

Charting the Course for Power Sector Subsidies in Pakistan

Energy Regulatory Sandbox Initiative (ERSI)

Authors: Zainab Babar, Sarim Zia, Ahad Nazir, Dr Khalid Waleed



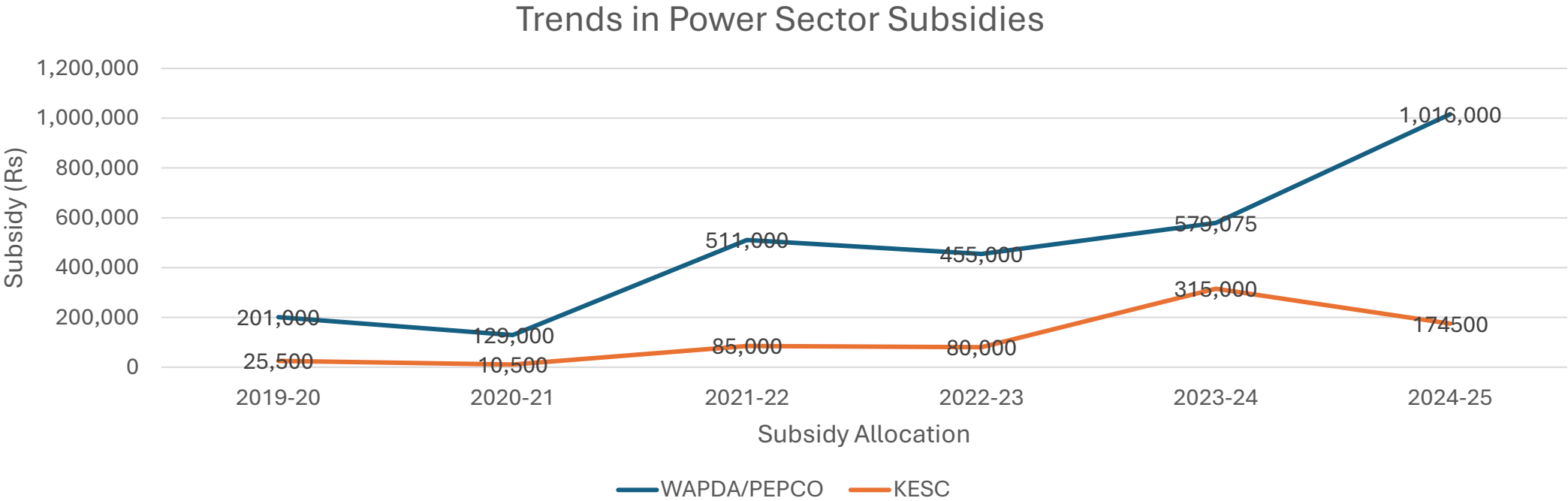
Overview

1. Background
2. Objectives
3. Methodology for ERSI
4. Methodology for Tariff Analysis
5. Outcome(Scenario analysis, welfare analysis)
6. Proposed Policy recommendations

Background

- Concerns with exponential increase in tariff - In Pakistan, the increasing power tariffs raise significant concerns among consumers and businesses. The rapid escalation of power tariffs not only burdens household budgets but also undermines the competitiveness of industries, hindering economic growth.
- Elimination of uniform subsidy(blanket subsidy) and tariff differential subsidy (TDS) - Pakistan lacks a targeted subsidy approach, which is required for efficient and equitable distribution of subsidies
- Introduction of targeted subsidy approaches - The elimination of uniform subsidies and the introduction of Tariff Differential Subsidy marks a strategic shift towards more targeted and efficient subsidy allocation

Power Sector Subsidies over the Years



Energy Regulatory Sand-boxing Initiative(ERSI)



The Energy Regulatory Sand-boxing Initiative by SDPI aims to facilitate a dialogue among experts and stakeholders to shape the future of power sector issues.



Through a regulatory sandbox approach—a simulation-based method—this initiative will provide a platform to discuss and refine new energy technologies, business models, and regulatory frameworks.



The sandbox will enable experimentation and collaboration, promoting innovation while helping stakeholders understand emerging energy trends and their associated challenges and opportunities.



To accelerate the adoption of cleaner, more efficient, and equitable energy systems.

ERSI - Program Objectives

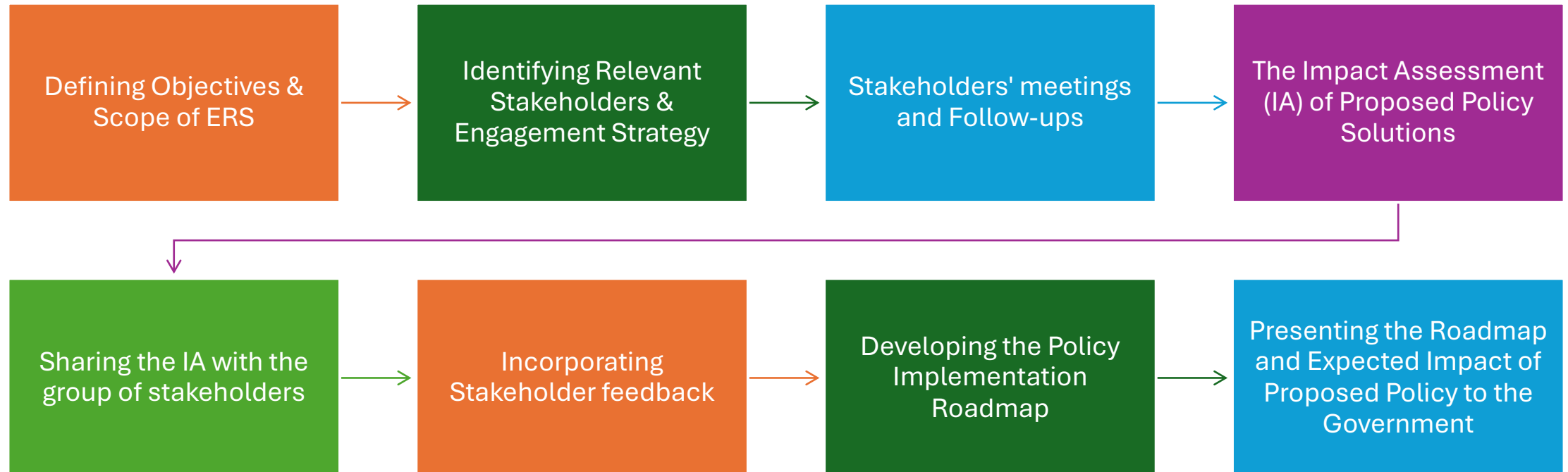
Formulating clear objectives for subsidy reforms in the power sector through collaborative brainstorming and expert input.

Creating a shared understanding of the role subsidies play in addressing the circular debt crisis and their potential impact on long-term debt education.

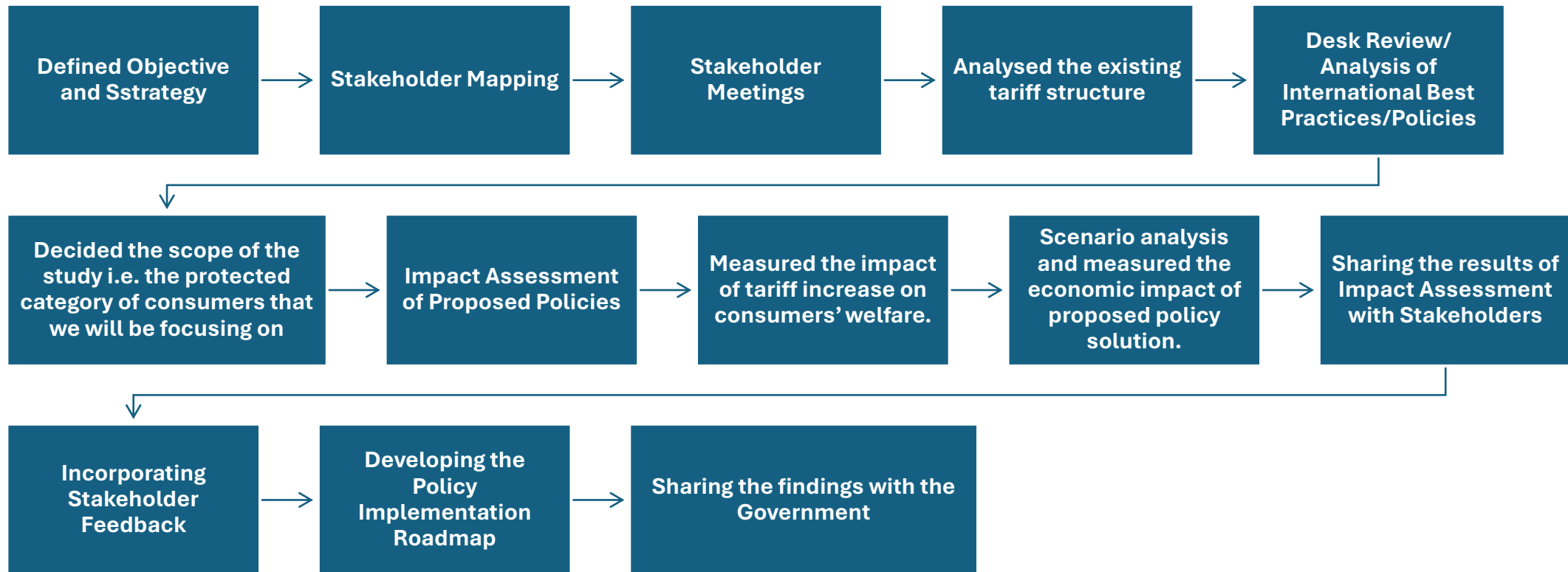
Developing recommendations for targeted consumer-centric subsidy measures that prioritize the welfare of households, especially vulnerable groups.

Planning to phase –out the blanket subsidy by introducing the Targeted Subsidy Regime

Methodological Steps for ERSI



Methodological Steps of Sandbox for Electricity Subsidies



Existing Tariff Slabs

A-1 General Supply Tariff - Residential		
S. No	Tariff Category / Particulars	
For peak load requirement less than 5kW		
Protected	i. Up to 50 Units - Life Line	
	ii. 01 - 100 Units - Life Line	
	iii. 001 - 100 Units	
	iv. 101 - 200 Units	
Unprotected	v. 1-100 Units	
	vi. 101-200 Units	
	vii. 201-300 Units	
	viii. 301-400 Units	
	ix. 401-500 Units	
	x. 501-600 Units	
	xi. 601- 700 Units	
	xii. Above 700 Units	
	xii. Above 700 Units	
	For peak load requirement exceeding 5kW	
	xiii.	Time-of-Use (ToU) Customers - Peak
	xiv.	Time-of-Use (ToU) Customers – Off-Peak

Structure of Electricity Bills

Case 1 Protected								
Unit Consumed	Tariff Rate	C.O.E	Other Charges	C.O.E x Other Charges	Total Bill			
50	11.69	584.5	45%	263.025	847.525			
99	11.69	1157.31	45%	520.7895	1678.0995			
Case 1 Unprotected								
Unit Consumed	Tariff Rate	C.O.E	Other Charges	C.O.E x Other Charges	Total Bill			
50	23.59	1179.5	45%	530.775	1710.275			
99	23.59	2335.41	45%	1050.9345	3386.3445			
Case 2 Protected								
Units Consumed	Tariff rate upto 100	C.O.E upto 100 Units	Tariff Rate Upto 200	C.O.E 100 - 200 units	Total C.O.E	Other Charges	Total C.O.E x Other Charges	Total Bill
101	11.69	1169	14.16	14.16	1183.16	45%	532.422	1715.582
199	11.69	1169	14.16	1401.84	2570.84	45%	1156.878	3727.718
Case 2 Unprotected								
Units Consumed	Tariff rate upto 100	C.O.E upto 100 Units	Tariff Rate 101 - 200	C.O.E >100 units	Total C.O.E	Other Charges	Total C.O.E x Other Charges	Total Bill
101	23.59	2359	30.07	30.07	2389.07	45%	1075.0815	3464.152
199	23.59	2359	30.07	2976.93	5335.93	45%	2401.1685	7737.099

Cost of electricity (C.O.E*)

Note: All calculations are in Pkr.

Scenarios of Existing Tariff

Case 1 Protected		Case 1 Unprotected		
Unit Consumed	Total Bill	Unit Consumed	Total Bill	Subsidy Given
50	847.525	50	1710.275	862.75
99	1678.0995	99	3386.3445	1708.245
Case 2 Protected		Case 2 Unprotected		
Units Consumed	Total Bill	Units Consumed	Total Bill	Subsidy Given
101	1715.582	101	3464.1515	1748.5695
199	3727.718	199	7737.0985	4009.3805

Case 1 Protected		Case 2 Protected		
Unit Consumed	Subsidy Given	Units Consumed	Subsidy Given	Average
50	862.75	99	1708.245	1285
101	1748.5695	199	4009.3805	3752
		Total Subsidy		5037
		Total Subsidy Given		Rs. 78 Billion

Proposed Policy for Targetted Subsidy Program

Based on the analysis, it is proposed that the government should reform the subsidy program

- Instead of giving subsidy in electricity bills to the protected consumers, the Government should provide a certain amount of cash through the Benazir Income Support Program (BISP).
- This will also help to identify and address distortive extortion practices where consumers (who have the affordability and high electricity consumption) use multiple single-phase meters to evade the proper billing for higher usage, thus reducing their bills.
- By ensuring that consumers with high usage are not getting any subsidy, this policy would promote fairness in billing, prevent misuse of the system, and eliminate inefficiencies.
- The Economic impact of this policy will be a saving of 52 billion rupees per month.

Note – In this analysis, we haven't taken the case of lifeline consumers. Here, we're focusing only on the protected consumers.

- Currently, around 15 million consumers are being provided with the subsidy in the protected category, which constitutes 48 % of the total subsidy allocations.
- The current average amount of subsidy provided to protected category consuming 0-100 units is Rs.1285 per month and for 101-200, the amount is Rs. 3752 per month.
- The sum of these two amounts of subsidy is around Rs. 5037 per month.
- Instead of Rs. 5037 , if we implement the cash transfer program with BISP, we can transfer an amount of around Rs. 3000 per month to the vulnerable families that are registered with BISP.
- The Government can save up to **52 Billion rupees per month** by implementing this cash transfer program.

Total Subsidy Provided /month	78
Amount Required for Cash Transfer Program	26
Net Savings	78-26
	Rs. 52 Billion

Cash Transfers		
Total Enrolled Beneficiaries with BISP	8,694,295	
Cash Transfer amount	Rs 3000	
		Rs. 26 billion

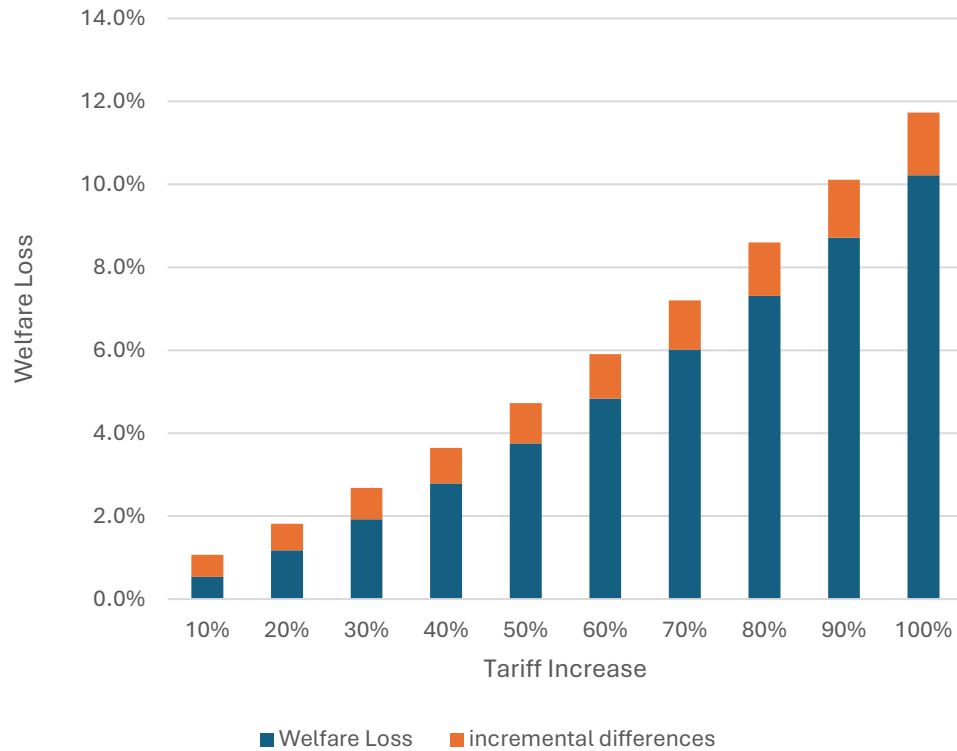


International Best Practices

The next slide highlights successful cases of subsidy reforms, particularly through the implementation of cash transfer programs

Country	Program	Impact
Indonesia	Indonesia's government introduced the Bantuan Langsung Sementara Masyarakat (BLSM) program in 2013 as part of its energy subsidy reforms. The program aimed to reduce subsidies on fuel and electricity and instead provided direct cash transfers to low-income households.	The cash transfers helped cushion the financial impact of fuel price hikes on vulnerable populations.
Mexico	Mexico's PROSPERA program (formerly Oportunidades) was adapted to address energy price reforms. The cash transfer system targeted vulnerable households, ensuring they had financial support as energy subsidies were reduced.	The program helped reduce the hardship of rising fuel prices on poor households.
Egypt	In Egypt, following the reduction of fuel subsidies, the government launched a cash transfer program for low-income households to mitigate the effects of rising energy costs. This was part of a broader economic reform package agreed with the International Monetary Fund (IMF).	The cash transfers helped ensure that poorer Egyptians could afford basic energy needs despite rising prices.
Jordan	As part of its energy subsidy reforms, Jordan introduced a cash compensation program for vulnerable households affected by higher fuel and electricity prices. The government utilized an income-targeted program to identify eligible families.	This helped offset the impact of energy price hikes and ensure equity in the distribution of energy reforms.
Tunisia	Tunisia implemented a cash transfer scheme as part of its energy subsidy reform. The government aimed to reduce subsidies on fuel and energy and used direct transfers to protect lower-income households from the negative consequences of these changes.	This program aimed to avoid exacerbating poverty while still addressing fiscal sustainability.
Iran	Comprehensive reform plan – 5 years for reducing subsidies. Public relations awareness campaign. Clearly defined objective for eliminating subsidies. Cash transfers.	The program aims to gradually reduce energy subsidies, supported by public awareness campaigns and cash transfers to offset the impact on vulnerable groups.

Tariff Change vs. Welfare Loss and Incremental Growth



Source: WELFARE IMPLICATIONS OF ENERGY SUBSIDY REFORMS UNDER THE IMF STABILIZATION PROGRAM: THE CASE OF HOUSEHOLD SECTOR IN PAKISTAN.

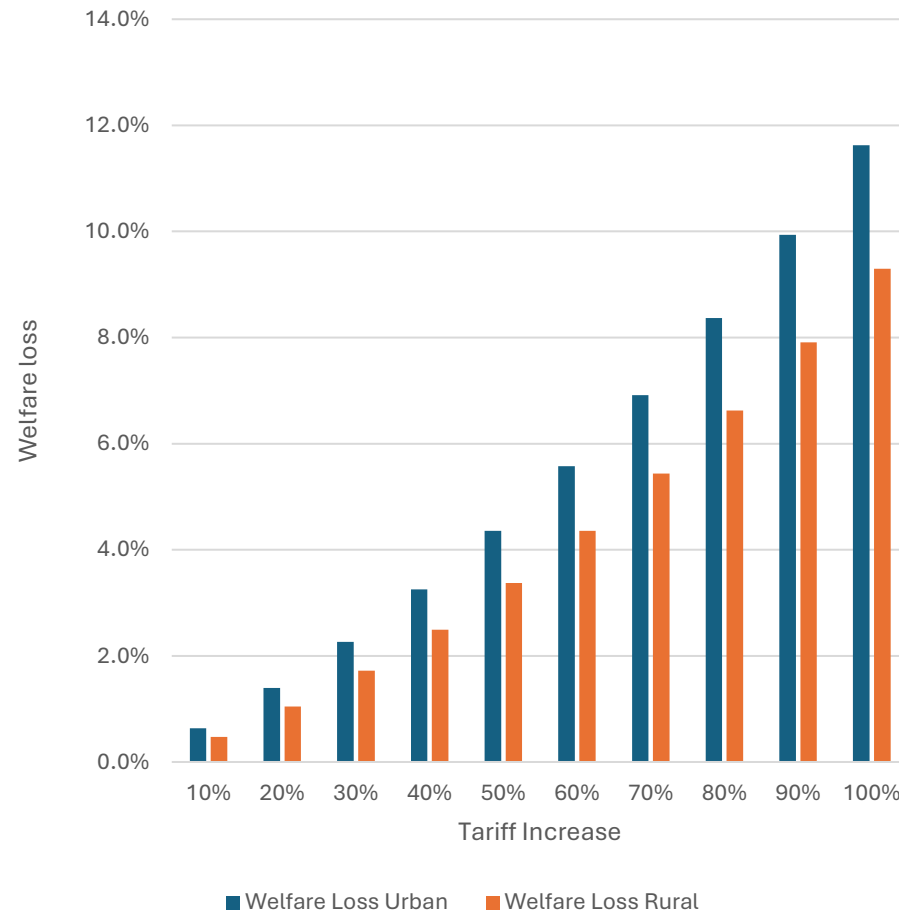
Measuring the Impact of Tariff Increase on Consumers' Welfare

At the national aggregate level, tariff adjustments directly influence welfare loss, demonstrating a clear and intensifying relationship. As tariffs increase, welfare losses grow significantly, reflecting the economic and societal costs of such adjustments:

- A 10% tariff increase results in a welfare loss of 0.5%, a relatively small but noticeable impact.
- By 50% increase in tariffs, the welfare loss escalates to 3.8%, marking a substantial shift in the cumulative economic burden.
- At 100% tariffs, welfare loss peaks at 10.2%, illustrating the dramatic rise in costs due to compounded effects.

The progression indicates that lower tariff adjustments impose manageable burdens, but as the increases become steeper, the welfare loss rises disproportionately.

Comparison of Urban vs Rural Welfare Loss



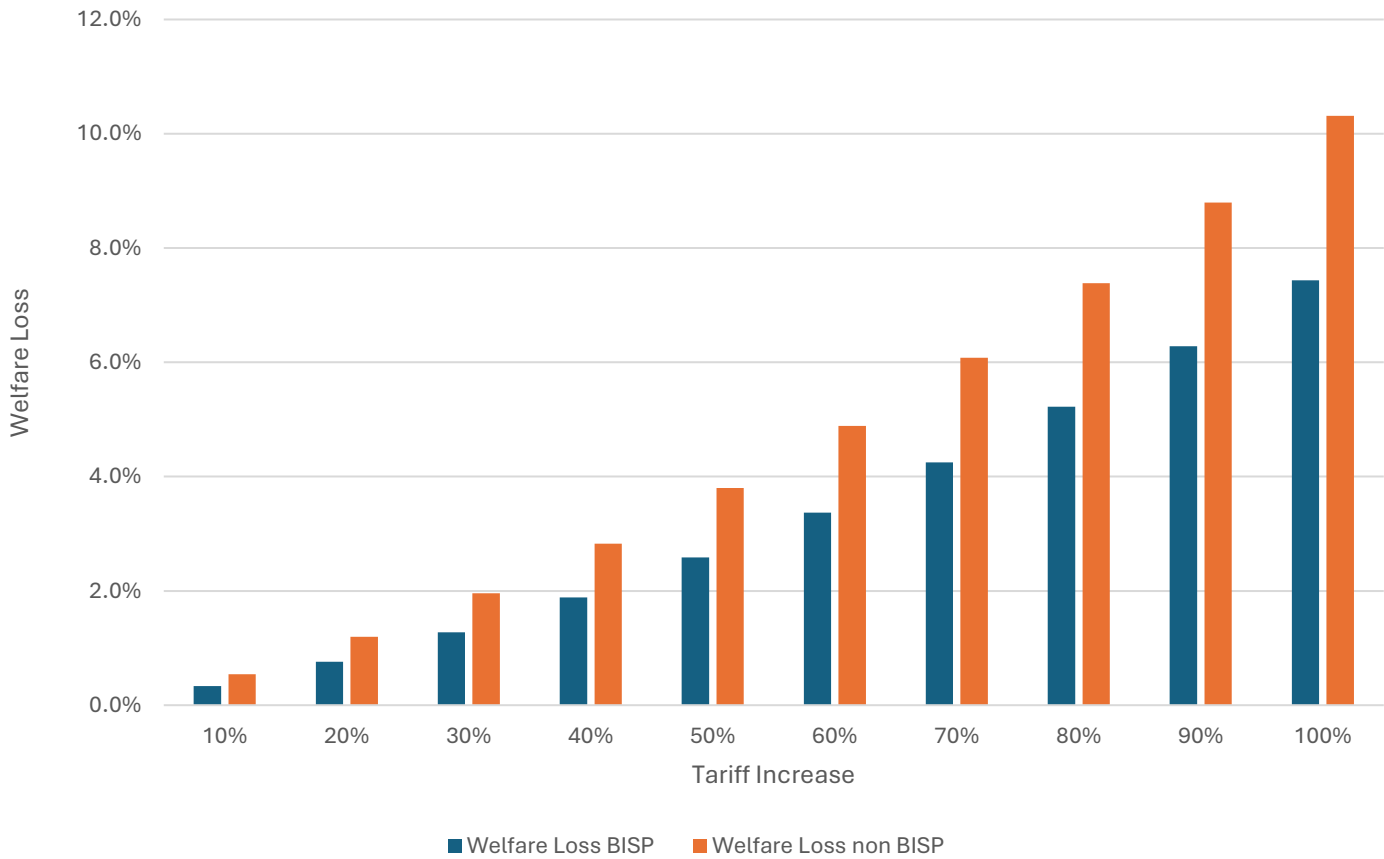
Comparison of Urban vs Rural Incremental Growth in Welfare Loss

Urban households experience higher welfare losses than rural households at every tariff level.

- A 10% tariff increase results in a welfare loss of 0.6%, higher than the rural counterpart (0.5%).
- By 50% tariffs, welfare loss rises to 4.4%, marking a substantial cumulative impact that underscores the sensitivity of urban households to rising electricity costs.
- At 100% tariffs, welfare loss peaks at 11.6%, exceeding rural welfare loss (9.3%) by a significant margin.

The pattern indicates that urban households experience greater cumulative welfare losses than rural households at all tariff levels, primarily due to higher electricity demand and limited coping mechanisms.

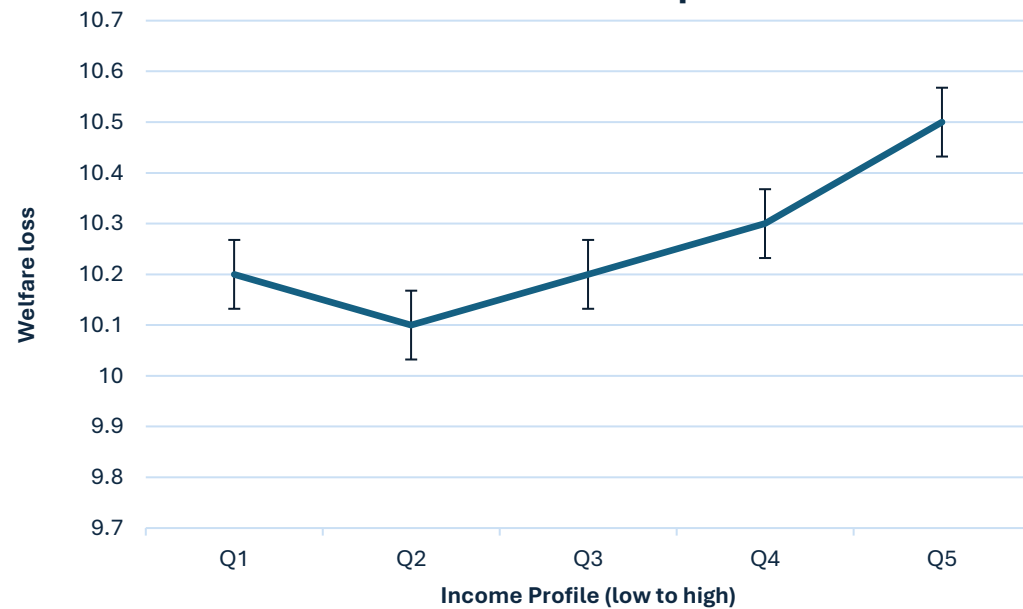
Comparison of BISP HH vs Non BISP HH Welfare Loss




Comparison of BISP HH vs Non BISP HH Welfare Loss

Non-BISP households consistently experience higher welfare losses than BISP households at every tariff increase.

Impact of tariff increase on Different Income Groups



The graph on the left illustrates the impact of tariff increase on different income groups which shows that higher income categories are more affected than lower income groups. In this graph, the data is divided into quantiles, with Q1 representing the lowest income group and Q5 representing the highest income group. The graph depicts that the higher income groups experience a more significant impact from tariff increase compared to the lower income group, suggesting that rising tariffs disproportionately affect those with higher incomes. The reason for this could be due to several factors; they tend to consume more energy because of larger homes, more appliances, and energy-intensive lifestyles. Moreover, they may have less flexibility in reducing consumption.

- 
- The welfare analysis validates our policy solution by revealing that impact of tariff increase is comparatively less for the households who are registered with BISP as compared to Non-BISP households.
 - This impact will be more reduced through the inclusion of cash transfer program.
 - Moreover, the welfare analysis shows that the impact of tariff increase is high for Urban population as compared to those living in rural areas.
 - The welfare analysis indicates that the impact of a tariff increase is more significant for urban populations compared to those living in rural areas. This is largely because urban residents typically have higher electricity consumption due to greater reliance on appliances, air conditioning, and commercial activities. Moreover, while urban areas may have higher average incomes, the cost of living is also greater, meaning that any increase in tariffs can place a larger strain on household budgets, especially for low to middle-income groups. Furthermore, urban populations often have fewer alternatives to reduce their electricity consumption, such as relying on solar power or other off-grid energy sources, which might be more accessible in rural areas. The financial burden of tariff hikes is felt more acutely in urban areas, making them more vulnerable to such increases.
 - This analysis provides us with significant insight that there is a potential to increase electricity demand of urban households if there is a reduction in existing tariff.
-

Positive Economic Growth

Government should also remove gas subsidy for industries and make an agreement with the government, government should provide them electricity at an affordable price and the industry should shift to grid instead of using captive power plants . This will significantly add to the economic growth.

Increase in Grid Demand

Increased grid demand will decrease the per capita capacity charges and will resolve the issue of decreasing grid demand


Targeted Subsidy or Cash Transfer Program

As discussed earlier, the government can save 52 billion rupees per month through cash transfer program. With this, government can control the tariff and provide a relief to the consumers who are consuming more by a reduction in tariff. This will result in increasing the energy demand and will reduce the escalating capacity charges.


Reduced Tariff for All

Removing cross subsidy should reduce tariff for high demand consumers i.e. Urban HH & Industry

The Government is advised to introduce a different tariff slab for Government buildings, currently they're charged as per the HH tariff or commercial tariff. In different countries, the electricity tariff for government buildings is higher than the commercial and industrial sector. Also, the residential tariff is higher than industrial tariff in some countries because the industries add value to the economy so they should be given an incentive for growth.

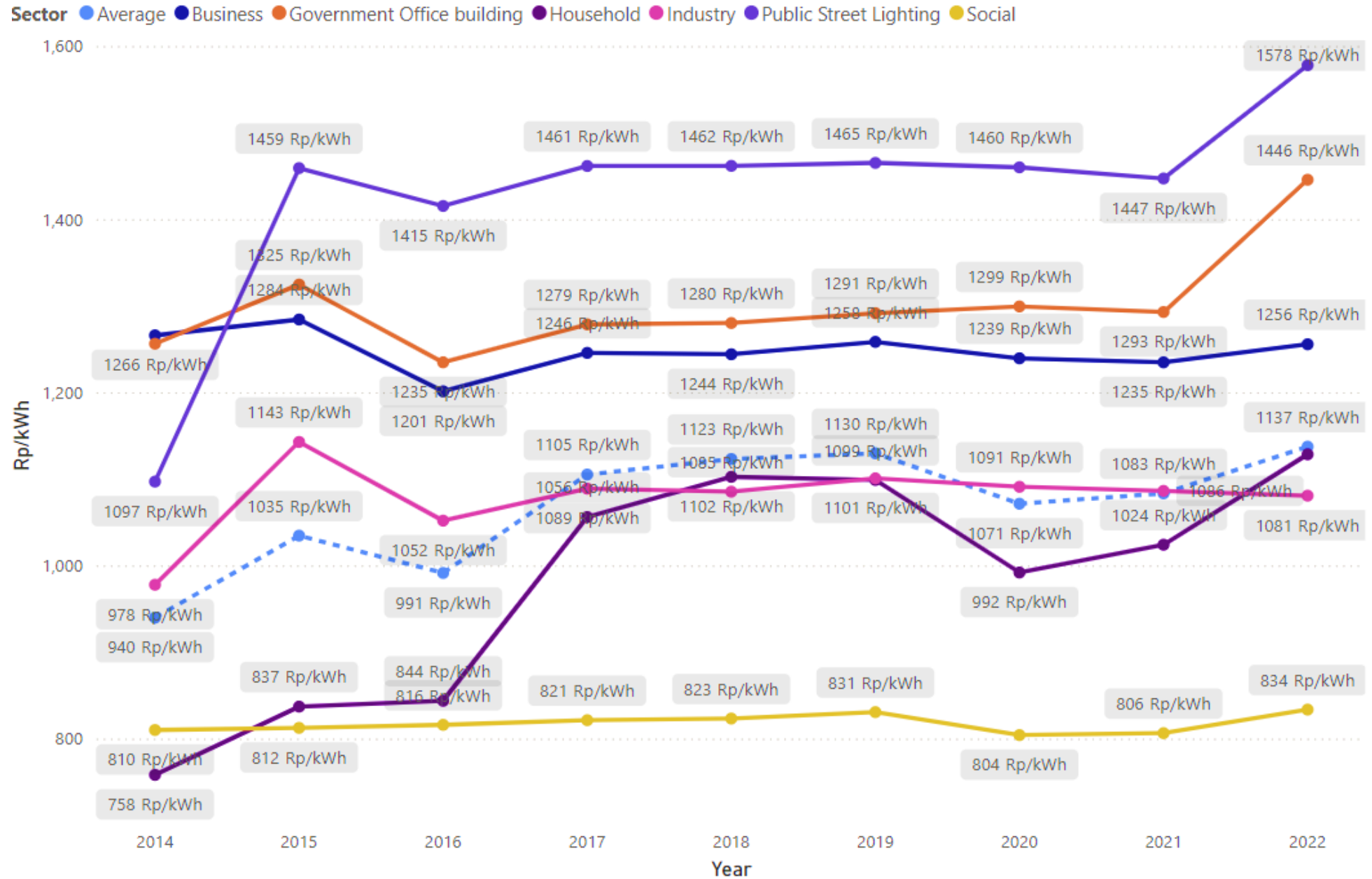


By following these policies, the looming issues surrounding electricity tariffs can be curbed down.



The graph in the next slide shows the electricity tariff is comparatively higher for government buildings than HH, commercial and industrial sector in Indonesia.

Average Electricity Tariff Per Sector



Source : <https://datacenter-pyc.org/data/economy/energy-price/electricity-tariff-in-indonesia/>

Thank you!

Please do share
your valuable
feedback with us.