

# **Frugal Innovation: Adaptive Solutions for Pakistan**

**Dr Aneel Salman**

**Maryam Ayub**

**Sheraz Ahmad Choudhary**

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## Executive Summary

This paper explores the transformative potential of Frugal innovation in addressing Pakistan's socio-economic challenges. Frugal innovation, an indigenous approach characterised by resourcefulness and innovation, leverages limited resources to create cost-effective solutions. This method is particularly relevant for Pakistan, where a significant portion of the population lacks access to basic resources such as banking, electricity, healthcare, and education. The principles of Frugal innovation include seeking opportunity in adversity, doing more with less, thinking and acting flexibly, keeping it simple, including marginalised groups, and following one's heart. Several Pakistani start-ups exemplify the spirit of Frugal innovation, such as Modulus Tech, Metric, Aabshar, Nearpeer, SadaPay, NayaPay, and Tajir. These ventures demonstrate how Frugal innovation can effectively address customer needs while contributing to economic, environmental, and social sustainability. Pakistan needs Frugal Innovation to promote financial inclusion, address energy deficits, enhance healthcare and education, improve livelihoods, and optimise infrastructure and resource utilisation. Policy recommendations include recognising and appreciating local businesses that embody Frugal innovation principles, establishing collaboration centres, organising Frugal innovation hackathons, and integrating Frugal-driven solutions into policymaking. By adopting Frugal innovation, Pakistan can unlock new avenues for sustainable development and inclusive growth, improving the quality of life for all its citizens.

“If necessity is the mother of invention, then, dire necessity is the mother of Jugaad.”

–Virender Kapoor, 23<sup>rd</sup>, Sept 2017

*In the heart of Swat Valley, in 2007, hope seemed a distant memory for the residents of a refugee camp. Amidst the chaos, families struggled to piece together bricks and wood, their efforts aimed at constructing a communal kitchen—a small beacon of normalcy in their disrupted lives. Their faces, etched with determination and despair, told stories of resilience in the face of adversity.*

*One day, Yasmeen Lari, an award-winning architect, arrived at the camp. Her keen eyes scanned the barren landscape, resting momentarily on a solitary bamboo tree swaying gently in the breeze. Inspired, she approached the beleaguered residents with a revolutionary idea: to use bamboo for building a makeshift house. Skepticism mingled with curiosity as they listened to her vision.*

*With a mixture of hope and necessity, the residents joined forces with Lari. Bamboo, a symbol of flexibility and strength, was soon transformed into sturdy walls and roofs, creating shelters that offered not just protection, but a semblance of home. The success of this first structure rippled through the camp, and what began as a humble experiment blossomed into a movement.*

*Under the aegis of the Heritage Foundation of Pakistan, Lari’s bamboo homes became a lifeline for millions. She dedicated herself to constructing over 85,000 disaster-resistant homes, providing sanctuary to those ravaged by earthquakes and floods. Each bamboo home stood as a testament to human ingenuity and compassion, a reminder that even in the darkest times, hope could be rebuilt—one bamboo at a time.*

*Yasmeen Lari’s legacy grew, not just in the number of homes, but in the countless lives touched by her innovation and kindness. Her bamboo structures became more than just houses; they were symbols of resilience, hope, and the enduring human spirit.*

*In 2023, the lifeline of many Pakistani households and industries—natural gas—faced a dire decline. Gas reserves dwindled, leading to a significant reduction in supplies to filling stations, industrial units, and homes. The impact was felt acutely across the nation, but nowhere more so than in the rural areas where the struggle for energy had long been a harsh reality.*

*For years, residents of these areas, especially those in Khyber Pakhtunkhwa, had managed without reliable electricity. When the price of LPG cylinders soared to an exorbitant Rs 10,000, an already difficult situation became almost unbearable. Many families were left with no affordable means to cook or heat their homes, pushing them to the brink of despair.*

*Yet, in the face of this adversity, an incredible spirit of innovation and resilience emerged. The people of Khyber Pakhtunkhwa, drawing on their resourcefulness, devised an ingenious solution: storing natural gas in large plastic bags. It began with a simple observation and a collective determination to overcome the odds.*

*Using compressors, they filled these plastic bags with natural gas, sealing them tightly with nozzles. This gas, now securely stored, could be transported and used in homes with the help of small suction pumps. In kitchens across the region, the gentle hum of these pumps became a symbol of ingenuity, turning a dire situation into a manageable one.*

*This grassroots solution brought a glimmer of hope and relief to many families. It wasn't just about having gas to cook a meal; it was about reclaiming a sense of normalcy and dignity. The story of these resilient villagers spread, showcasing the power of community and human creativity in the face of hardship.*

*In the remote corners of Khyber Pakhtunkhwa, where modern conveniences often seemed a distant dream, these plastic bags filled with natural gas became more than just a necessity. They became a testament to the enduring spirit of the people, a story of how, even in the darkest times, innovation and hope can light the way forward.*

These examples showcase how the spirit of innovation thrives in Pakistan. Much like its Indian counterpart *jugaad*<sup>1</sup>, *Frugal innovation* refers to the art of creating simple, unique solutions to complex problems using available resources. It is a testament to the ingenuity and intelligence of the people, a way of turning adversity into opportunity.<sup>2</sup>

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<sup>1</sup> <http://naviradjou.com/book/jugaad-innovation-think-frugal-be-flexible-generate-breakthrough-growth/>

<sup>2</sup> Frugal innovation is an approach that emphasises simplicity, affordability, and accessibility. In India the term is referred to as 'Jugaad', but in Pakistan, it is referred as 'Butta (بٹتا)'. The term butta (بٹتا) originates from Punjab and has been used by Punjabi Sufi poets like Mian Muhammad Bakhsh in his epic Saif ul Malooq. It is a masculine term derived from its feminine counterpart butti, and in Punjabi slang, it means "kaam saarna" or "heela karna"—essentially, finding a way to make things work.

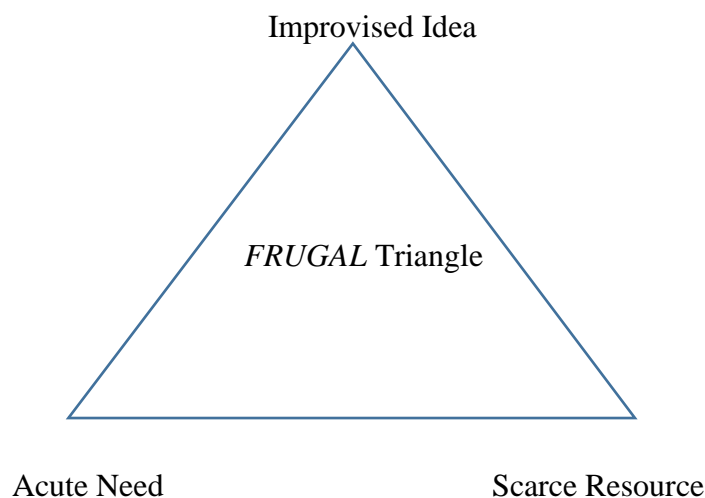
Improvised solutions are practised daily across Pakistan, from bargaining during shopping to using empty ice-cream containers for storing needles and threads. It is seen in the creative solutions people devise, like ironing clothes with heated utensils, using missed calls to convey messages, or using plastic sheets as makeshift rain covers. These practices are not just about reducing costs but also about adding technical knowledge to make products innovative and affordable.

The term *Frugal innovation* originates from the need to describe a specific kind of innovation prevalent in resource constrained environments, particularly in developing countries. The concept gained traction in the early 2000s, but the term itself was popularized by scholars and practitioners studying innovative practices.

Incorporating these improvised solutions into Pakistan's economic and social fabric highlights the country's unique approach to innovation. It reflects the ability to identify complex consumer needs, including those of marginalised groups, and to develop solutions that are both economical and effective. Practitioners of *frugal innovation* view their challenges as opportunities, using limited resources efficiently to benefit their communities.

In essence, this approach is more than just a practice; it is a mindset. It embodies the gutsy art of finding opportunities in tricky situations and capitalising on adversity. By doing so, it adds value to the lives of many, making it a vital part of Pakistan's cultural and economic identity.

### **Economic Values of *FRUGAL INNOVATION***



***Source: Author's construct***

Frugal innovation practitioners work on the economic concept of "scarce resources." They capitalise on adverse situations as opportunities and use the available scarce resources in efficient ways. Businesses, entrepreneurs, and policymakers use the spirit of frugal innovation in their decision-making. Businesses are now following the model of frugal innovation for running their operations, as the Western structured model leaves no room for a flexible-innovative mindset.

### Characteristics of the Western Structured Model<sup>3</sup>

1. **High Cost and Capital Intensity** The Western industrial system is capital-intensive, operating on the model of "more output with more inputs." It is not cost-effective. However, *frugal innovation* practitioners use limited resources as an opportunity to produce indigenous solutions to address needs. Western firms invest heavily in R&D to produce innovative products or services. However, there is a weak correlation between investments in R&D and their performance in terms of developing and marketing products that generate significant financial flows.
2. **Lack of Flexibility** The Western structured approach lacks flexibility due to high R&D investments, leading to a risk-averse attitude. Their decisions are calculative, leaving little room for spontaneous innovation. In contrast, *frugal innovation* practitioners do not stop because of the risk of failure. They are fully aware of the potential for failure inherent in their indigenous approaches, yet they choose to follow their instincts and ingenuity.
3. **Elitism and Exclusivity** As the Western approach relies heavily on R&D innovation, it becomes exclusive and elitist, involving only a select group in the process of product development. This exclusivity limits participation from those outside the chosen few. However, innovative thinking should not be confined to designated R&D teams alone. *Frugal innovation* practitioners, by contrast, embrace a more inclusive approach, tapping into the collective creativity and resourcefulness of the broader community.

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<sup>3</sup> <http://naviradjou.com/book/jugaad-innovation-think-frugal-be-flexible-generate-breakthrough-growth/>

## **Principles of Frugal Innovation<sup>4</sup>**

Frugal innovation is not a capital-intensive process. It works on the principle of turning adverse situations into opportunities by efficiently using limited available resources to gain economic benefits. These principles of Frugal innovation are increasingly replacing old Western structures:

### **Seeking an Opportunity in Adversity**

Innovators in the Frugal tradition transform adverse situations into opportunities to gain economic value. They embrace difficult challenges presented by emerging markets, using them as opportunities to learn, innovate, and grow. Unfavourable conditions are seen as catalysts for growth, driving them to make constraints work in their favour.

### **Do More with Less**

Understanding that resources are scarce and customer needs are limitless, those who practice Frugal innovation rise to the challenge of using limited resources efficiently and effectively. By optimising the use of scarce natural and financial resources, they aim to deliver high value to a broad range of customers.

### **Think and Act Flexibly**

Flexibility is key for Frugal innovators. Unlike the rigid approach of Western structured R&D, they maintain an adaptive attitude, continuously exploring new options, questioning existing systems, and transforming products and services to meet customer needs. Their non-traditional thinking and rapid adjustments to changing circumstances foster the creation of innovative ideas and new marketplaces.

### **Keep It Simple**

Frugal Innovation focuses on addressing the acute needs of customers with adequate, straightforward solutions rather than overengineering for perfection. The goal is to get the job done in the simplest way possible, contrasting with Western firms that often prioritise leading the innovation race through heavy investments in R&D and technology.

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<sup>4</sup> <http://naviradjou.com/book/-innovation-think-frugal-be-flexible-generate-breakthrough-growth/>

## **Include the Margins**

While structured firms typically serve the elite mainstream consumers, Frugal innovators recognise the diverse needs of the market and aim to serve unserved, marginal groups. For example, Dawaai not only delivers medicines online but also supports low-income providers by offering online medical consultations, thus integrating these groups into the mainstream market.

## **Follow Your Heart**

Innovators in the Frugal tradition do not rely solely on structured practices to meet people's needs. They intuitively identify their target customers and act on their insights. Yasmeen Lari, known for designing luxury homes, followed her heart when she saw a bamboo tree in Swat, leading her to build a bamboo house for refugees. Since then, she has continued to create similar structures for flood-affected people. Skills like empathy, passion, and intuition are as vital as analytical thinking in their approach to global markets.

## **Why Pakistan Needs Frugal Innovation**

Pakistan needs this novel approach to overcome its financial challenges. There are several specific reasons why Pakistani society would benefit from Frugal innovation:

- A significant portion of the population is unbanked.
- Many people live off the electricity grid.
- Healthcare and education services are limited.
- Wages are often insufficient for a proper living.
- Resources to follow traditional procedures are scarce.

In a country like Pakistan, where resources are often limited, Frugal innovation can play a crucial role in promoting cost-effective solutions. Businesses and entrepreneurs can run their operations more sustainably and competitively by finding innovative techniques to minimise costs and maximise resource utilisation. Pakistan faces several economic challenges, including infrastructure deficiencies, energy shortages, and a large informal sector. Frugal innovation encourages adaptability and resilience to tackle these issues.



By improvising solutions and leveraging available resources creatively, businesses can navigate these challenges more effectively. The primary goal of Frugal innovation is to serve marginalised or underserved populations. In Pakistan, where a large portion of the population lives in rural and informal settlements, inclusive innovation can open new market opportunities. Products and services tailored to the needs and affordability of these sectors can drive economic growth and social development.

This type of innovative technique promotes local entrepreneurship, enabling individuals to identify and solve local issues through practical and immediate solutions. Empowering the local community and strengthening local businesses will create job opportunities, potentially enhancing economic growth. The government's focus on rural and urban marginalised communities could make this approach more effective. Integrating Frugal innovation into Pakistan's economic model could increase the country's competitiveness in the global market, contribute to export growth, and attract foreign direct investment (FDI).

However, there are challenges in adopting this technique, such as ensuring quality, scalability, and regulatory compliance. Pakistan must balance grassroots innovation with maintaining standards for consumer safety, environmental sustainability, and ethical business practices. Government policies and support mechanisms are crucial in creating an enabling environment for Frugal-driven entrepreneurship and innovation to thrive in Pakistan's economy.

## **Economic Rationale for Frugal Innovation in Pakistan**

**Financial Inclusion and Access to Banking:** A significant portion of Pakistan's population remains unbanked, which limits their access to financial services. Frugal innovation can provide innovative, low-cost financial solutions that reach these underserved populations, promoting financial inclusion and economic participation.

**Addressing Energy Deficits:** Many regions in Pakistan are off the electricity grid, facing chronic energy shortages. Frugal-driven solutions, like the innovative use of natural gas in plastic bags, can offer alternative energy sources, ensuring energy security and fostering economic stability.

**Enhancing Healthcare and Education:** Limited access to healthcare and education is a pressing issue. Frugal innovation can inspire cost-effective, scalable solutions, such as mobile

health units or low-cost educational tools, to bridge these gaps and improve human capital development.

**Livelihood and Wage Improvement:** With many people lacking proper living wages, Frugal innovation can help create income-generating opportunities through local entrepreneurship and innovation. By identifying and addressing local needs with limited resources, communities can uplift themselves economically.

**Infrastructure and Resource Utilisation:** Pakistan's infrastructural deficiencies and resource constraints call for innovative approaches. Frugal Innovation focuses on maximising the utility of available resources, leading to more sustainable and efficient use of infrastructure and natural assets.

**Fostering Inclusive Growth:** Traditional economic models often exclude marginalised groups. Frugal innovation prioritises inclusivity, ensuring that innovation reaches the most vulnerable populations. This inclusive growth can drive broader economic development and social equity.

**Stimulating Local and Global Competitiveness:** By encouraging local innovation and entrepreneurship, Frugal innovation can enhance Pakistan's competitiveness in both domestic and global markets. It can lead to the development of unique products and services that stand out internationally, boosting exports and attracting FDI.

**Government Role in Facilitating Frugal Innovation:** The government's role is pivotal in supporting Frugal Innovation. By fostering an enabling environment through supportive policies, regulatory frameworks, and incentives, the government can ensure that grassroots innovations thrive while maintaining standards for safety and sustainability.

In summary, adopting Frugal Innovation can help Pakistan tackle its economic challenges by promoting innovative, cost-effective solutions that leverage limited resources efficiently. This approach not only addresses immediate needs but also fosters sustainable economic growth, inclusivity, and resilience in the face of adversity.

## **Innovative Pakistani Start-Ups Embracing Frugal Innovation**

Many startups in Pakistan are harnessing the entrepreneurial spirit of Frugal innovation to devise solutions to everyday problems in an improvised manner. The economic and flexible

mindset of different business owners and entrepreneurs leverages Frugal innovation to solve significant socioeconomic challenges in our society. These businesses not only address the acute needs of targeted sectors but also contribute to the country's overall development. Here are some notable examples of startups embodying the Frugal innovation mindset:

### **1. Modulus Tech**<sup>5</sup>

Founded in 2017, Modulus Tech aims to provide affordable portable housing. The business operates in the spirit of Frugal innovation, offering quick, simple, and economical housing solutions. Utilising local resources and maintaining a small carbon footprint, Modulus Tech's solutions reduce waste and are resilient to disasters.

### **2. Metric**<sup>6</sup>

Mena Tariq noticed that many small-scale businesses fail due to poor financial decision-making. To address this need, Metric was founded in 2022, providing AI-based financial decisions to businesses. Operating in Pakistan, Singapore, and the UAE, Metric aims to make business finance and data-driven decision-making accessible, helping entrepreneurs make informed decisions and manage their businesses effectively.

### **3. Aabshar**<sup>7</sup>

Water security is a significant issue in Pakistan, often due to mishandling rather than scarcity. Aabshar, a clean-tech company, addresses this by designing optimised nozzles to reduce water wastage while maintaining water flow. These low-cost nozzles have saved 4.3 billion litres of water in Pakistan, benefiting up to twenty-six million people.

### **4. Nearpeer**<sup>8</sup>

An education-technology startup, Nearpeer aims to make quality education affordable and accessible through technology. Serving more than 200,000 students annually in Pakistan and

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<sup>5</sup> <https://modulus-tech.com/>

<sup>6</sup> <https://metricapp.co/>

<sup>7</sup> <https://www.aabshar.net/>

<sup>8</sup> <https://sadapay.pk/>

the Middle East, Nearpeer has become the largest online education platform in Pakistan, creating employment opportunities and contributing positively to the GDP.

### **5. SadaPay and NayaPay<sup>9</sup>**

These fintech apps offer alternatives to conventional banking by providing easy account setup via online forms. In a country with low financial literacy, especially in rural areas, these apps simplify banking, allowing people to transfer money and receive remittances without navigating complex banking procedures. This ease of access is transforming financial inclusion in Pakistan.

### **6. Tajir<sup>10</sup>**

In 2018, Babar and Ismail founded Tajir to assist small retail store owners in purchasing inventory without closing their shops, thus avoiding potential customer loss. Tajir provides an online marketplace for inventory procurement, currently serving 15,000 stores in central Punjab. This innovation supports small businesses by streamlining supply chains and enhancing operational efficiency.

These entrepreneurial ventures exemplify how Frugal innovation can address customer needs effectively and sustainably. They not only simplify life but also contribute to Pakistan's economic output, embodying principles of environmental and socioeconomic sustainability. By leveraging limited resources and turning challenges into opportunities, these startups highlight the transformative power of Frugal innovation in driving innovation and development in Pakistan.

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<sup>9</sup> <https://www.nayapay.com/>

<sup>10</sup> <https://www.tajir.app/blog/empowering-mom-and-pop-stores-to-grow-their-business>

## SWOT Analysis for Pakistan in Terms Of FRUGAL INNOVATION

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- Pakistanis are known for their ability to find creative solutions with limited resources, making Frugal innovation a powerful tool for problem-solving.
- Frugal innovation often leads to the development of inexpensive and accessible solutions, making them highly relevant in a developing country like Pakistan.
- Frugal innovation fosters a collaborative spirit, encouraging communities to work together to address shared challenges.
- Frugal innovation nurtures a culture of innovation and risk-taking, leading to the creation of new businesses and ventures.

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- Frugal innovation solutions can sometimes be temporary fixes or lack long-term durability due to the focus on immediate functionality over standardized processes.
- Frugal innovation solutions are often localised and context-specific, making it difficult to replicate and scale them for broader impact.
- Quick fixes and improvisations inherent in Frugal innovation might sometimes compromise safety standards.
- Short-term, Frugal innovation solutions might not consider long-term environmental or social consequences.

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- Government initiatives that recognise and support Frugal innovation can provide funding, infrastructure, and recognition, leading to wider adoption and impact.
- Leveraging technology alongside Frugal principles can create more sophisticated and sustainable solutions.
- Sharing Pakistan's Frugal success stories on the international stage can attract investment, partnerships, and knowledge exchange.

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- Stringent regulations and bureaucratic hurdles can stifle the spontaneous and flexible nature of *Frugal innovation*.
- The increasing focus on formal education and technology might lead to the erosion of traditional knowledge and skills that underpin *Frugal innovation*.
- Negative perceptions of Frugal innovation as being unsophisticated or makeshift can limit its acceptance in certain contexts

## Conclusion and Policy Recommendations

A simple solution has emerged from within Pakistani society, one that could fundamentally change the dynamics of the nation. This overlooked but powerful concept could lead Pakistan towards progressive economic, social, and environmental development. In a country where many people lack the resources to improve their living standards, only a privileged few can enjoy the luxuries of life. However, with this novel approach, a higher quality of life becomes accessible to everyone.

Pakistan needed a cost-effective and economically sound method to drive progress. Frugal innovation opens a new path to economic advancement by utilising fewer resources and reducing costs. When resources are scarce, people seek simple solutions to their problems. Frugal innovation embodies a practical, adaptive, resourceful, and pragmatic approach that resonates with the needs of a resource-constrained population.

This concept from within Pakistani society presents a potentially transformative solution. Its inherent simplicity lies in its ability to simultaneously address the nation's economic, social, and environmental needs. Recognising the resource constraints faced by society, this approach aims to bridge the gap and enable a more inclusive standard of living for all. This cost-effective and structurally sound strategy emphasises resource optimisation and efficiency, providing a pathway for progressive advancement with minimal resource expenditure. By adopting this approach, Pakistan can unlock a new trajectory towards a more equitable and sustainable future.

The following policy recommendations should be considered by Pakistan's government to foster this innovative spirit:

- **Recognition and Appreciation:** The government should acknowledge and appreciate local businesses that apply Frugal innovation techniques and contribute to economic development and societal welfare. This could include awards, recognition programs, and media coverage to highlight their success stories.
- **Collaboration Centers:** Establish physical or virtual centres where Frugal innovators can connect, share ideas, and collaborate on problem-solving. These hubs would foster a community of practice and drive collective innovation.
- **Frugal Innovation Hackathons:** Organise "Frugal innovation Hackathons" to bring together diverse groups such as engineers, designers, entrepreneurs, and local communities to find solutions

to specific challenges within a short period. These events can stimulate creativity and practical problem-solving.

- **Policy Integration:** Incorporate Frugal innovation into policy-making to address Sustainable Development Goals (SDGs). This approach can be particularly effective in tackling issues such as clean water and sanitation, climate change, and sustainable development.

By implementing these recommendations, the government can create an enabling environment for Frugal innovation-driven entrepreneurship and innovation to thrive, thus fostering a more inclusive, resilient, and prosperous Pakistan.

## Action Matrix

Action Area	Pathways to Solution	How to Implement Each Solution	Actor Responsible	Implementation Timelines
<b>Capacity Building</b>	Establish <i>Frugal</i> innovation labs or hubs in educational institutions and communities to provide access to tools, resources, and mentorship.	Provide access to tools, resources, and mentorship	Educational Institute and governmental bodies	5 years
<b>Collaboration &amp; Networking</b>	Facilitate the creation of online and offline platforms for Jugaad innovators to connect, share knowledge, and collaborate on projects	Connect, share knowledge, and collaborate on projects.	Media networks. Government	5 years
<b>Funding &amp; Investment</b>	Encourage private sector investment in <i>Frugal</i> innovation through tax incentives and partnership opportunities.	Tax incentives and partnership opportunities.	Private stakeholder	5 years
<b>Policy &amp; Advocacy</b>	Integrate frugal innovation's principles into government development programs and initiatives to address social and environmental challenges.	Address social and environmental challenges.	Government	5 years



## **About the Authors**

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

**Maryam Ayub** holds an M-Phil in Economics and Finance from PIDE. Her areas of expertise are Macroeconomics, Climate Finance and Development Economics.

**Sheraz Ahmad Choudhary** is a Research Associate at IPRI. He is affiliated with the University of Sussex and his areas of expertise are Macroeconomics, Trade Public Finance, ESG, and Environmental Economics