across its economic, political, social, and moral dimensions. Delegates critically examined and built upon the ideas presented at the World Summit on Sustainable Development in Johannesburg, reframing these debates within the South Asian context. The conference proceedings were later published as a peer-reviewed anthology under the same title, capturing the research, analyses, and region-specific perspectives generated during the event.

Sixth SDC (2003)



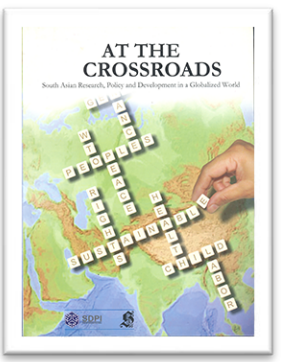
The sixth SDC, titled *Sustainable Development: Bridging the Research/Policy Gaps in Southern Contexts*, focused on the problematique of knowledge production in the Global South. It examined policy–research gaps in two directions: in some cases, policy needs to be informed by stronger research; in others, existing robust research is insufficiently reflected in policymaking. The discussions explored practical ways to translate knowledge into effective policy initiatives at local, national, regional, and international levels, identifying multiple sector-specific gaps and directions to address them. The proceedings were later published as a peer-reviewed anthology under the same title.

Seventh SDC (2004)



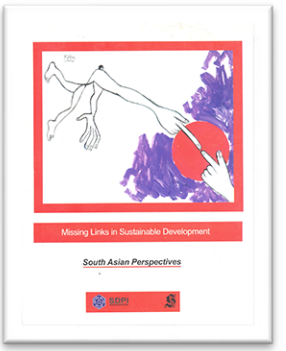
The seventh SDC, titled *Troubled Times: Sustainable Development and Governance in the Age of Extremes*, examined fundamental questions on the state of governance and its role in delivering just and equitable development. Discussions probed whether resource sharing—both natural and institutional—has improved; whether regional and international institutions have been strengthened; and how much progress South Asia has made on governance. The conference also explored issues of transparency, accountability, and whether governments have fulfilled their commitments to marginalised groups, including the poor, women, and minorities. The proceedings were later published as a peer-reviewed anthology under the same title.

Eighth SDC (2005)



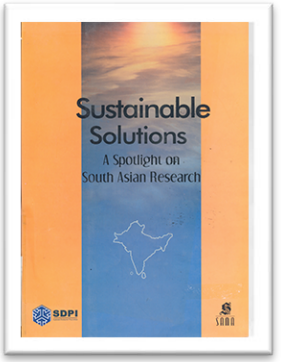
The eighth SDC, titled *At the Crossroads: South Asian Research, Policy and Development in a Globalized World*, explored the multifaceted dimensions of sustainable development within the South Asian context. Speakers examined how regional challenges could be addressed more effectively by drawing on lessons from successful policy interventions at local, national, and international levels. The conference's outcomes were consolidated into a high-impact, peer-reviewed anthology, published under the same title, which serves as a definitive record of the research, policy insights, and innovative tactics presented, offering a lasting resource for policymakers, academics, and development practitioners across the region and beyond.

Ninth SDC (2006)



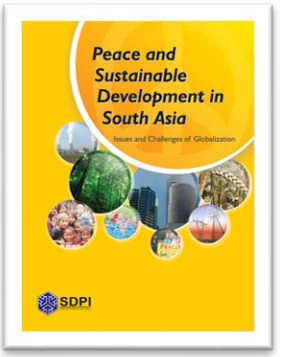
The ninth SDC, titled *Missing Links in Sustainable Development (SD): South Asian Perspectives*, sought to identify critical gaps in the region's sustainable development agenda and propose actionable solutions. The conference convened leading academics, senior policymakers, activists, and other key stakeholders for a vibrant three-day exchange of ideas and evidence-based research. The insights and research generated were consolidated into a high-impact, peer-reviewed anthology—published under the same title—which stands as an authoritative reference for addressing the region's most pressing development gaps.

Tenth SDC (2007)



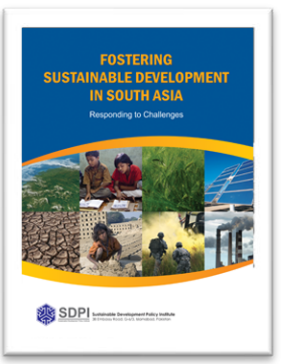
The tenth SDC, titled *Sustainable Solutions: A Spotlight on South Asian Research*, examined a spectrum of urgent challenges, including poverty, illiteracy, public health crises, environmental degradation, disaster management, gender inequality, insecurity, violence, and historical legacies. The discussions highlighted both innovative solutions and enduring, indigenously developed approaches that have stood the test of time. The conference's intellectual contributions were captured in a high-impact, peer-reviewed anthology which serves as a repository of region-specific methodologies, evidence-based analyses, and replicable best practices for advancing sustainable development.

Eleventh SDC (2008)



The eleventh SDC, titled *Peace and Sustainable Development in South Asia: Issues and Challenges of Globalization*, addressed a wide range of pressing issues, including inequality, poverty, climate change, energy scarcity, natural resource degradation, trade liberalisation policies, food insecurity, violence and conflict, historical narratives, and governance deficits. The conference also explored how addressing non-conventional security threats could yield significant dividends for peace in the region. The resulting peer-reviewed volume channelled the most compelling research, policy insights, and debates from the event providing a critical knowledge base for advancing both sustainable development and peacebuilding across South Asia.

Twelfth SDC (2009)



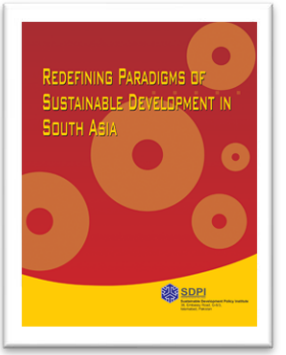
The twelfth SDC, titled *Fostering Sustainable Development in South Asia: Responding to Challenges*, examined the region's response to the six 'Fs' crises: fiscal, food, fuel, frontiers, functional democracy, and the fragility of climate. Scholars from across South Asia and beyond provided in-depth analyses of where the region stands in addressing these interconnected challenges, with gender considerations woven throughout the discussions. The conference culminated in a peer-reviewed anthology—published under the same title—that brought together diverse regional perspectives, offering both diagnostic assessments and forward-looking pathways for policy and action.

Thirteenth SDC (2010)



The thirteenth SDC, titled *Peace and Sustainable Development in South Asia: The Way Forward*, examined how economic challenges could be addressed in ways that safeguard natural resources while strengthening institutional capacity and effectiveness. Panels covered a wide spectrum of issues, including Pakistan's post-flood recovery, food insecurity, energy and financial crises, land acquisition, trade and financial liberalisation, social protection, eliminating violence against women, the role of think tanks, chemical management, climate change, religious diversity, and labour rights. The resulting peer-reviewed anthology, under the same title, captured this breadth of discourse, weaving together research findings, policy proposals, and regional case studies into a resource designed to inform both immediate decision-making and long-term strategy.

Fourteenth SDC (2011)



The fourteenth SDC, titled *Redefining Paradigms of Sustainable Development in South Asia*, brought together diverse perspectives on an expansive set of themes, including livelihoods, governance, literature, Sufism, poverty, geopolitics, forest management, REDD+, social accountability, the 18th Amendment, land rights, food security, education financing, feminism, economic non-cooperation, water governance, and energy sustainability. The peer-reviewed anthology published under the same title serves as a curated compendium of ideas and evidence, offering a multidisciplinary lens on how South Asia can reimagine its pathways to sustainable development in the face of complex, interlinked challenges.

Fifteenth SDC (2012)



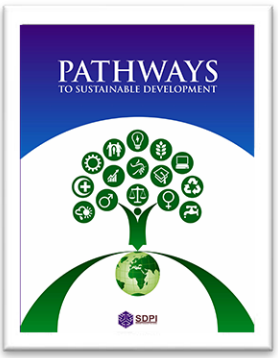
The fifteenth SDC, titled *Sustainable Development in South Asia: Shaping the Future*, looked ahead to the next 20, 30, and even 50 years, identifying the critical issues likely to define the region's trajectory. Discussions offered concrete ideas for overcoming emerging challenges and presented practical policy recommendations for building a sustainable South Asia. Its peer reviewed anthology translates these forward-looking deliberations into a structured body of knowledge, providing policymakers, researchers, and development practitioners with a roadmap for navigating the region's long-term future.

Sixteenth SDC (2013)



The sixteenth SDC, titled *Creating Momentum: Today is Tomorrow*, examined the critical link between present choices and future outcomes, emphasising that the ability to forecast and adapt decisions today can shape a more sustainable tomorrow. Across multiple sub-themes, discussions underscored the risks of delaying action, warning that postponement could mean the permanent loss of opportunities. The resulting peer-reviewed anthology captures this sense of urgency, bringing into focus the conference's analyses, policy recommendations, and case studies distilling these into a call to action for decision-makers across South Asia and beyond.

Seventeenth SDC (2014)



The seventeenth SDC, titled *Pathways to Sustainable Development*, explored how leadership transitions in China, Pakistan, Iran, Bangladesh, India, and Afghanistan could shape the region's future development trajectories. The discussions underscored the need for political and executive leadership committed to peace, human security, and the political economy of the region while engaging directly with its primary stakeholders, the people. In this context, panels addressed climate change, migration, sustainable and inclusive economic growth, regional energy-sharing, environmental challenges, food security, human rights, women's participation in peace processes, and regional connectivity. These insights were consolidated into a peer-reviewed anthology that serves as a regional reference point for advancing a shared vision of sustainable development.

Eighteenth SDC & Eighth SAES (2015)



The eighteenth SDC, titled *Securing Peace and Prosperity*, convened a 'thinkers' agenda' in Islamabad bringing together leading regional think tanks, senior policymakers from across South Asia, and representatives of current and prospective SAARC member states. The conference examined the evolving dynamics of regional integration, with particular attention to the 2015 initiatives within SAARC aimed at opening new development corridors to accelerate sustainable growth and stability in the region. Held in parallel, the Eighth South Asia Economic Summit (SAES)—the region's foremost platform for the political, social, and economic debate—

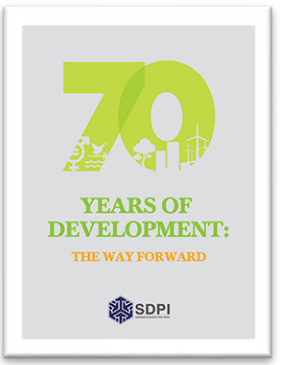
expanded this dialogue, engaging stakeholders in a critical review of South Asia's development challenges and opportunities under its theme of *Regional Cooperation for Sustainable Development in South Asia*. Together, these twin events created a rare convergence of foresight-based visioning, policy dialogue, and collaborative problem-solving. The consolidated insights, research, and policy recommendations from both the SDC and SAES were captured in the peer-reviewed anthology *Securing Peace and Prosperity*, which stands as a joint intellectual output, offering an integrated perspective on the pathways to peace, prosperity, and sustainable development in South Asia.

Nineteenth SDC (2016)



The nineteenth SDC, titled *Sustainable Development: Envisaging the Future Together*, examined the role of cooperation between developed and developing countries in advancing the Sustainable Development Goals, with a strong emphasis on human-centred approaches. Discussions addressed a broad set of interlinked themes, including post-conflict recovery, trade, economic growth, environmental sustainability, sustainable energy, regional economic integration, minority rights, disaster risk management, climate change, youth employment, and the intersections of gender with both democracy and demography. The conference's proceedings were synthesised into a peer-reviewed anthology which integrates diverse perspectives into a unified framework for action. The volume not only documents the debates and evidence presented but also consolidates them into actionable strategies for policymakers, development practitioners, and scholars committed to shaping a more inclusive and sustainable future.

Twentieth SDC (2017)



The twentieth SDC, titled *Seventy Years of Development: The Way Forward*, stands out as one of the most significant gatherings in Pakistan's and the region's development discourse. Over three days, the conference brought together the best and brightest minds in 40 panels, roundtables, and podium discussions, including four plenary sessions, many of which ran concurrently. The event reviewed seven decades of development in Pakistan and the wider region, drawing on participation from across the globe. A total of 269 panellists from 16 countries—Afghanistan, China, Ethiopia, Finland, France, Germany, India, Italy, Nepal, Pakistan, Thailand, the Philippines, Sri Lanka, Switzerland, the United Kingdom, and the United States of America—shared their insights. The conference attracted an audience of over 3,000 participants, making it a landmark in SDPI's convening history. Its peer-reviewed volume presents a comprehensive reflection on Pakistan's development journey since independence. It examines the country's economic, social, political, and environmental transformations over seven decades, distilling lessons learnt and proposing policy directions for the decades ahead.

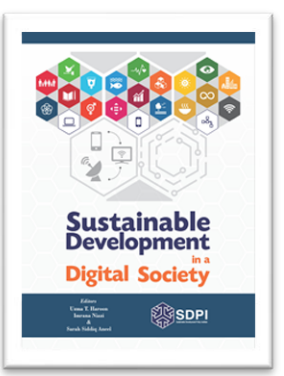
Twenty-First SDC & Eleventh SAES (2018)



The twenty-first SDC, held alongside the eleventh South Asia Economic Summit (SAES), explored the theme *Corridors of Knowledge for Peace and Development*. The joint events expanded the concept of 'corridors' beyond economic infrastructure to include corridors of

connectivity, knowledge, and cooperation emphasising their potential to steer South Asia towards peace, stability, and sustainable development. Across 40 concurrent sessions, participants examined the implications of stalled regional organisations and processes, stressing that such setbacks must not hinder research, innovation, or the exchange of best practices. The dialogue underscored the importance of forging new collaborative partnerships in knowledge-sharing while reinforcing existing networks to strengthen the region's collective capacity for problem-solving. The events brought together 261 delegates from 20 countries—Afghanistan, Australia, Brazil, Belgium, Canada, China, Germany, Kenya, Maldives, France, India, Nepal, Sri Lanka, Switzerland, Tajikistan, Thailand, Pakistan, the Philippines, the United Kingdom, and the United States of America. Of these, 204 participants were from within Pakistan, while 57 represented the other countries listed. Over 4,000 attendees engaged with the four-day proceedings. The peer-reviewed edited volume—*Corridors of Knowledge for Peace and Development*—consolidates the key debates, policy proposals, and case studies presented during the joint sessions, offering a forward-looking blueprint for harnessing connectivity and knowledge exchange as drivers of peace and regional prosperity.

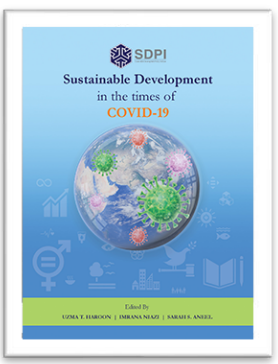
Twenty-Second SDC (2019)



The twenty-second SDC, themed *Sustainable Development in a Digital Society*, was inspired by the transformative wave of the Fourth Industrial Revolution (4IR) and the accelerating digitalisation reshaping human interaction, governance, and economic systems. The conference convened scholars, researchers, policymakers, innovators, and civil society leaders to explore how South Asia—and Pakistan in particular—can harness 4IR technologies,

with Artificial Intelligence (AI) playing an increasingly pivotal role in development plans. The Inaugural Plenary was held on 2 December 2019 at Aiwan-e-Sadr, with the then-President of Pakistan, Dr Arif Alvi, serving as Chief Guest and formally inaugurating the event. Over three days, 223 panellists from 17 countries participated, including 192 from Pakistan and 31 international speakers representing Afghanistan, China, Finland, France, Germany, India, Iran, Italy, Maldives, Nepal, the Philippines, Sri Lanka, Thailand, Türkiye, the United Kingdom, and the United States of America. The conference also reflected a strong commitment to diversity and inclusion, with 150 male panellists, 69 female panellists, and four transgender panellists contributing their perspectives. The peer-reviewed anthology—*Sustainable Development in a Digital Society*—crystallises the conference's deliberations, offering critical insights on leveraging emerging technologies for inclusive, equitable, and sustainable growth in the digital era.

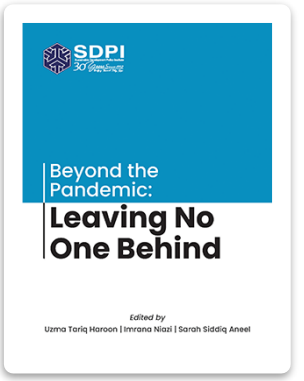
Twenty-Third SDC (2020)



The twenty-third SDC, titled *Sustainable Development in the Times of COVID-19*, focused on the profound impact of the Pandemic and the shifting contours of the global order in its aftermath. Held entirely online from 14–17 December 2020, the conference provided a platform to assess the health, economic, social, and environmental dimensions of the crisis while exploring pathways for recovery and resilience. Over four days, 45 sessions, comprising nine plenaries and 36 concurrent discussions, were conducted, attracting 235 panellists from 25 countries. Of these, 174 participants were from Pakistan, while 61 international speakers joined from Afghanistan, Australia, Austria, Bangladesh, Brunei, Canada, China, Ecuador, Germany, Hong Kong, India, Kenya, Nepal, Nigeria, Saudi Arabia, South Africa, Singapore, Sri Lanka, Sweden,

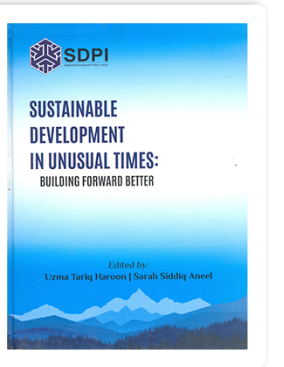
Switzerland, Thailand, the Netherlands, the United Kingdom, and the United States of America. The event drew an online audience of over 6,800 viewers from 84 countries, underscoring its extensive global reach and engagement. Its peer-reviewed anthology captures the breadth of research, analysis, and policy dialogue from the conference, offering a critical record of how South Asia and its partners dealt with one of the most disruptive global crises in modern history.

Twenty-Fourth SDC (2021)



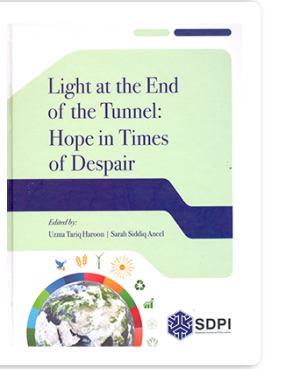
The twenty-fourth SDC, themed *Beyond the Pandemic: Leaving No One Behind*, was held in a hybrid format from 6–9 December 2021 in Islamabad, Pakistan. Dr Arif Alvi, then-President of Pakistan, inaugurated the conference at the Presidency, while then–Prime Minister Imran Khan delivered a special message underscoring the importance of inclusive development. The four-day programme comprised 38 sessions—ten plenaries and 28 concurrent discussions—designed to be both forward-looking and reflective, marking two years since the onset of the COVID-19 Pandemic. The event drew 2,365 in-person and online participants, featuring 250 speakers from 20 countries, including Afghanistan, Bangladesh, Bhutan, Canada, Ecuador, Fiji, Germany, India, Malaysia, Maldives, Nepal, Peru, Sri Lanka, Sweden, Switzerland, Thailand, the Netherlands, the United Kingdom, and the United States of America. The intellectual output of the conference was consolidated into a peer-reviewed anthology, *Beyond the Pandemic: Leaving No One Behind*, which not only documents the key debates and research findings but also serves as a resource for policymakers. By translating lessons from the Pandemic into actionable pathways, the volume provides guidance on building resilient, equitable, and inclusive development systems for the future.

Twenty-Fifth (Silver Jubilee) SDC (2022)



From 5–8 December 2022, SDPI hosted its twenty-fifth SDC in Islamabad under the theme *Sustainable Development in Unusual Times: Building Forward Better*. Marking the Institute's Silver Jubilee, the hybrid event enabled both in-person and online participation. Held alongside UNESCAP's Sixth South and South-West Asia Forum (SSWAF) on the SDGs, the conference was jointly organised with the Ministry of Planning, Development & Special Initiatives, Government of Pakistan. Together, the two events brought together 345 panellists from 21 countries and regions, including Afghanistan, Bangladesh, Bhutan, Cambodia, Canada, China, Hong Kong, Germany, India, Iran, Italy, Malaysia, Maldives, Nepal, Pakistan, Singapore, Sri Lanka, Thailand, Türkiye, the United Kingdom, and the United States of America. Over four days, 46 sessions were convened—11 plenaries and 35 concurrent discussions—attracting a total audience of 5,000. The closing day featured Dr Arif Alvi, then-President of Pakistan, as Chief Guest. The peer-reviewed anthology from this milestone Silver Jubilee SDC draws together the extensive debates, research, and policy recommendations, offering a lasting record of the thought leadership and collaborative insights that emerged from this landmark gathering.

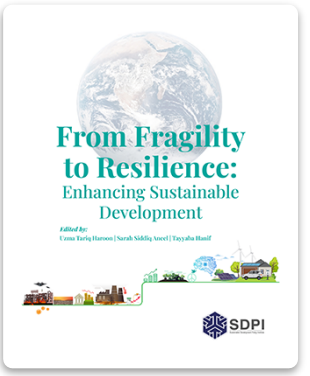
Twenty-Sixth SDC (2023)



The twenty-sixth SDC, themed *Light at the End of the Tunnel: Hope in Times of Despair*, was inaugurated by Dr Arif Alvi, then-President of the Islamic Republic of Pakistan. Over four days, 40 sessions—nine plenaries and 31 concurrent discussions—brought together more than 300 speakers from 19 countries, including Australia, Bangladesh, Canada, China, Germany, Italy,

India, Kenya, Nepal, Norway, Pakistan, the Philippines, Qatar, Singapore, Sri Lanka, Switzerland, Thailand, the United Kingdom, and the United States of America. The event attracted an audience of over 3,000 participants. For the first time, the conference was complemented by a Sustainability Investment Expo (SIE) and a Food Security Hackathon. The Expo connected public- and private-sector innovators in the design, production, and management of sustainability-oriented products, services, and initiatives. The two-day Hackathon focused on developing creative solutions to pressing food security challenges in Pakistan and Afghanistan. The peer-reviewed anthology—published the following year under the same title—captured the event's diverse dialogues, forward-looking research, and innovative case studies, serving as both a record of the conference and a resource for shaping regionally collaborative policy and practice.

Twenty-Seventh SDC (2024)



The twenty-seventh SDC, held from 4–7 November 2024 in Islamabad, Pakistan, carried the overarching theme *From Fragility to Resilience: Enhancing Sustainable Development*, underscoring SDPI's commitment to addressing contemporary global challenges through resilience-building and sustainable growth. The conference convened over 300 panellists from 15 countries—Bangladesh, Chile, China, Germany, India, Italy, Kenya, Nepal, Qatar, Sri Lanka, Switzerland, Thailand, the United Kingdom, and the United States of America—alongside Pakistan. H.E. Yousaf Raza Gilani, then-Acting President of the Islamic Republic of Pakistan and Chairman of the Senate, addressed the inaugural plenary as Chief Guest. Across four days, the programme featured 52 sessions, including 11 high-level plenaries, 29 concurrent discussions, and 12 fireside chats. The conference also hosted the second edition of the Sustainability

Investment Expo (SIE), titled *Pioneering Solutions for Climate Resilience*, which brought together 35 companies and organisations from the development and private sectors. These included key innovators in the design, production, and management of sustainability-focused products, services, and initiatives. Development partners, including multilateral institutions exploring high-impact investment opportunities, showcased their work through knowledge booths. The conference's anthology is a compendium of the research, policy insights and leadership vision shared at this mega gathering.

Twenty-Eighth SDC (2025)



Held from 4–7 November 2025 at Allama Iqbal Open University, Islamabad, Pakistan, the twenty-eighth SDC focused on *Sustainable Development in the Emerging World Dis|Order*. It took place alongside three other forums that have been shaping sustainable development discussions at the local and regional levels, including:

- SDPI's third Sustainability Investment Expo (SI Expo) with an overarching theme of 'Collaborations for a Climate Smart Future' that served as a call to action for collective engagement.
- UNESCAP's ninth South and South-West Asia Subregional Forum on Sustainable Development on 'Transformative, Equitable, Innovative and Coordinated Actions for the 2030 Agenda and its SDGs for a Sustainable Future for All.'
- The sixteenth South Asia Economic Summit (SAES) on 'Exploring Innovations and Policies in the Circular Economy.'

The conference brought together over 300 speakers, comprising more than 200 national and 90 international participants from 23 countries who joined in person as well as online. Alongside the distinguished

voices from within Pakistan, experts and practitioners contributed to the discourse from Australia, Bangladesh, Canada, China, Denmark, Germany, India, Indonesia, Japan, Kenya, the Kingdom of Thailand, Maldives, Mauritius, Nepal, the Philippines, Sri Lanka, Switzerland, Türkiye, the United Arab Emirates, the United Kingdom, the United States of America and Vietnam. Adding further distinction to the event, H.E. Syed Yousaf Raza Gilani, then Acting President and Chairman of the Senate of Pakistan, honoured the delegates by attending the networking event as Chief Guest on 4 November 2025.

Note: Download past anthologies at the following link: <https://sdpi.org/sdc-anthologies/publications>.

Annexure III

Acknowledgements

The Sustainable Development Policy Institute (SDPI) is grateful for the financial and knowledge support provided by the following donors and partners for the Twenty-Eighth Sustainable Development Conference (SDC):

Donors and Partners:

1. **Allama Iqbal Open University**
2. **Ministry of Planning, Development & Special Initiatives**
3. **Institute for Global Environmental Strategies**
4. **United Nations Economic and Social Commission for Asia and the Pacific**
5. **The Bank of Punjab**
6. **PepsiCo Pakistan**
7. **Coca-Cola Pakistan**
8. **Commission on Science and Technology for Sustainable Development in the South**
9. **CoRe Alliance**
10. **Embassy of Denmark in Pakistan**
11. **Friedrich-Ebert-Stiftung**
12. **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)**
13. **International Centre for Integrated Mountain Development**
14. **International Development Research Centre**
15. **Jazz Pakistan**
16. **Malala Fund**

17. Nestlé Pakistan
18. Nutrition International
19. PATH International
20. Pakistan-China Institute
21. Secours Islamique France
22. Tara Climate Foundation
23. Tetra Pak
24. United Nations Environment Programme, Kenya Office
25. United Nations International Children's Emergency Fund
26. Unilever
27. Vital Strategies
28. South Asia Economic Summit

SDC Anthology Review Panel

SDPI prides itself on producing high-quality, credible research. The blind peer-review process is therefore an essential mechanism for ensuring the quality, rigour, and validity of the research published each year in the SDC Anthology. The anthology also features peer-reviewed papers presented at the conference.

Each year, we remain mindful that the selection of reviewers is as important as the review process itself. We select each reviewer with care, drawing on their academic and professional expertise and their knowledge of the subject matter. Although this important contribution often goes unrecognised beyond the academic and research community, the rigorous and constructive feedback provided by our reviewers is integral to maintaining the quality and credibility of the anthology.

The Institute and the Anthology editors sincerely appreciate the time, expertise, and commitment of all those who reviewed papers for this year's edition. We are particularly grateful for their impartial, timely, and constructive feedback, which has helped strengthen the quality of the work published. We wish to thank the following academics, researchers, and professionals for their thoughtful and insightful reviews of the submitted papers:

Dr Amjad Masood **is Chief of Research at the Pakistan Institute of Development Economics (PIDE). His research spans international trade, industry and development economics. He has contributed to research projects funded by the Asian Development Bank, CAREC Institute, and other organisations.**

Dr Khalid Waleed **has more than ten years of experience in Pakistan's energy sector. His expertise includes energy markets, energy poverty, the energy transition at both macro and micro levels, sustainable future resources, carbon markets, emissions trading, long-term macroeconomic sustainability, and econometrics. He is a vocal advocate for integrating sustainable energy and environmental considerations into economic policies. He has authored a book and published several research papers. He has also represented Pakistan as an official negotiator for the Climate Mitigation Stream at COP29 in Azerbaijan. Dr Waleed has a PhD in Energy Economics.**

Dr Muhammad Arshad **is a career civil servant, having extensive knowledge of the policy-making process at the Federal Government level. He earned his doctorate in Development Policy from the Korea Development Institute.**

Dr Sofia Khalid **is Chairperson and Associate Professor at the Department of Environmental Science, Allama Iqbal Open University, Pakistan, bringing over 24 years of academic and research experience in the field. She previously served as Chairperson and Associate Professor at the Department of Environmental Science, Fatima Jinnah**

Women University, Rawalpindi. Her work focuses on environmental management, sustainability education, and interdisciplinary environmental research. She earned her PhD in Environmental Science from Imperial College London, an MPhil in Plant Taxonomy, and an MSc in Biology (Plant Sciences) from Quaid-i-Azam University, Pakistan.

Key Contributions

In addition to the leadership, strategic direction and exceptional problem-solving abilities of SDPI's Executive Director, Dr Abid Qaiyum Suleri, the Conference benefited from the patient stewardship and close oversight of Uzma Tariq Haroon, supported by Tayyaba Hanif and Sarah Siddiq Aneel.

Tayyaba Hanif played a central role in coordinating and assembling the Conference's extensive and multifaceted agenda, while Ms Siddiq provided overarching editorial and publications guidance, maintaining exacting standards of consistency and quality across the Conference's substantive written outputs.

The Conference was further strengthened by the steadfast support of the ED office staff; Deputy Executive Directors; the intellectual and organisational contributions of thematic session organisers; the long hours, late nights and weekends committed by the IT, Administration, Protocol and Social Media teams; enthusiastic volunteers and rapporteurs; and the professionalism, responsiveness and collective dedication of the entire SDPI staff.

In particular, Romila Qamar, Associate Editor of SDPI's *Journal of Development Policy, Research & Practice (JoDPRP)*, led the team of rapporteurs responsible for capturing key policy recommendations. With over a decade of experience in research publishing and editorial management, she has expertise in research quality, ethical publishing, journal development, indexing and dissemination.

Mashhood Urfi served as SDC Assistant and contributed to the anthology by transcribing the speeches delivered by the keynote speakers.

Nimrah Nadeem served as the Management Trainee Officer and assisted with coordinating the collection of policy recommendations from multiple conference sessions.

Annexure IV

SDPI's Twenty-Eighth Sustainable Development Conference (SDC)

4—7 November 2025, Allama Iqbal Open University (AIOU), Pakistan

In parallel with the

Third Sustainability Investment Expo (SIE) 'Collaborations for a Climate Smart Future'

Ninth South and South-West Asia Subregional Forum on Sustainable Development 'Transformative, Equitable, Innovative and Coordinated Actions for the 2030 Agenda and its SDGs for a Sustainable Future for All'

&

Sixteenth South Asia Economic Summit (SAES) 'Exploring Innovations and Policies in the Circular Economy'

Day 1 | Tuesday, 4 November 2025 Opening Plenary 1.1 | Hall: Zaki Auditorium
Registration 9:00am–9:25am Plenary 9:30am–11:00am
Sustainable Development in the Emerging World Dis|Order *In collaboration with SAES and UNESCAP* **Recitation and National Anthem** **Master of Ceremony:** Dr Khalid Waleed, Research Fellow, Sustainable Development Policy Institute (SDPI), Pakistan **Welcome Remarks:** Ambassador Shafqat Kakakhel, Chairperson, Board of Governors, Sustainable Development Policy Institute (SDPI), Pakistan **Introductory Note:** Dr Abid Qaiyum Suleri, Executive Director, Sustainable Development Policy Institute (SDPI), Pakistan **Welcome Remarks by the Co-Host:** Prof. Dr Nasir Mahmood, Allama Iqbal Open University (AIOU), Pakistan **Remarks by the Chief Guest:** Dr Musadik Masood Malik, Federal Minister for Climate Change, Ministry of Climate Change and Environmental Coordination, Government of Pakistan **Remarks by the Guest of Honour:** H.E. Ms Syeda Rizwana Hasan, Advisor to the Ministry of Environment, Forest, and Climate Change, Bangladesh **Distinguished Speakers:** 1. Mr Mohamed Yahya, UN Resident Coordinator and Humanitarian Coordinator, Pakistan 2. Prof. Kazuhiko Takeuchi, President, Institute for Global Environmental Strategies (IGES), Japan *(Online)* **Launch of Publications:** 1. *From Fragility to Resilience: Enhancing Sustainable Development* 2. *Journal of Development Policy, Research & Practice (JoDPRP), Volume 9* 3. *Colours of Pakistan through the Eyes of the Diplomats* 4. *Provincial Development Monitor (PDM): A Derived Human Development Index Approach* **Plenary Organisers**: Ms Romila Qamar & Mr Mashhood Urfi, SDPI

Hall In-charge: Mr Faizan Basharat, SDPI

Rapporteurs: Mr Aftab Hameed Mirani, Ms Mursal Qaisari & Mr Sarfaraz Ahmed

Video Link: https://www.youtube.com/live/OAP3GWGNM_8?si=Cx0tYRAEfFnFwQfN

Day 1 |Tuesday, 4 November 2025 **Sustainability Investment Expo: Awards Plenary & Ribbon Cutting** **Plenary 1.2 | Hall: Zaki Auditorium**
11:30am–1:00pm
Collaborations for a Climate Smart Future *In collaboration with KfW and Embassy of Denmark* **Ribbon Cutting and Visit of Stalls by the Chief Guest** **Moderator:** Ms Zainab Naeem, Associate Research Fellow, Sustainable Development Policy Institute (SDPI), Pakistan **Welcome Remarks:** Dr Abid Qaiyum Suleri, Executive Director, Sustainable Development Policy Institute (SDPI), Pakistan **Introductory Remarks:** Mr Peter Emil Nielsen, Deputy Head of Mission, Embassy of Denmark **Special Remarks:** Mr Arno Kirchhof, Deputy Head of Mission, Embassy of Germany **Sustainability Award Recipients:** 1. Circular Economy & Production Innovation: PepsiCo Pakistan & Green Plastic Private Limited 2. Renewable Energy & Low Carbon Transitions: J.K. Spinning Mills Limited & Nestlé Pakistan 3. Agri-Tech & Food Security: University of Sargodha 4. Gender Equity & Social Impact: Punjab Skills Development Fund & Coca-Cola Pakistan 5. Sustainability Education and Community-Led Adaptation: Tetra Pak Pakistan 6. Disaster Resilience & Climate Risk Management: Jazz Pakistan & AI Geo Navigators 7. Smart Mobility & Green Infrastructure: Electric Ark Private Limited

Remarks by the Chief Guest: Prof. Ahsan Iqbal, Federal Minister for PD&SI & Deputy Chairman, Planning Commission, Ministry of Planning Development and Special Initiatives, Government of Pakistan

Guest of Honour: Mr Qaiser Ahmed Sheikh, Chairman, Board of Investment, Government of Pakistan

Distinguished Speaker: Dr Kamran Jahangir, Managing Director National Book Foundation

Winners Group Photo with Jury Members and Chief Guest

Plenary Organisers: Ms Zainab Naeem, Mr Umar Farooq & Engr. Ubaid ur Rehman Zia, SDPI

Hall In-charge: Mr Khurram Shahzad, SDPI

Rapporteurs: Mr M. Junaid Sial, Ms Ramla Javed & Ms Shogofa Shokori

Video Link: https://www.youtube.com/live/BDjzTFHcnIw?si=sSpAmK1NR2OA33Il

Day 1 | Tuesday, 4 November 2025 **Plenary 1.3 | Hall: Zaki Auditorium**
2:00pm–3:30pm
Roundtable Strategic Dialogue **Accelerating SDGs in the World Today–Challenges and Opportunities** ***Multistakeholder Perspectives on Challenges and Opportunities in SDGs 6, 7, 9, 11 and 17*** *In collaboration with UNESCAP* **Moderator & Introductory Remarks:** Ms Mikiko Tanaka, Director & Head, Economic and Social Commission for Asia and the Pacific (ESCAP) South and South-West Asia Office, India **Special Address:** Ms Armida Salsiah Alisjahbana, Executive Secretary, Economic and Social Commission for Asia and the Pacific (ESCAP), Thailand **Presentation:** *Summary of the Subregional SDG Review* by Ms Mikiko Tanaka

Distinguished Speakers:

1. H.E. Mr Faiyaz Murshid Kazi, Ambassador and Permanent Representative to ESCAP, Embassy of the People's Republic of Bangladesh
2. Ms Prathma Uprety, Director, Information and Poverty Alleviation Division, SAARC Secretariat, Nepal
3. Mr Daya Sagar Shrestha, Executive Director, National Campaign for Sustainable Development, Nepal & Focal Point SSWA, Asia-Pacific Regional CSOs Engagement Mechanism, Nepal
4. Mr Danish Tariq, Youth Advocacy Network and UN Major Group for Children and Youth
5. Dr Sajid Amin Javed, Deputy Executive Director (Research), Sustainable Development Policy Institute (SDPI), Pakistan
6. Dr Dushni Weerakoon, Executive Director, Institute of Policy Studies, Sri Lanka
7. Ambassador Dr Debapriya Bhattacharya, Convenor, Citizen's Platform for SDGs & Distinguished Fellow, Centre for Policy Dialogue (CPD), Bangladesh *(Online)*

Plenary Organisers: Dr Shafqat Munir Ahmad, Dr Khalid Waleed & Ms Sadia Satti, SDPI | Dr Rajan Sudesh Ratna & Dr Jing Huang, UNESCAP

Hall In-charge: Mr Faizan Basharat, SDPI

Rapporteurs: Dr Jing Huang, Ms Amal Shahid & Mr Nazar Muhammad

Video Link: https://www.youtube.com/live/tbhkVjaL_U0?si=WqJ-Zl-YPxMvn5W4

Day 1 | Tuesday, 4 November 2025 **Plenary 1.4 | Hall: Zaki Auditorium**
4:00pm–5:30pm
High-Level Opening Policy Dialogue **Circular Economy in South Asia** *In collaboration with IGES* **Master of Ceremony:** Ms Zainab Naeem, Associate Research Fellow, Sustainable Development Policy Institute (SDPI), Pakistan **Moderator:** Ms Aban Marker Kabraji, Senior Advisor, United Nations Environment Programme (UNEP), Pakistan **Welcome Remarks:** Dr Khalid Waleed, Research Fellow, Sustainable Development Policy Institute (SDPI), Pakistan

Special Video Message: Ms Djaheezah Subratty, Head Consumption & Production Unit Resources and Markets Branch, Industry and Economy Division, United Nations Environment Programme (UNEP), Mauritius

Scene Setting: Dr Premkumara Jagath, Institute for Global Environmental Strategies (IGES), Japan

Chief Guest: Dr Shezra Mansab Ali Khan Kharal, Minister of State for Climate Change, Government of Pakistan

Distinguished Speakers:

1. Ms Shahnaz Wazir Ali, President, Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST), Pakistan
2. Dr Fahmida Khatun, Executive Director, Centre for Policy Dialogue (CPD), Bangladesh
3. Dr Dushni Weerakoon, Executive Director, Institute of Policy Studies (IPS), Sri Lanka
4. Dr Posh Raj Pandy, Chair Emeritus, South Asia Watch on Trade, Economics and Environment (SAWTEE), Nepal *(Online)*
5. Dr Asim Mahmood, Chief Executive Officer, Global Environmental Consultancy & Options (ECO) Group

Publications Launch:

1. State of Circular Economy in Pakistan by Ms Zainab Naeem, Sustainable Development Policy Institute (SDPI), Pakistan
2. Socioeconomic Impact Study by Mr Syed Omar, Head, Corporate Affairs & Sustainability, The Coca-Cola Company

Plenary Organisers: Ms Zainab Naeem & Mr Umar Farooq, SDPI

Hall In-charge: Mr Faizan Basharat, SDPI

Rapporteurs: Mr Tahir Zaman, Mr Mashhood Urfi & Ms Muqadas Hafeez

Video Link: https://www.youtube.com/live/Gwqkq31NzOc?si=PVRq9ngp8ZM16v4l

Day 1 | Tuesday, 4 November 2025 Plenary 1.5 | Hall: 109
4:00pm–5:30pm
Alternative Finance Strategy–Closing the Fiscal Gap for Sustainable Development *In collaboration with UNICEF* **Moderator:** Ms Sadaf Zulfiqar, Chief Social Policy, United Nations International Children's Emergency Fund (UNICEF) **Chief Guest:** Mr Adnan Pasha Siddiqui, Advisor to Finance Minister on Special Initiatives, Finance Division, Government of Pakistan **Guest of Honour:** Mr Anteneh Girma, Chief Mission Nutrition, United Nations International Children's Emergency Fund (UNICEF), Pakistan **Introductory Remarks**: Dr Sajid Amin Javed, Deputy Executive Director (Research), Sustainable Development Policy Institute (SDPI), Pakistan & Dr Razia Safdar, Advisor, Center of Health & Policy Institute (CHIP), Sustainable Development Policy Institute (SDPI), Pakistan **Distinguished Speakers:** 1. Ms Ambrina Bakhtiar, Chief SDGs, Ministry of Planning, Development & Special Initiatives (MoPD&SI), Government of Pakistan 2. Mr Muhammad Mateen Farooq, Head, Investment Banking Group, The Bank of Punjab (BOP), Karachi (*Online*) 3. Prof. Mustafizur Rahman, Distinguished Fellow, Centre for Policy Dialogue (CPD), Bangladesh 4. Ms Shumaila Rifaqat, Head Innovation Investment and Monitoring & Evaluation, Karandaaz 5. Ms Shameen Bashir, Head of Social Finance, British Asian Trust, Pakistan **Plenary Organisers:** Dr Razia Safdar & Ms Khadeeja Hassan, SDPI **Hall In-charge:** Mr Khurram Shahzad, SDPI **Rapporteur:** Ms Aneela Aziz **Video Link**: https://www.youtube.com/live/U7ZorQf_O_w?si=jq0Hebioz_W9ltDM

Day 1 | Tuesday, 4 November 2025 Plenary 1.6 | Hall: Zaki Auditorium
6:00pm–7:30pm
High-Level Plenary **Unlocking Circular Opportunities in Plastics and Agri-Food Systems** *In collaboration with PepsiCo Pakistan* **Moderator:** Ms Zainab Naeem, Associate Research Fellow, Sustainable Development Policy Institute (SDPI), Pakistan **Welcome Remarks:** Dr Abid Qaiyum Suleri, Executive Director, Sustainable Development Policy Institute (SDPI), Pakistan **Chief Guest:** Mr Rana Tanveer Hussain, Minister for National Food Security and Research & Minister of Industries and Production, Government of Pakistan **Distinguished Speakers:** 1. Dr Ranga Pallawala, Key Expert, EU SWITCH-Asia Official, The European Union (EU), Thailand 2. Mr Haseeb Malik, Senior Director Supply Chain & Office of Sustainability Lead, PepsiCo Pakistan 3. Dr Shunichi Honda, Programme Officer, International Environmental Technology Centre (IETC), Japan 4. Mr Zawar Kazmi, Head of Agro, PepsiCo Pakistan **Plenary Organisers:** Ms Zainab Naeem & Mr Umar Farooq, SDPI **Hall In-charge:** Mr Khurram Shahzad, SDPI **Rapporteur:** Ms Ramla Javed **Video Link:** https://www.youtube.com/live/42iSYaYydyg?si=qU_w3GWxQ9G2qzbX

Day 1 | Tuesday, 4 November 2025 Plenary 1.7
7:30pm–10:00pm
SDC Networking Dinner with International Delegates and Partners *In collaboration with FES and PATH, UK* **Venue:** Movenpick Hotel Centaurus, Islamabad *Cultural Performance* **Welcome Remarks:** Dr Abid Qaiyum Suleri, Executive Director, Sustainable Development Policy Institute (SDPI), Pakistan **Remarks by the Guest of Honour:** H.E. Ms Syeda Rizwana Hasan, Advisor to the Ministry of Environment, Forest, and Climate Change, Bangladesh **Remarks by the Chief Guest:** H. E. Yousaf Raza Gilani, Acting President & Chairman Senate, Islamic Republic of Pakistan **Closing Remarks:** Dr Nabeel Goheer, Chief of Asia, Middle East and Europe, PATH, UK **Plenary Organisers:** Mr Junaid Zahid & Ms Sahar Basharat, SDPI

Day 2 | Wednesday, 5 November 2025			
Thematic Session A–1 **Hall: 107**	**Thematic Session A–2** **Hall: 108**	**Thematic Session A–3** **Hall: 109**	**Thematic Session A–4** **Hall: 104**
Registration 9:30am–10:00am **Sessions 10:00am–11:30am**			
High-Level Policy Dialogue **Rewiring Economic and Fiscal Planning for Climate Prosperity** *In collaboration with Embassy of Denmark & Climate Vulnerability Forum* **Moderator:** Ms Nismah Rizwan, Research Associate, SDPI **Welcome and Scene Setting Remarks:** Engr. Ubaid ur Rehman Zia, SDPI **Chair:** Mr Rana Ihsaan Afzal, Coordinator to the Prime Minister on Commerce, GoP **Technical Presentation:** Mr Hamza Haroon, CVF **Distinguished Speakers:** 1. Dr Pierre Horna, Economic Affairs Officer, UNESCAP, Thailand *(Online)* 2. Mr Faran Rana, IRENA, UAE 3. Dr Fahmida Khatun, ED, CPD, Bangladesh	*Report Launch* **Going Against the Grain: Implementing Pakistan's Geoeconomic Pivot Amidst Geopolitical Chaos** *In collaboration with FES* **Moderator:** Mr Ejaz Haider, Senior Resident Fellow, CSSPR, Lahore **Chair:** Lt. Gen. Aamer Riaz (Retd.) HI(M) **Author:** Dr Moeed Yusuf, VC, BNU **Distinguished Speakers:** 1. Ambassador Aizaz Ahmad Chaudhry, Former Foreign Secretary of Pakistan & Chairman, Sanober Institute 2. Prof. Dr Huma Baqai, Rector, MiTE University, Karachi **Vote of Thanks:** Ambassador Shafqat Kakakhel, Chairperson, BoG, SDPI	**Transformative, Sustainable and Equitable Energy Transition** *In collaboration with UNESCAP* **Moderator:** Ms Mikiko Tanaka, Director & Head, Economic and Social Commission for Asia and the Pacific (ESCAP) South and South-West Asia Office, India **Distinguished Speakers:** 1. H.E. Mr Faiyaz Murshid Kazi, Ambassador of Bangladesh to the Kingdom of Thailand, Thailand 2. Mr Faisal Sharif Muhammad, Director (Environment), PPIB, GoP *(Online)* 3. Mr Ahsan Javed, Research Fellow (Renewable Energy), SAARC Energy Center, Pakistan 4. Ms Subathirai Sivakumaran, Chief of Section, Macroeconomic Policy and Financing for Development, ESCAP *(Online)*	*High-Level Roundtable Dialogue* **South Asia in a Changing World** **Introduction & Moderator:** Mr Imran Shauket, JOBS-DC Inc.; Convener Pakistan & SA Initiative, Former Advisor to GoP **Opening Remarks:** Dr Abid Qaiyum Suleri, ED, SDPI **Distinguished Speakers:** 1. Ambassador Seema Ilahi Baloch 2. Mr Haroon Sharif, Chairman, PREF, Pakistan 3. Mr Tariq Suleman, Senior Research Fellow, Bloomsbury Pakistan 4. Brig. Feroz Hassan Khan, (Retd), NPS, USA 5. Mr Anthony Renzulli, Associate Partner, South Asia, Albright Stonebridge Group 6. Mr Jon Danilowicz, ED, Right to Freedom, USA 7. Mr Skip Waskin, CEO, International Solutions

4. Mr Adnan Rehmat, Program Manager, IMS Pakistan 5. Ms Anam Rathor, Program Lead Pakistan, CVF-V20 Secretariat **Closing Remarks:** Dr Abid Qaiyum Suleri, ED, SDPI **Report Launch:** Exploring Country Platforms to Advance Pakistan's Energy Transition by Ms Nismah Rizwan **MoU Signing:** SDPI & CVF **Panel Organisers:** Engr. Ubaid ur Rehman Zia, Dr Khalid Waleed, Ms Nismah Rizwan & Ms Saira Adnan, SDPI **Hall In-charge:** Mr Rahat Ullah, SDPI **Rapporteur:** Ms Shogofa Shokori **Video Link:** https://www.youtube.com/watch?v=QHSYtTjmGSM	**Panel Organisers:** SDC Unit | Mr Hamayoun Khan, FES **Hall In-charge:** Mr Asif Khan **Rapporteur:** Mr Sarfaraz Ahmed **Video Link:** https://www.youtube.com/live/isfQdxJ3-Qg?si=bknS9o188cqu5ewO	5. Mr Muhammad Ameen Keryo, Chairperson, Sindhica Reforms Society Pakistan 6. Ms Mahnoor Rashid, Partnerships & Grants Manager, Politics4Her Asia-Pacific, Pakistan 7. Dr Khalid Waleed, Research Fellow-Climate and Energy, SDPI **Hall In-charge:** Mr Khurram Shahzad, SDPI **Panel Organisers:** Dr Shafqat Munir Ahmad, Dr Khalid Waleed & Ms Sadia Satti, SDPI | Dr Rajan Sudesh Ratna & Mr Joseph George, UNESCAP **Rapporteurs:** Mr Joseph George & Mr Nazar Muhammad **Video Link:** https://www.youtube.com/live/zpgvIEVVq24?si=e-U_DNnQUqZmKzd6	8. Ms Maureen Shauket, Former Development Advisor (US Mil Central Africa Command, Stuttgart), Mission Director Kosovo, Procurement Executive, USAID 9. Mr Michael Kugelman, Former Director South Asia Institute, Wilson Center, USA 10. Ms Elizabeth Threlkeld, South Asia Director, Stimson Center, USA 11. Mr Tariq Cheema, Founder, World Donors Forum 12. Dr Bishnu Raj Upreti, ED, NCCR, Nepal 13. Dr Kala Peiris, Director, Senior Researcher, CENWOR/ Sri Lanka Center for Development Facilitation (APRCEM) 14. Maj. Gen. Dr Ehsan Mehmood Khan (Retd.) **Hall In-charge:** Mr Faizan Basharat, SDPI **Panel Organisers:** Dr Sajid Amin Javed, Ms Sadia Satti, SDPI & Mr Imran Shauket, JOBS-DC Inc. **Rapporteurs:** Mr M. Junaid Sial & Ms Muqadas Hafeez

			Video Link: https://www.youtube.com/live/ZLl3F3OTllE?si=X4awRz5mfXF_P-UE
Wednesday, 5 November 2025 | Break 11:30am–11:45am Sessions 11:45am–12:30pm			
SI Expo Fireside Chat–1 **Shaping Impact Together: German Development Cooperation in Pakistan** *In collaboration with KfW* **In Conversation with:** • Ms Maria-Jose Poddey, Country Director, GIZ Pakistan • Mr Sebastian Jacobi, Country Director, The Kreditanstalt für Wiederaufbau Development Bank (KfW), Pakistan **Organiser:** Ms Zainab Naeem, SDPI **Rapporteur**: Ms Ramla Javed			
Thematic Session A–5 **Hall: 107**	**Thematic Session A–6** **Hall: 108**	**Thematic Session A–7** **Hall: 109**	**Thematic Session A–8** **Hall: 104**
12:30pm– 2:00pm			
Policy Dialogue **Inclusive Growth for Shared Prosperity** *In collaboration with Coca-Cola Pakistan* **Moderator:** Ms Zainab Naeem, SDPI **Welcome Remarks:** Dr Abid Qaiyum Suleri, ED, SDPI	*Roundtable Dialogue* **Strengthening the Role of Parliament in Public Debt Management in Pakistan** *In collaboration with FES* **Moderator:** Dr Sajid Amin Javed, SDPI **Opening Remarks:** Mr Abdullah Dayo, FES	**Sustainable Cities and Communities** *In collaboration with UNESCAP* **Moderator:** Mr Jawed Ali Khan, Senior Advisor/Programme Manager, UN-Habitat Pakistan **Distinguished Speakers:** 1. Mr Curt Garrigan, Chief, Sustainable Urban Development Unit,	**The Economy of Green Skills in Pakistan–Building a Future-Ready Workforce** *In collaboration with UNICEF* **Moderator:** Ms Meeran Jamal, Social Policy Officer, UNICEF Pakistan **Chair:** Ms Gulmina Bilal Ahmad, Chairperson, NAVTTC

Chair: Ms Shaista Pervaiz Malik, Convenor, Parliamentary Taskforce on SDGs & MNA, GoP **Guest of Honour:** Mr Fahad Haroon, SAPM Digital Communication, GoP **Scene Setting Presentation:** *Coca-Cola Pakistan Socioeconomic Impact Report (2019–2024)* by Mr Umar Farooq, SDPI **Distinguished Speakers:** 1. Prof. Dr Muhammad Naveed, Bahria University 2. Dr Aliya Hashmi Khan, former Dean, Quaid-e-Azam University, Islamabad 3. Mr Sami Wahid, General Manager, The Coca-Cola Pakistan **Panel Organisers:** Ms Zainab Naeem & Mr Umar Farooq, SDPI **Hall In-charge:** Mr Rahat Ullah, SDPI **Rapporteurs:** Ms Mursal Qaisari & Ms Shogofa Shokori	**Closing Remarks:** Mr Syed Naveed Qamar, Chairman, Parliamentary Standing Committee on Finance and Revenue, GoP **Distinguished Speakers:** 1. Mr Rana Ihsan Afzal, Coordinator to PM, MoC, GoP 2. Mr Muzzammil Aslam, Advisor, Ministry of Finance, Govt. of KPK 3. Mr Mohsin Mushtaq Chandna, DG (Debt), Finance Division, GoP 4. Dr Ali Salman, ED, PRIME 5. Dr Farooq Sattar, MNA, GoP 6. Dr Aneel Salman, Chair Economic Security, IPRI 7. Ms Uzma Zia, PIDE 8. Dr Umer Khalid, PRIDE 9. Mr Umer Akhlaq Malik, UNDP 10. Mr Abdul Rehman Warraich, SECP, GoP 11. Dr Mirza Ikhtiar Baig, MNA, PPP 12. Mr Mehtab Haider, Senior Report Officer, The News 13. Mr Riaz Fatyana, MNA, PTI 14. Dr Nasir Iqbal, Assoc. Prof., PIDE	Environment and Development Division, ESCAP *(Online)* 2. Barrister Arsalan Islam Shaikh, Mayor of Sukkur, Pakistan *(Online)* 3. Ms Anum Shahid, The Urban Sector Planning and Management Services Unit (The Urban Unit), Govt. of Punjab 4. Mr Khawaja Sikandar Zeeshan, DG PHATA, Pakistan 5. Ms Shajeea Khalid, Technical Specialist, Climate Finance NCGCL *(Online)* 6. Dr Kala Peiris, Director, Senior Researcher, CENWOR/ Sri Lanka Center for Development Facilitation (APRCEM) 7. Dr Paras Kharel, ED, SAWTEE, Nepal **Panel Organisers:** Dr Shafqat Munir Ahmad, Dr Khalid Waleed & Ms Sadia Satti, SDPI | Dr Rajan Sudesh Ratna & Ms Gawon Lee, UNESCAP **Hall In-charge:** Mr Khurram Shahzad, SDPI	**Guest of Honour:** Ms Sharmeela Rassool, Deputy Representative Programs, UNICEF Pakistan **Presentation:** *Proposed Green Skills Framework and Implementation Plan (2025–2030)* by Engr. Ahad Nazir **Distinguished Speakers:** 1. Dr Abid Qaiyum Suleri, ED, SDPI 2. Ms Sobiah Becker, Advisor, Pak-German Climate and Energy Partnership, GIZ 3. Ms Aamena Aly Kamal, MoPD&SI, GoP 4. Dr Quratulain Bakhteari, Founding Director, IDSP, Pakistan 5. Dr Asanka Wijesinghe, RF, IPS, Sri Lanka 6. Dr Nisha Arunatilake, Director of Research, IPS, Sri Lanka **Panel Organisers:** Dr Razia Safdar & Ms Khadeeja Hassan, SDPI **Hall In-charge:** Mr Faizan Basharat, SDPI **Rapporteur:** Ms Aneela Aziz

Video Link: https://www.youtube.com/live/1g-NzauAMU0?si=vSCH8YMIKJ7oDFKE	15. Dr Muhammad Arshad, Chief (Macroeconomics), MoPD&SI, GoP 16. Prof. Mustafizur Rahman, Distinguished Fellow, CPD, Bangladesh 17. Dr Lakmini Fernando, RF, IPS, Sri Lanka 18. Mr Zafar ul Hassan, Ex-Joint Chief Economist Eco Policy 19. Mr Imtiaz Ali Solangi, FBR 20. Ms Rashida Dohad, ED, Omer Asgher Khan Foundation 21. Dr Sajeela Rabbani, Asst. Prof., Iqra University 22. Mr Shahbaz Rana, Reporter, Express Tribune **Panel Organisers:** Dr Sajid Amin Javed, Ms Aqsa Naveed & Mr Muhammad Sameer, SDPI **Hall In-charge:** Mr Asif Khan **Rapporteur:** Mr M. Junaid Sial **Video Link:** https://www.youtube.com/live/7UpCgCN54gk?si=JPBTvzR-i2iR1kOe	**Rapporteurs:** Ms Gawon Lee & Ms Amal Shahid **Video Link:** https://www.youtube.com/live/Z6Jtj3msaXM?si=jpKCLolIfQV6LNBl	**Video Link:** https://www.youtube.com/live/Mxo-ZFaaM8I?si=_iPOlGQ9BCY0vPT7

<table>
<tr><th colspan="4">Wednesday, 5 November 2025 | Break 2:00pm–2:15pm
Sessions 2:15pm–3:00pm</th></tr>
<tr><td colspan="4">SI Expo Fireside Chat–2
Private Sector Pathways to Food Security in Pakistan
In collaboration with PepsiCo Pakistan

In Conversation with: Mr Zakiuddin Khalid, Snr Director Commercial & Food Businesses, PepsiCo Pakistan

Organiser: Ms Zainab Naeem, SDPI

Rapporteur: Ms Zaiba Shoukat</td></tr>
<tr><th>Thematic Session A–9
Hall: 107</th><th>Thematic Session A–10
Hall: 104</th><th>Thematic Session A–11
Hall: 109</th><th>Thematic Session A–12
Hall: 108</th></tr>
<tr><th colspan="4">3:00pm–4:30pm</th></tr>
<tr><td>Pakistan’s Coal to Clean Transition: Opportunities and Challenges

Moderator: Ms Zainab Babar, SDPI

Chair: Mr Malik Amin Aslam, Former Minister for Climate Change, GoP

Welcome Remarks and Presentation: Engr. Ubaid ur Rehman Zia, SDPI

Technical Presentation: Pakistan’s Coal to Clean Transition: Opportunities and</td><td>Designing the Transition to a Circular Economy in South Asia
In collaboration with IGES

Moderator: Ms Zainab Naeem, SDPI & Dr Shunichi Honda, PO, IETC

Chair: Mr Dhani Ram Sharma, JS (Head of Division), Foreign Aid Coordination Division, Ministry of Finance, Nepal (Online)

Distinguished Speakers:
1. Dr Lakmini Fernando, RF, IPS, Sri Lanka
2. Dr Pham Ngoc Bao, IGES, Japan</td><td>Voluntary National Reviews (VNRs) and Voluntary Local Reviews (VLRs) of SDGs–Lessons for SDGs Acceleration
In collaboration with UNESCAP

Moderator: Ms Mikiko Tanaka, Director & Head, Economic and Social Commission for Asia and the Pacific (ESCAP) South and South-West Asia Office, India

Distinguished Speakers:
1. Ms Juliet Nicole Braslow, UNESCAP, Thailand (Online)
2. Ms Tashi Choden, Senior Planning Officer at the Prime Minister’s Office, Bhutan</td><td>South Asian Coalition for Improved Nutrition (SACIN): Transforming Food Systems through Fiscal and Trade Policies Reforms
In collaboration with IDRC

Moderator: Ms Imrana Niazi, SDPI

Introductory Remarks & Scene Setting: Ms Madiha Ahmed, Snr. Program Specialist, IDRC, Canada

Chair: H.E. Ms Syeda Rizwana Hasan, Minister of Environment, Forest and Climate Change, Bangladesh</td></tr>
</table>

Challenges by Ms Zainab Babar, SDPI & Dr Ying Qian, Boston University, USA **Distinguished Speakers:** 1. Dr Julia Skorupska, Head of Secretariat, PPCA, UK (*Online*) 2. Dr Ying Qian, Boston University, USA 3. Ms Haneea Isaad, Energy and Finance Analyst, IEEFA 4. Mr Mustafa Hyder Sayed, ED, PCI 5. Mr Hamid Sharif, Former Managing Director, Asian Infrastructure Investment Bank (AIIB) & President, GTTN. 6. Mr Faran Rana, IRENA, UAE 7. Ms Yvonne Yujing Liu, Principal (China Power System & Renewables), RMI China **Program Launch:** Transform Program: Transition Finance for Actionable Mitigation	3. Ms Farheen Zahoor, GM ESG, YTML 4. Mr Muhammad H. Shafqaat, CEO, PTC 5. Mr Sheikh Waqar Ahmed, Nestlé Pakistan **Panel Organisers:** Ms Zainab Naeem & Mr Umar Farooq, SDPI **Hall In-charge:** Mr Faizan Basharat, SDPI **Rapporteurs:** Mr Tahir Zaman & Mr Saad Hamed **Video Link:** https://www.youtube.com/live/2Y9cXydyWAY?si=7nbKrcEuX9sVZrh4	3. Mr Adam Azim, Mayor of Malé City, Male City Council, Republic of Maldives *(Online)* 4. H.E. Mr Faiyaz Murshid Kazi, Ambassador of Bangladesh to the Kingdom of Thailand, Thailand 5. Dr Sulakshana Jayawardena, DG (Corporate Affairs), Ministry of Finance, Planning and Economic Development, Government of Sri Lanka (*Online*) 6. Ms Shilpa Lamichhane, ED, Visible Impact, Nepal 7. Ms Memoona Asif, Assistant International Engagements, Youth Advocacy Network 8. Prof. Selim Raihan, University of Dhaka, Bangladesh (*Online*) **Panel Organisers:** Dr Shafqat Munir Ahmad, Dr Khalid Waleed & Ms Sadia Satti, SDPI | Dr Rajan Sudesh Ratna & Ms Gawon Lee, UNESCAP **Hall In-charge:** Mr Khurram Shahzad, SDPI **Rapporteurs:** Ms Gawon Lee, Mr Umair Talha & Ms Shogofa Shokori	**Special Remarks:** 1. Mr Udaya Namalgama, Rep., CAA, Sri Lanka 2. Ms Shabnam Shivakoti, JS, Ministry of Agriculture and Livestock Development, Govt. of Nepal **Distinguished Panellists:** 3. Mr Sakib Sherani, Founder & CEO, Macro Economics Insights, Pakistan 4. Ms Hasani Rajapaksha, Research Professional, CEPA, Sri Lanka 5. Ms Neelu Thapa, SF, SAWTEE, Nepal 6. Mr Md. Badruddin Saify, ARK Foundation, Bangladesh **Panel Organisers:** Ms Dua Mobeen, Ms Khansa Naeem & Mr Syed Qasim Ali Shah, SDPI **Hall In-charge:** Mr Asif Khan **Rapporteur:** Ms Ramla Javed **Video Link:** https://www.youtube.com/live/FJIMFkM6DIE?si=aaAYCjHoQBCYq9Vl

Panel Organisers: Engr. Ubaid ur Rehman Zia, Ms Zainab Babar & Ms Saira Adnan, SDPI **Hall In-charge:** Mr Rahat Ullah, SDPI **Rapporteurs:** Mr Aftab Hameed Mirani & Ms Amal Shahid **Video Link:** https://www.youtube.com/live/lipxudtsgXA?si=NZ69JeilsaleMurT		**Video Link:** https://www.youtube.com/live/qtODpeU3jVo?si=pNcXvb2rXyWezkzW	
Wednesday, 5 November 2025 | Break 4:30pm–4:45pm			

Day 2 | Wednesday, 5 November 2025 **Plenary 2.1| Hall: Zaki Auditorium**
Plenary 5:30pm–7:00pm
Development Beyond 2030: Rethinking Global Priorities in an Age of Disruption *In collaboration with IGES* **Moderator:** Ms Zainab Naeem, Associate Research Fellow, Sustainable Development Policy Institute (SDPI), Pakistan **Chief Guest:** Dr Ishrat Husain, Professor Emeritus and Chairman, Centre for Excellence in Islamic Finance (CEIF), Institute of Business Administration (IBA), Pakistan **Guest of Honour:** Senator Sherry Rehman, Chairperson/Convener, Senate Standing Committee on Climate Change and Environmental Coordination, Government of Pakistan **Distinguished Panellists:** 1. Mr Mohamed Yahya, UN Resident Coordinator and Humanitarian Coordinator, Pakistan

2. Mr Haroon Sharif, Chairman, Pakistan Regional Economic Forum (PREF), Pakistan
3. Dr Premkumara Jagath, Institute for Global Environmental Strategies (IGES), Japan
4. Mr Rabi Shanker Sainju, Vice Chair, South Asia Watch on Trade, Economics and Environment (SAWTEE), Nepal

Vote of Thanks: Dr Abid Qaiyum Suleri, Executive Director, Sustainable Development Policy Institute (SDPI), Pakistan

Plenary Organisers: Ms Zainab Naeem & Mr Umar Farooq, SDPI

Hall In-charge: Mr Faizan Basharat, SDPI

Rapporteurs: Ms Mursal Qaisari & Mr Saad Hamed

Video Link: https://www.youtube.com/live/i3fjG1rTKJA?si=n2WQHQ8IXUi0lHFA

Day 3 | Thursday, 6 November 2025			
Thematic Session B–1 **Hall: 108**	**Thematic Session B–2** **Hall: 107**	**Thematic Session B–3** **Hall: 109**	**Thematic Session B–4** **Hall: 104**
Registration 9:30am–10:00am **Sessions 10:00am–11:30am**			
Regional Dialogue **Accelerating Green Industrialisation: Policy Pathways, Opportunities and Challenges** *In collaboration with NCET* **Moderator:** Ms Saleha Qureshi, SDPI **Chair:** Mr Asif Saeed Khan Lughmani, Additional Secretary, MoI&P, GoP	**Circular Economy and Food Systems Nexus: Transforming Pakistan's Dairy Sector for a Sustainable Future** *In collaboration with Tetra Pak* **Moderator:** Ms Amna Urooj, SDPI **Distinguished Speakers:** 1. Mr Noor Aftab, Director Corporate Affairs Pakistan	**Investing in Girls' Education in the Emerging World Dis|Order: Solutions and Reforms for Pakistan** *In collaboration with Malala Fund* **Moderator:** Ms Arooj Khalid, ITA **Opening Remarks:** Dr Nishat Riaz, Chief Executive, Malala Fund, Pakistan	**Advancing SDG 7 in the Hindu Kush Himalaya: Climate-Resilient Renewable Energy, Regional Cooperation and Pathway** *In collaboration with ICIMOD* **Moderator:** Ms Zainab Babar, SDPI **Welcome Remarks:** Engr. Ubaid ur Rehman Zia, SDPI **Scene Setting Presentation:** Dr Abid Hussain, ICIMOD, Nepal

Welcome Remarks: Engr. M. Abdul Jabbar, CEO, Automotive MFG Pvt. Ltd **Distinguished Speakers:** 1. Mr Faisal Shafaat, Senior JD, SBP 2. Mr M. Abdul Aleem, SG, OICCI *(Online)* 3. Ms Sobiah Becker, Advisor, Pak-German Climate and Energy Partnership, GIZ 4. Dr Paras Kharel, ED, SAWTEE, Nepal 5. Ms Kanwal Shehzadi, GHG Lead Auditor, SGS Pakistan, Pvt. Ltd 6. Ms Chen Yan, CEO, Challenge Fashion Private Limited *(Online)* 7. Mr Farooq Khalili, CEO, Axiom Energy, Lahore **Panel Organisers:** Ms Saleha Qureshi, Dr Khalid Waleed & Engr. Ubaid ur Rehman, SDPI **Hall In-charge:** Mr Asif Khan **Rapporteurs:** Ms Amal Shahid & Ms Mursal Qaisari	and MENA (Middle East & North Africa), Tetra Pak 2. Mr Muhammad Bin Shahzad, Sustainability Manager, Tetra Pak Pakistan 3. Dr Kashif Majeed Salik, SDPI 4. Mr Muddassir Shafique, IFC 5. Dr Irfan Chatha, SDPI **Closing Remarks:** Ms Sobiah Becker, Advisor, Pak-German Climate and Energy Partnership, GIZ **Panel Organisers:** Ms Zainab Naeem & Ms Amna Urooj, SDPI | Mr Muhammad Bin Shahzad & Mr Noor Aftab, Tetra Pak **Hall In-charge:** Mr Rahat Ullah, SDPI **Rapporteur:** Mr Aftab Hameed Mirani **Video Link:** https://www.youtube.com/live/4LjLAPf0j8g?si=XuHWSi8yl0C0HUe0	**Chair:** Ms Farah Naz Akbar, MNA, GoP **Distinguished Panellists:** 1. Dr Muhammad Shahid Soroya, DG, PIE 2. Mr Qamar Naseem, Program Manager, Blue Veins 3. Ms Urwa Naeem, Snr. PO, Pakistan Coalition for Education 4. Ms Maliha Hyder, Education Specialist, TWB **Panel Organisers:** Dr Kashif Majeed Salik & Mr Yahya Gulraiz, SDPI **Hall In-charge:** Mr Khurram Shahzad, SDPI **Rapporteurs:** Ms Ramla Javed & Mr M. Junaid Sial **Video Link:** https://www.youtube.com/live/7scwmGvOXg0?si=uEJuu2oKPbOEsUSr	**Chair:** Mr Riaz Fatyana, MNA, GoP **Launch of ICIMOD's Regional Energy Report:** *Together We Have More Power: Status, Challenges, and the Potential for Regional Renewable Energy Cooperation in the Hindu Kush* Himalaya by Dr Abid Hussain, ICIMOD, Nepal **Remarks and Key Findings** Ms Izabella Koziell, Deputy Director General, ICIMOD, Nepal **Presentation:** *Navigating the Path to SDG 7 (Affordable and Clean Energy) in Asia and the Pacific: Breakthroughs and Barriers* by Ms Fadiah Achmadi, UNESCAP (*Online*) **Distinguished Speakers:** 1. Ms Shubhuti Kiran Ghimire, ICIMOD, Nepal 2. Mr Syed Aqeel Hussain Jafri, PPIB 3. Mr Anis Zaman, UNESCAP *(Online)* 4. Ms Kiran Gautam, SAARC Energy Centre **Vote of Thanks:** Dr Khalid Waleed, SDPI **Panel Organisers**: SDC Unit and Energy Unit

Video Link: https://www.youtube.com/live/GOjTF40jbdQ?si=GdqNSILXqg-SFd1n			**Hall In-charge:** Mr Faizan Basharat, SDPI **Rapporteur:** Ms Muqadas Hafeez **Video Link:** https://www.youtube.com/live/UodkbK5IuHs?si=xqGmWXrUI9Rb3Svj
Thursday, 6 November 2025 | Break 11:30am–11:45am			
Thematic Session B–5 **Hall: 108**	**Thematic Session B–6** **Hall: 107**	**Thematic Session B–7** **Hall: 109**	**Thematic Session B–8** **Hall: 104**
12:30pm–2:00pm			
Roundtable **From Baku to Belém: The Road Ahead for Pakistan's Climate Finance Architecture** **Moderator:** Ms Saleha Qureshi, SDPI, Pakistan **Welcome Remarks:** Ms Sobiah Becker, Advisor, Pak-German Climate and Energy Partnership, GIZ **Scene Setting:** Dr Khalid Waleed, SDPI **Presentation:** *A Strategic Overview of Global Climate Finance, National Commitments and the Urgent 2025*	**Just Transition and Circular Economy: Integrating the Informal Sector in South Asia** *In collaboration with IGES* **Moderator:** Ms Zainab Naeem, SDPI & Ms Amna Urooj, SDPI **Presentations:** • *A Bankable, MRV-ready Playbook to Institutionalise Informal Actors in JT & CE Programs* by Ms Rizwana Anjum, CM, Green Programme Punjab • *Community-Centric Enterprise Approach to Waste Management and Piloting the Circular Economy in Sahiwal,*	**Contours of Change: New Voices in Sustainable Development** **Moderator:** Ms Uzma T. Haroon, SDPI, Pakistan **Chair:** Prof. Saima Hamid, Public Health & Theme Lead, Global Health and Development, STMU **Special Remarks:** 1. Dr Khalid Waleed, SDPI, Pakistan 2. Dr Sofia Khalid, Chairperson Dept. of Envir. Sciences, AIOU, Pakistan	*Policy Dialogue* **Telecom and the Digital Future of Pakistan: Artificial Intelligence, Connectivity, and the Frontiers of Development** *In collaboration with Jazz* **Moderator:** Engr. Ubaid ur Rehman Zia, SDPI **Chair:** Dr Mukaram Khan, DG (CVD), PTA **Welcome Remarks:** Brig. Mohammad Yasin (Retd.), Distinguished Advisor Emeritus, SDPI, Pakistan **Opening Remarks:** Mr Syed Zaheer Mehdi, Group Chief Corporate & Regulatory Affairs, Jazz

Climate Roadmap for Pakistan Resilience by Ms Saleha Qureshi **Chair:** Dr Nafisa Shah, MNA, GoP **Distinguished Speakers:** 1. Mr Faisal Shafaat, Senior JD, SBP 2. Mr Arslan Muhammad Iqbal, Chief Risk Officer, BoP 3. H.E. Mr Faiyaz Murshid Kazi, Ambassador of Bangladesh to the Kingdom of Thailand, Thailand 4. Engr. M. Abdul Jabbar, CEO, Automotive MFG Pvt. Ltd **Panel Organisers:** Ms Saleha Qureshi, Dr Khalid Waleed, Engr. Ubaid ur Rehman Zia, Ms Zainab Naeem & Ms Saira Adnan, SDPI | Ms Sobiah Becker, GIZ **Hall In-charge:** Mr Asif Khan **Rapporteur:** Mr Nazar Muhammad **Video Link:** https://www.youtube.com/live/g5N1jAxTes4?si=ltf06heWpcRGJRsz	*Pakistan* by Mr Imran Javed, AHKF **Distinguished Speakers:** 1. Dr Bishnu Raj Upreti, NCCR, Nepal 2. Mr Sheikh Waqar Ahmed, Nestlé Pakistan **Panel Organisers:** Ms Zainab Naeem & Mr Umar Farooq, SDPI | ILO **Hall In-charge:** Mr Rahat Ullah, SDPI **Rapporteurs:** Mr M. Junaid Sial & Ms Shogofa Shokori **Video Link:** https://www.youtube.com/live/tas_TDwCpP0?si=3Tky6I4q5sujvQzC	**Summary of Key Policy Recommendations:** Dr Rabia Manzoor, Deputy Chief (Policy) & JS, PSDE, PIDE **Distinguished Speakers:** 1. Ms Shaista Tariq, Textile Research & Circulatory Innovation, Pakistan 2. Dr Asjed Sanaullah, IBADAT International University, Pakistan 3. Mr Rameez Ahmed Sheikh, SIF, Pakistan 4. Dr Tariqullah Khan, CEO Ventureethica, Canada 5. Ms Noor Ul Ain, UIII, Indonesia 6. Ms Kiran Ejaz, Muslim Hands, Pakistan **Panel Organiser:** SDC Unit **Hall In-charge:** Mr Khurram Shahzad, SDPI **Rapporteur:** Ms Mursal Qaisari **Video Link:** https://www.youtube.com/watch?v=3OjD3L9rzIE	**Presentation:** *Governing Data as Capital: Smart Data Portfolios for AI and Connectivity* by Prof. Talha Yalta, TOBB University of Economics and Technology, Türkiye & Ms A. Yasemin Yalta **Distinguished Speakers:** 1. Mr Pervez Iktikhar, International ICT Consultant 2. Mr Ahmed Qadir, CCP 3. Mr Bilal Anwar, CEO, NDRMF **Vote of Thanks:** Ms Zainab Naeem, SDPI **Panel Organisers:** Mr Ali Aamer, Ms Romila Qamar & Engr. Ubaid ur Rehman Zia, SDPI **Hall In-charge:** Mr Faizan Basharat, SDPI **Rapporteur:** Mr Aftab Hameed Mirani **Video Link:** https://www.youtube.com/live/MpJSSTW5h2k?si=l2nVgdnQUG22PgbM

Thursday, 6 November 2025 | Break 2:00pm–2:15pm			
2:15pm–3:00pm			
SI Expo Fireside Chat–3 **Resilient Dairy Futures: Integrating Nutrition, Circularity & Climate Action** *In collaboration with Tetra Pak Pakistan* **In Conversation with:** Mr Noor Aftab, Director Corporate Affairs, Pakistan & MENA, Tetra Pak **Organiser:** Ms Zainab Naeem, SDPI **Rapporteur**: Mr Saad Hamed			
Thematic Session B–9 **Hall: 109**	**Thematic Session B–10** **Hall: 107**	**Thematic Session B–11** **Hall: 104**	**Thematic Session B–12** **Hall: 108**
3:00pm–4:30pm			
Moving Beyond GDP: Towards Inclusive Wealth *In collaboration with UNEP, Kenya* **Moderator:** Ms Saleha Qureshi **Scene Setting:** Dr Pushpam Kumar, Chief Environmental Economist, UNEP **Technical Presentation:** Dr Muhammad Khurshid, Former Officer, Planning Commission, GoP **Distinguished Speakers:** 1. Mr Zafar ul Hassan, Ex-Joint Chief Economist Eco Policy	**Fortify Pakistan: Compliance, SMEs and Consumer Trust** **Moderator:** Dr Kashif Majeed Salik, SDPI **Distinguished Speakers:** 1. Dr Tahira Siddique, DD, Islamabad Food Authority 2. Dr Tanveer Ibrahim, NIH 3. Prof. Dr Asif Ahmad, PMAS-AAU 4. Ms Dua Mobeen, SDPI **Panel Organisers:** Dr Kashif Majeed Salik & Mr Yahya Gulraiz, SDPI	*Roundtable* **Strategic Framework for Living Wage Implementation in Pakistan: Economic Rationale and Policy Pathways** *In collaboration with Unilever* **Moderator:** Ms Maheen Rehan, SDPI **Chair:** Senator Roshan Khursheed Bharucha, Member, Judicial Commission of Pakistan; Member, BoG, SDPI	*Roundtable* **Anticipating Tomorrow: Forging Pakistan's National Strategy for Proactive Disaster Risk Reduction** *In collaboration with GIZ* **Moderator:** Dr Shafqat Munir Ahmad, SDPI **Opening Remarks:** Mr Idrees Mehsud, Member DRR, NDMA, GoP **Chair:** Mr Thomas Conan, Deputy CD, WFP **Keynote Speaker:** Mr Marcus Oxley, Founder, GNDR *(Online)*

2. Mr Towfiqul Islam Khan, Add. Director, Research, CPD, Bangladesh *(Online)* 3. Mr Farooq Khalili, CEO, Axiom Energy, Lahore 4. Mr Mohammad Farooq, Director Research, PIDE 5. Mr Muhammad Ali Kemal, Chief, Employment & Research (E&R), MoPD&SI, GoP **Vote of Thanks:** Dr Sajid Amin Javed, SDPI **Panel Organisers:** Dr Khalid Waleed, Ms Saleha Qureshi & Ms Sadia Satti, SDPI **Hall In-charge:** Mr Khurram Shahzad, SDPI **Rapporteur:** Mr Tahir Zaman **Video Link:** https://www.youtube.com/live/qiKVSelkgDQ?si=g1HLZJvZaH36BTnS	**Hall In-charge:** Mr Rahat Ullah, SDPI **Rapporteur:** Ms Ramla Javed **Video Link:** https://www.youtube.com/live/_Se8NwCXMYg?si=ypU8Lc9rlzfROvrf	**Technical Presentations:** • *Unilever Living Wage* by Mr Matteo Squire, Global Sustainability Manager, Unilever • *The Business and Economic Case for a Living Wage* by Engr. Ahad Nazir, SDPI **Distinguished Speakers:** 1. Mr. Sheikh Waqar Ahmed, Nestlé Pakistan 2. Dr Lubna Shahnaz, Chief Executive Officer, PRIDE 3. Mr Muhammad Ali Kemal, Chief, Employment & Research (E&R), MoPD&SI, GoP 4. Mr Abdullah Dayo, FES 5. Mr Ahmed Ijaz, Director, Sigma Distributors Pvt. Ltd 6. Ms Fatima Arshad, Unilever **Panel Organisers:** Engr. Ahad Nazir, Ms Maheen Rehan & Mr Hammad Nadir, SDPI **Hall In-charge:** Mr Faizan Basharat, SDPI **Rapporteur:** Mr M. Junaid Sial	**Distinguished Speakers:** 1. Mr Naeem Gul, WFP 2. Dr Mona Shrestha, CEO, EMERGE, Geneva 3. Mr Bilal Khalid, DRM Specialist, TWB 4. Mr M. Abrar Khan, DM Officer, JICA 5. Mr Qazi Saqib Basir, Muslim Aid, Pakistan 6. Mr Arup Kumar Chatterjee, ADB, Manila *(Online)* 7. Ms Fatima Akhtar, VP Corporate Communications & ESG, Jazz 8. Gen. Asghar Nawaz, Former Chairman, NDMA, GoP **Closing Remarks:** Ms Johanna Knoess, Head, Adaptive Social Protection Project, GIZ Pakistan **Panel Organisers:** Dr Shafqat Munir Ahmad, Mr Muhammad Awais Umar, Ms Ramsha Mehboob Khan & Mr Ali Rehmat, SDPI **Hall In-charge:** Mr Asif Khan **Rapporteurs:** Ms Amal Shahid & Mr Aftab Hameed Mirani

		Video Link: https://www.youtube.com/live/4DIl_Muc-to?si=I6EbXLuQs7SVYps0	**Video Link:** https://www.youtube.com/live/MKE2KVE5Ir8?si=x6MXd0vBaSIWZUNg
Thursday, 6 November 2025 | Break 4:30pm–4:45pm			
4:45pm–5:30pm			
SI Expo Fireside Chat–4 **Closing the Loop: Inside PepsiCo Pakistan's rPET Journey** *In collaboration with PepsiCo Pakistan* **In Conversation with:** Mr Shahzeb Mazhar, Territory Sales Manager, PepsiCo, Pakistan **Organiser:** Ms Zainab Naeem, SDPI **Rapporteur**: Mr Saad Hamed			

Day 3 | Thursday, 6 November 2025 Evening Plenary 3.1 | Hall: Zaki Auditorium
5:30pm–7:00pm
High-Level Plenary **Mobilising Finance for a Circular, Climate-Resilient South Asia: Blended Finance, Regional Funds & Private Capital** *In collaboration with IGES* **Master of Ceremony:** Ms Zainab Naeem, Associate Research Fellow, Sustainable Development Policy Institute (SDPI), Pakistan **Moderator:** Dr Abid Qaiyum Suleri, Executive Director, Sustainable Development Policy Institute (SDPI), Pakistan **Chief Guest:** Senator Muhammad Aurangzeb, Federal Minister for Finance & Revenue, Finance Division, Government of Pakistan **Distinguished Speakers:** 1. Mr Zulfiqar Younas, Senior Advisor, Climate Finance, CVF/V20 2. Mr Zafar Masud, Chief Executive Officer, Bank of Punjab (BOP), Pakistan 3. Dr Pushpam Kumar, Chief Environmental Economist, UNEP, Nairobi, Kenya *(Online)* 4. Dr Premkumara Jagath, Institute for Global Environmental Strategies (IGES), Japan 5. Dr Paras Kharel, Executive Director, SAWTEE, Nepal 6. Mr Saad Yusufi, Chief Financial Officer, The Coca-Cola Company **Plenary Organisers:** Ms Zainab Naeem & Mr Umar Farooq, SDPI **Hall In-charge:** Mr Faizan Basharat, SDPI **Rapporteurs:** Mr Tahir Zaman & Ms Muqadas Hafeez **Video Link:** https://www.youtube.com/live/YJ8bs4v-0Rw?si=cnXGB2WDRgWJBqwS

Day 3 | Thursday, 6 November 2025 Plenary 3.2 | Hall: 109
5:30pm–7:00pm
High-Level Plenary **Annual State of Renewable Energy 2025: Regional Trends and Development Pathways** **Moderator & Technical Presentation:** Engr. Ubaid ur Rehman Zia, Sustainable Development Policy Institute (SDPI), Pakistan *SDPI's Clean Energy Transition Program* **Opening Remarks:** Mr Adil Khattak, Member, Board of Governors, Sustainable Development Policy Institute (SDPI), Pakistan **Chief Guest:** Mr Shah Jahan Mirza, Managing Director, Private Power and Infrastructure Board (PPIB), Ministry of Energy (Power Division), Government of Pakistan **Distinguished Speakers:** 1. Mr Faran Rana, Energy Transition Finance & Policy Analyst, International Renewable Energy Agency (IRENA), UAE 2. Engr. Ahad Nazir, Associate Research Fellow & Head, Centre for Private Sector Engagement, Sustainable Development Policy Institute (SDPI), Pakistan 3. Prof. Talha Yalta, Prof. of Economics, TOBB University of Economics and Technology, Türkiye 4. Ms Yvonne Yujing Liu, Principal (China Power System & Renewables), RMI, China 5. Mr Hussain Ali Talib, Head of External Affairs, Unilever Pakistan Ltd 6. Dr Shen Wei, Lead Researcher, International Institute of Green Finance (IIGF) *(Online),* UK **Plenary Organisers:** Dr Khalid Waleed, Engr. Ubaid ur Rehman Zia & Ms Saira Adnan, SDPI **Hall In-charge:** Mr Khurram Shahzad, SDPI **Rapporteur:** Mr Sarfaraz Ahmed **Video Link:** https://www.youtube.com/live/czlonpt9Z6w?si=U5lOEOk4eZd1u4OI

Day 4 | Friday, 7 November 2025			
Thematic Session C–1 **Hall: 107**	**Thematic Session C–2** **Hall: 109**	**Thematic Session C–3** **Hall: 108**	**Thematic Session C–4** **Hall: 104**
Registration 9:00am-9:30am | Sessions 9:30am-11:00am			
Transboundary Water Management in a Changing World **Moderator:** Dr Shafqat Munir Ahmad, SDPI **Opening Remarks:** Ambassador Shafqat Kakakhel, Chairperson, BoG, SDPI **Special Remarks:** H.E. Mr Faiyaz Murshid Kazi, Ambassador and Permanent Representative to ESCAP, Embassy of the People's Republic of Bangladesh **Presentation:** Mr Ashfaq Mahmood, Former Federal Secretary for Water and Power, GoP **Distinguished Speakers:** 1. Prof. Dr Shaheen Akhtar, HoD, IR, NDU, Pakistan 2. Mr Aftab Alam, CEO, Resilient Future International **Panel Organisers:** Dr Shafqat Munir Ahmad, Mr Muhammad Awais	**Climate and Health Nexus: Impacts and Implications for Pakistan** *In collaboration with PATH, UK* **Moderator:** Dr Nabeel Goheer, Chief of Asia, Middle East, and Europe, PATH **Presentations:** • *Climate and Health Nexus: Impacts and Implications for Pakistan* by Dr Nhu Nguyen, Southeast Asia Hub, PATH, Vietnam *(Online)* • *Air Pollution Crisis in Pakistan: Lessons Learnt from China's Success in Improving Air Quality* by Dr Mahrukh Shams, Public Health Professional *(Online)* **Distinguished Speakers:** 1. Dr Nhu Nguyen, Southeast Asia Hub, PATH, Vietnam *(Online)*	*Podium Discussion* **Greening the Belt and Road Initiative (BRI): China's Central Role in South-South Renewable Energy Transitions** *In collaboration with PCI* **Moderator:** Engr. Ubaid ur Rehman Zia, SDPI **Opening Remarks:** Dr Hassan Daud Butt, Senior Advisor, Energy China, MoPD&SI, GoP **Technical Presentation:** *Journey of SDPI's CPEC Green Development Program (2019–2025)* by Dr Hina Aslam, Senior Research Fellow, ANU *(Online)* **Distinguished Speakers:** 1. Dr Ying Qian, Boston University, USA *(Online)* 2. Mr Hamid Sharif, President, GTTN 3. Ms Hu Min, Director and Co-Founder, iGDP, China *(Online)*	*Roundtable* **Tariff Turbulence: Policy Options for Global Trade Governance** **Moderator:** Dr Sajid Amin Javed, SDPI **Distinguished Speakers:** 1. Mr Muhammad Ashfaq, Joint Secretary, MoC, GoP 2. Prof. Talha Yalta, TOBB University, Türkiye 3. Prof. Selim Raihan, University of Dhaka, Bangladesh *(Online)* 4. Engr. M. Abdul Jabbar, CEO, Automotive MFG Pvt Ltd. 5. Dr Paras Kharel, ED, SAWTEE, Nepal 6. Ms Anna Twum, Economist, TWB 7. Mr Muhammad Ali Kemal, MoPD&SI, GoP 8. Dr Safdar Sohail, ED, SPRC 9. Dr Muhammad Sabir, Principal Economist, SPDC 10. Ms Zubia Zubair, VC, SAARC Chamber Women Entrepreneurs Council 11. Dr Manzoor Ahmed, WTO 12. Prof. Dr Abdul Jalil, NDU

Umar, Ms Ramsha Mehboob Khan, Mr Ali Rehmat & Ms Sadia Satti, SDPI **Hall In-charge:** Mr Rahat Ullah, SDPI **Rapporteur:** Mr Umair Talha **Video Link:** https://www.youtube.com/live/5o954Q7TdNQ?si=EJzSJopGK6dFkst7	2. Dr Mahrukh Shams, Public Health Professional 3. Dr Zulfiqar Ali Bhutta, AKU (*Online*) 4. Dr Iqrar Ahmad Khan, Chairman, PHEC 5. H. E. Nabeel Munir, Special Secretary UN, MoFA, GoP 6. Ms Inna Sacci, Senior Vice President for Asia/MENA, URC, USA **Vote of Thanks:** Ms Hadiya Ali Khan, Partnerships Associate, PATH, UK **Panel Organisers:** Mr Junaid Zahid, SDPI | Dr Nabeel Goheer & Ms Hadiya Ali Khan, PATH, UK **Hall In-charge:** Mr Khurram Shahzad, SDPI **Rapporteur:** Ms Zaiba Shoukat **Video Link:** https://www.youtube.com/live/irNlkXddwYA?si=vXMrHxlBykrnVGA	**Panel Organisers:** Engr. Ubaid ur Rehman Zia, Dr Khalid Waleed & Ms Saira Adnan, SDPI **Hall In-charge:** Mr Asif Khan **Rapporteur:** Mr Nazar Muhammad **Video Link:** https://www.youtube.com/live/oDepPBDWigg	13. Dr Mona Shrestha, CEO, EMERGE, Geneva 14. Mr Rabi Shanker Sainju, Vice Chair, South Asia Watch on Trade, Economics and Environment (SAWTEE), Nepal 15. Prof. Zhang Jiadong, Director, South Asia Research Center, Fudan University, China *(Online)* **Panel Organisers:** Dr Sajid Amin Javed, Ms Sahar Basharat & Ms Romila Qamar, SDPI **Hall In-charge:** Mr Faizan Basharat, SDPI **Rapporteurs:** Ms Ramla Javed & Ms Muqadas Hafeez **Video Link:** https://www.youtube.com/live/wxMeiyjmSUc?si=o8s1FcwcjPU8qGBT

<table>
<tr><th colspan="4">11:00–11:30am</th></tr>
<tr><td colspan="4">SI Expo Fireside Chat–5
Redefining Responsibility: EPR, Recycling & the Future of Sustainable Packaging
In collaboration with Tetra Pak

In Conversation with: Mr Muhammad Bin Shahzad, Sustainability Manager, Tetra Pak Pakistan

Organiser: Ms Zainab Naeem, SDPI

Rapporteur: Mr Saad Hamed</td></tr>
<tr><th>Thematic Session C–5
Hall: 108</th><th>Thematic Session C–6
Hall: 109</th><th>Thematic Session C–7
Hall: 104</th><th>Thematic Session C–8
Hall: 107</th></tr>
<tr><th colspan="4">11:30am–1:00pm</th></tr>
<tr><td>Fostering Anticipatory Action to Climatic and Socioeconomic Risks at Sub-national Scales in the Hindu Kush Himalaya Region
In collaboration with ICIMOD

Moderator: Dr Shafqat Munir Ahmad, SDPI

Chair: Mr Idrees Mehsud, Member DRR, NDMA, GoP

Presentation: Sustaining Transhumance Yak Herding in the Lower Mustang, Nepal: A Foresight Process by Ms Sabarnee Tuladhar, ICIMOD, Nepal (Online)</td><td>Policy Dialogue
Digital Currencies in Pakistan: Making Sense of Policy Positions, Consequences and Future Trajectory
In collaboration with BoP

Moderator: Dr Sajid Amin Javed, SDPI

Welcome Remarks: Dr Abid Qaiyum Suleri, ED, SDPI

Keynote Scene Setting Presentation: Digital Currencies in Pakistan Policy Positions, Consequences & Future Trajectory by Mr Zafar Masud, CEO, Bank of</td><td>Tobacco Control and Sustainable Development: Strengthening Laws and Enforcement
In collaboration with Vital Strategies

Moderator: Mr Syed Ali Wasif Naqvi, SDPI

Presentation: SDPI's Work on Tobacco Control by Dr Waseem Janjua, SDPI

Distinguished Speakers:
1. Dr Nadia Tahir, Senior Researcher, PM Office
2. Dr Minhaj-us-Siraj, ED, Syndicate Health</td><td>Policy Dissemination
Investing in Adaptation: Private-Sector–Led Water Stewardship Model Community — Misal-e-Basti
In collaboration with PepsiCo Pakistan

Moderator: Ms Zainab Naeem, SDPI

Chair: Mr Hammad Shamimi, Secretary, Privatisation Division, GoP

Guest of Honour: Ms Van Nguyen, UNDP Pakistan</td></tr>
</table>

Distinguished Speakers: 1. Prof. Dr Babar Shahbaz, UAF, Pakistan 2. Ms Aisha Khan, CEO, MGPO, Pakistan 3. Mr Owais Ahmad, Project Manager, SIF 4. Mr Mian Muhammad Junaid, CD, WaterAid 5. Mr Kanchan Mani Dixit, ED, ISET-International, Nepal **Panel Organisers:** Dr Shafqat Munir Ahmad, Mr Muhammad Awais Umar, Ms Ramsha Mehboob Khan & Mr Ali Rehmat, SDPI **Hall In-charge:** Mr Asif Khan **Rapporteurs:** Ms Ramsha Mehboob Khan & Mr Ali Rehmat **Video Link:** https://www.youtube.com/live/xTQ73qurAlc?si=3Rycqpj2yZIi_Fwm	Punjab & Mr Imran Ashraf, Head of Digital Banking, BOP **Distinguished Speakers:** 1. Mr Faisal Mazhar, Deputy Director Payments, SBP 2. Mr Ali Farid Khawaja, Chairman, K-Trade (*Online*) 3. Mr Zaid Munir, CEO, Scytalelabs 4. Dr Yanan Wu, Chairman & CEO, Surfin Group (*Online*) 5. Mr Nofel Daud, Chief Digital Officer, BOP 6. Mr James Humes, CEO, Begini (*Online*) 7. Mr Ayad Butt, CEO, Zodia Markets (*Online*) **Panel Organisers:** Mr Abdullah Khalid, Muhammad Umar Ayaz & Dr Sajid Amin Javed, SDPI **Hall In-charge:** Mr Khurram Shahzad, SDPI **Rapporteur:** Ms Amal Shahid **Video Link:** https://www.youtube.com/live/cPu7rE0KkV4?si=vwii4C3BmXrquRAZ	3. Mr Aftab Anwer Balouch, Former Chairperson SEZs, Sindh 4. Dr Syed Kaleem Imam, Former Federal Secretary, Ministry of Narcotics Control, GoP 5. Dr Tabassum Naz, Director National Curriculum Council, MoFEPT 6. Mr Muhammad Sabir, Principal Economist, SPDC, Karachi 7. Dr Kanza Batool, MRCGP **Panel Organisers:** Dr Waseem Janjua & Mr Syed Ali Wasif Naqvi, SDPI **Hall In-charge:** Mr Faizan Basharat, SDPI **Rapporteur:** Mr Aftab Hameed Mirani **Video Link:** https://www.youtube.com/live/eSWpJmarVuI?si=eRXm3WykhFAfo8_o	**Policy Paper Launch:** Misal-e-Basti–A Water Stewardship Model Community by Ms Mahnoor Pasha, PepsiCo Pakistan **Distinguished Speakers:** 1. Dr Altaf Abro, Head of Mission, SIF 2. Mr Haseeb Malik, Director, PepsiCo Pakistan **Closing Remarks:** Dr Abid Qaiyum Suleri, ED, SDPI **Panel Organisers:** Ms Zainab Naeem & Mr Ihtesham Ul Haq, SDPI | Mr Basit Pirzada, PepsiCo Pakistan **Hall In-charge:** Mr Rahat Ullah, SDPI **Rapporteurs:** Ms Mursal Qaisari & Ms Shogofa Shokori **Video Link:** https://www.youtube.com/live/Nv_YDJyW7P0?si=D2a3BEFak8rSIDlj

1:00pm–1:45pm
SI Expo Fireside Chat–6 **Gender, Equity & Social Inclusion** *In collaboration with PepsiCo Pakistan* **In Conversation with:** Mr Khurram Shah, Director of Corporate Affairs & Sustainability-Pakistan & Afghanistan, PepsiCo Pakistan **Organiser:** Ms Zainab Naeem, SDPI **Rapporteur**: Mr M. Junaid Sial
Friday, 7 November 2025: 1:00pm–2:30pm | Friday Prayer / Preparations for Closing Plenary

Day 4 | Friday, 7 November 2025 Plenary 4.1 | Hall: Zaki Auditorium
2:30pm–4:00pm
High-Level Plenary **Financing Sustainable Development in the Emerging World Dis|Order** *In collaboration with Nestlé Pakistan* **Master of Ceremony:** Dr Kashif Majeed Salik, Research Fellow, Sustainable Development Policy Institute (SDPI), Pakistan **Moderator:** Dr Abid Qaiyum Suleri, Executive Director, Sustainable Development Policy Institute (SDPI), Pakistan **Distinguished Speakers:** 1. Mr Jason Avanceña, Chief Executive Officer & Managing Director, Nestlé Pakistan 2. Ms Bolormaa Amgaabazar, Country Director, The World Bank, Pakistan 3. Dr Mahir Binici, Country Head Pakistan, International Monetary Fund (IMF), Pakistan 4. Dr Samuel Rizk, Resident Representative, United Nations Development Programme (UNDP), Pakistan **Plenary Organisers:** Dr Kashif Majeed Salik & Mr Yahya Gulraiz, SDPI | Ms Aatekah Mir Khan & Ms Namwar Yusuf Rahman, Nestlé Pakistan **Hall In-charge:** Mr Faizan Basharat, SDPI

Rapporteurs: Mr Tahir Zaman & Ms Amal Shahid

Video Link: https://www.youtube.com/watch?v=M_ToSkwmUPw

4:00pm–4:30pm

SI Expo Fireside Chat–7

Collaborating for Change: How AKDN and German Development Cooperation Shape a Sustainable Pakistan

In collaboration with KfW

In Conversation with:

- Mr Asad Farooq, Senior Sector Specialist, KfW
- Mr Felix Kurz, Director Partnerships Pakistan, Aga Khan Development Network

Organiser: Ms Zainab Naeem, SDPI

Rapporteur: Mr Umair Talha

Day 4 | Friday, 7 November 2025
Closing Plenary 4.2 | Hall: Zaki Auditorium

4:30pm–6:00pm

Sustainable Development in the Emerging World Dis|Order

Master of Ceremony: Dr Fareeha Armughan, Research Fellow & Lead-Center of Evidence Action, Sustainable Development Policy Institute (SDPI), Pakistan

Concluding Remarks from Co-host: Dr Irshad Ahmad Arshad, Director, Board of Advanced Studies & Research, Allama Iqbal Open University (AIOU), Pakistan

Summary of Conference: Dr Abid Qaiyum Suleri, Executive Director, Sustainable Development Policy Institute (SDPI), Pakistan

Special Remarks: Mr Abrar Ahmad, Senior Sector Specialist (Energy & Climate), KfW

Awards Ceremony:

- SDPI Rising Researcher Award: Ms Maheen Rehan
- SDPI Outstanding Research Publication Award: SDC Unit, Web Team, Dr Abid Qaiyum Suleri, Dr Khalid Waleed & Mr Ali Aamer
- SDPI Outstanding Policy Engagement Award: Systems Research Group
- SDPI Outstanding Innovation Award: Data for Development (D4D) Portal Team
- Best Pavilion Award: PepsiCo Pakistan & Nestlé Pakistan
- Acknowledgement Shield to AIOU

Vote of Thanks: Ambassador Shafqat Kakakhel, Chairperson, Board of Governors, Sustainable Development Policy Institute (SDPI), Pakistan

Vote of Thanks to Partners: Dr Sajid Amin Javed, Deputy Executive Director (Research), Sustainable Development Policy Institute (SDPI), Pakistan

SDPI Team Group Photograph

Plenary Organisers: Ms Sahar Basharat & Dr Rafia Batool Khan, SDPI

Hall In-charge: Mr Khurram Shahzad, SDPI

Rapporteurs: Ms Muqadas Hafeez & Mr Sarfaraz Ahmed

Video Link: https://www.youtube.com/watch?v=M_ToSkwmUPw

Abbreviations & Acronyms

ADB	Asian Development Bank
AIOU	Allama Iqbal Open University
APRCEM	Asia Pacific Regional CSO Engagement Mechanism
Assoc. Prof.	Associate Professor
Asst. Prof.	Assistant Professor
BISP	Benazir Income Support Programme
BoG	Board of Governors
BoI	Board of Investment, GoP
BoP	Bank of Punjab
BRI	Belt and Road Initiative
BRIGC	BRI International Green Development Coalition
CAA	Consumer Affairs Authority
CANSA	Climate Action Network South Asia
CAREC	Central Asia Regional Economic Cooperation Program
CBER	Center for Business and Economic Research
CCI	Chamber of Commerce and Industry
CCP	Competition Commission of Pakistan
CD	Country Director
CDA	Capital Development Authority
CEGS	Centre of Excellence in Gender Studies
CEI	Climate-Energy Initiative
CENWOR	Centre for Women's Research
CEO	Chief Executive Officer
CERB	Centre of Excellence in Responsible Business
Chintan	Chintan Environmental Research and Action Group
CJCSC	Chairman Joint Chiefs of Staff Committee
CLR	Centre for Labour Research
CPEC	China-Pakistan Economic Corridor
CPRD	Center for Participatory Research and Development
CRCC	Climate Resourcing Coordination Center
CREB	Center for Research in Economics and Business

CSD	Center for Sustainable Development, Earth Institute
CSSPR	Center for Security, Strategy and Policy Research
CTFK	Campaign for Tobacco-Free Kids
CVD	Cyber Vigilance Directorate
CVF	Climate Vulnerable Forum
DAI	Development Alternatives Incorporated
DED	Deputy Executive Director
DG	Director General
DGG Ltd	Development Guarantee Group Limited
DoE	Department of Economics
ECDPM	European Centre for Development Policy Management
EDD	Environment and Development Division
EFP	Employers' Federation of Pakistan
EMERGE	Enterprise for Management, Economic Reform and Gender Equality Pvt. Ltd
ESG	Environmental, Social and Governance
EU	European Union
FAO	Food and Agriculture Organization
FBR	Federal Board of Revenue
FCDO	Foreign, Commonwealth and Development Office
FES	Friedrich-Ebert-Stiftung
FFC	Federal Flood Commission
FJWU	Fatima Jinnah Women University
FKAAB	Faculty of Civil Engineering and Built Environment
FNF	Friedrich Naumann Foundation for Freedom
FPCCI	Federation of Pakistan Chambers of Commerce & Industry
GAIN	Global Alliance for Improved Nutrition
GCU	Government College University
GDI	Green Development Institute
GGPI	Green Growth Planning & Implementation
GIF	Global Infrastructure Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit / German Agency for International Cooperation
GNDR	Global Network of Civil Society Organisations for Disaster Reduction

GoP	Government of Pakistan
GRMA	Global Risk Modelling Alliance
GS	General Secretary
GTTN	Global Think Tank Network
HBS	Heinrich Böll Stiftung
HEC	Higher Education Commission of Pakistan
HKS	Harvard Kennedy School
HPSR	Health Policy & Systems Research
HRCP	Human Rights Commission of Pakistan
HSA	Health Services Academy
IBA	Institute of Business Administration
ICCI	Islamabad Chamber of Commerce and Industry
ICF	Indus Cultural Forum
ICIMOD	International Centre for Integrated Mountain Development
ICSC	Institute for Climate and Sustainable Cities
IDS	Institute of Development Studies
IDSP	Institute for Development Studies and Practices
IETC	International Environmental Technology Centre
IFC	International Finance Corporation
iGDP	Institute for Global Decarbonization Progress
IGES	Institute for Global Environmental Strategies, Japan
IHRA	Islamabad Healthcare Regulatory Authority
IIUI	International Islamic University Islamabad
ILO	International Labour Organization
INGOs	International Non-Governmental Organisations
IOM	International Organization for Migration
IRC	Indus Resource Center
IRC-Pak	International Rescue Committee-Pakistan
ISET	Institute for Social and Environmental Transition
ISSI	Institute of Strategic Studies Islamabad
ITA	Idara-e-Taleem-o-Aagahi
ITC	International Trade Centre

JD	Joint Director
JICA	Japan International Cooperation Agency
JIP	Jamaat-e-Islami Pakistan
JS	Joint Secretary
KEPZ	Karachi Export Processing Zone
KfW	Kreditanstalt für Wiederaufbau
KKAWF	Karim Khan Afridi Welfare Foundation
KP	Khyber Pakhtunkhwa
KVM	Kheti Virasat Mission, India
LEF	Labour Education Foundation
LII	Living Indus Initiative
LMICs	Low and Middle-Income Countries
LSE	Lahore School of Economics
LUMS	Lahore University of Management Sciences
MGPO	Mountain and Glacier Protection Organization
MiTE University	Millennium Institute of Technology and Entrepreneurship
MMfD	Media Matters for Democracy
MNA	Member of the National Assembly
MNC, GoP	Ministry of Narcotics Control, Government of Pakistan
MNFSR, GoP	Ministry of National Food Security & Research, Government of Pakistan
MNU	Maldives National University
MoCC&EC, GoP	Ministry of Climate Change and Environmental Coordination, Government of Pakistan
MoCom, GoP	Ministry of Commerce, Government of Pakistan
MoFEPT, GoP	Ministry of Federal Education and Professional Training, Government of Pakistan
MoHR, GoP	Ministry of Human Rights, Government of Pakistan
MoITT, GoP	Ministry of Information Technology and Telecommunication, Government of Pakistan
MoNHSRC, GoP	Ministry of National Health Services Regulations and Coordination, Government of Pakistan
MoPASS, GoP	Ministry of Poverty Alleviation and Social Safety, Government of Pakistan
MoPD&SI, GoP	Ministry of Planning, Development & Special Initiatives, Government of Pakistan
MoPHRD, GoP	Ministry of Overseas Pakistanis and Human Resource Development, Government of Pakistan
MPA	Member of the Provincial Assembly
MPFD	Macroeconomic Policy and Finance Division

NACTA	National Counter Terrorism Authority
NADRA	National Database and Registration Authority
NAP	National Adaptation Plan
NASTP	National Aerospace Science and Technology Park
NAVTTC	National Vocational and Technical Training Commission
NCCR	Nepal Center for Contemporary Research
NCGCL	National Credit Guarantee Company Limited
NCRC	National Commission on the Rights of Child
NCSW	National Commission on the Status of Women
NDRMF	National Disaster and Risk Management Fund
NDU	National Defence University
NED	National Endowment for Democracy
NEECA	National Energy Efficiency & Conservation Authority
NEPRA	National Electric Power Regulatory Authority
NEQS	National Environmental Quality Standards
NFIS	National Financial Inclusion Strategy
NIH	National Institutes of Health
Norec	Norwegian Agency for Exchange Cooperation
NPO	National Productivity Organization
NPS	Naval Postgraduate School, USA
NSPP	National School of Public Policy
NTA	National Taxpayers Association, Kenya
NTC	National Tariff Commission
NTDC	National Transmission & Despatch Company
NUST	National University of Sciences & Technology
NYCOP	National Youth Council of Pakistan
OICCI	Overseas Investors Chamber of Commerce & Industry
OPM	Oxford Policy Management
PAFLA	Pakistan Freelancers Association
PAGE	Pakistan Alliance for Girls Education
Pak-EPA	Pakistan Environmental Protection Agency
PAL	Pakistan Academy of Letters

PAQI	Pakistan Air Quality Initiative
PBC	Pakistan Business Council
PBS	Pakistan Bureau of Statistics
PCCA	Pakistan Climate Change Authority
PCI	Pakistan-China Institute
PCP	Pakistan Centre for Philanthropy
PDMA	Provincial Disaster Management Authority
PEPA	Pakistan Environmental Protection Act
PET	Pakistan Environment Trust
PFAN	Private Financing Advisory Network
PFN	Pakistan FinTech Network
PFUJ	Pakistan Federal Union of Journalists
PHIMC	Punjab Health Initiative Management Company
PHTPA	Punjab Housing and Town Planning Agency
PIDE	Pakistan Institute of Development Economics
PIE	Pakistan Institute of Education
PILER	Pakistan Institute of Labour Education and Research
PM	Program Manager
PMAS AAUR	Pir Mehr Ali Shah Arid Agriculture University Rawalpindi
PMIC	Pakistan Microfinance Investment Company Limited
PML-N	Pakistan Muslim League-Nawaz
PMN	Pakistan Microfinance Network
PMS	Pakistan Mission Society
PNWC	Pakistan Navy War College
PPAF	Pakistan Poverty Alleviation Fund
PPCA	Powering Past Coal Alliance
PPIB	Private Power Infrastructure Board
PPMA	Pakistan Pharmaceutical Manufacturers' Association
PPP	Pakistan People's Party
PPPA	Public Private Partnership Authority
PPPPA	Punjab Public Private Partnership Authority
PRCS	Pakistan Red Crescent Society

PREF	Pakistan Regional Economic Forum
PREIA	Pakistan-Regional Economic Integration Activity
PSEB	Pakistan Software Export Board
PSP	Police Service of Pakistan
PSQCA	Pakistan Standards & Quality Control Authority
PTC	Pakistan Textile Council
PTI	Pakistan Tehreek-e-Insaf
PU	University of the Punjab
PUWF	Pakistan United Workers' Federation
Reg. Dir.	Regional Director
RF	Research Fellow
RFI	Resilient Future International
RIF	Rise Infinity Foundation
RIHS	Rawal Institute of Health Sciences
RIS	Research and Information System for Developing Countries
RPC	Regional Programme Coordinator
RSPN	Rural Support Programmes Network
SAARC	South Asian Association for Regional Cooperation
SANS	South Asia Network on the Sustainable Development Goals
SAPM	Special Assistant to the Prime Minister
SAPPK	South Asia Partnership Pakistan
SBP	State Bank of Pakistan
SC	Solidarity Center, USA
SCF	Sindh Community Foundation
SDGs	Sustainable Development Goals
SDPI	Sustainable Development Policy Institute
SEC	SAARC Energy Centre
SECP	Securities and Exchange Commission of Pakistan
SELF	Sampada Entrepreneurship & Livelihoods Foundation
SF	Senior Fellow
SHRC	Sindh Human Rights Commission
SI	Sitara-e-Imtiaz

SIF	Secours Islamique France
SIFC	Special Investment Facilitation Council
SLCDF	Sri Lanka Centre for Development Facilitation
SPDC	Social Policy and Development Centre
SPRC	Social Protection Resource Centre
SRSP	Sarhad Rural Support Programme
STMU	Shifa Tameer-e-Millat University
SUDS	Sustainable Urban Development Section
TDAP	Trade Development Authority of Pakistan
TEPAV	Türkiye Ekonomi Politikaları Araştırma Vakfı
TERI	The Energy and Resources Institute
TIIKM	The International Institute for Knowledge Management
TUF	The University of Faisalabad
TWB	The World Bank
UEP	United Energy Pakistan
UIII	Universitas Islam Internasional Indonesia
UMT	University of Management and Technology
UNCT	United Nations Country Team
UNDP	United Nations Development Programme
UNEP FI	United Nations Environment Programme Finance Initiative
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCAP-SSWA	United Nations Economic and Social Commission for Asia and the Pacific: Sub-regional Office for South and South-West Asia
UNOPS	United Nations Office for Project Services
UNOSSC	United Nations Office for South-South Cooperation
UNRCO	United Nations Resident Coordinator Office
UO	University of Oxford
UoK	University of Karachi
UoP	University of Peshawar
UoS	University of Sargodha
USF	Universal Service Fund
USSEC	U.S. Soybean Export Council
VC	Vice Chancellor

VNRs	Voluntary National Reviews
VP	Vice President
V20	Vulnerable Twenty Group
WASH	Water Sanitation and Hygiene
WCCI	Women Chamber of Commerce & Industry
WEF	World Economic Forum
WES	World Education Services
WFP	World Food Programme
WHO	World Health Organization
WSSC	Water and Sanitation Services Company
WWA	Women Workers' Alliance
WWF	World Wide Fund for Nature

About the Editors

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Sustainable Development in the Emerging World Dis|Order

The vertical bar in the title carries this book's argument. Between 'dis' and 'order' there is only a thin line, and this anthology holds that it is still ours to draw.

Climate shocks now arrive as fiscal shocks. Rivers, polluted air and supply chains cross the borders that politics keeps hardening. The post-war international order, which shaped eight decades of global economic cooperation and development, is increasingly challenged by geopolitical competition and economic fragmentation. This volume comes out of the Sustainable Development Policy Institute's 28th Sustainable Development Conference, which brought together more than 300 speakers from 23 countries. It records what a region on the front line of these shocks had to say about them.

26 chapters start with the large forces behind global disorder and then go to the places where it lands. They cover flood-hit communities in Sindh, the food systems of Punjab, Bangladesh's triple burden of malnutrition, plastic waste in Pakistan and Indonesia, and women leading climate action in fragile states. Peer-reviewed, evidence-focused research sits beside thought pieces by senior policymakers from across Asia and Africa. From Pakistan's corridors of power come Prof. Ahsan Iqbal, Dr Musadik Masood Malik, Senator Muhammad Aurangzeb, Senator Sherry Rehman, and Dr Shezra Mansab Ali Khan Kharal. From Bangladesh comes Syeda Rizwana Hasan, from Japan Prof. Kazuhiko Takeuchi, from Indonesia Armida Salsiah Alisjahbana and from Mauritius Djaheezah Subratty. The striking thing is how alike their accounts are. For example, Bangladesh's deltas and Sindh's arid regions confront different manifestations of climate vulnerability, yet share challenges of extreme weather, financial constraints and gaps between policy commitments and implementation.



Ironically, countries that disagree at the negotiating table face many of the same development problems. This brings us to perhaps the book's most pragmatic and widely shared idea: functional cooperation – building partnerships around concrete priorities where the benefits to each side are clear. The unfulfilled promise of regional cooperation need not depend entirely on consensus within the South Asian Association for Regional Cooperation (SAARC). Those willing to build shared resilience can start now, with whoever is ready and wherever progress is possible.

The book neither mourns the old order nor promises a finished plan for a new one. It offers a development compact for building order within disorder. Thought leaders, change agents and anyone who believes that the next decade of development will be won by imagination rather than control will find much to reflect upon in these pages.

| Sarah Siddiq Aneel |

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