GOVERNANCE TOOL- MANAGEMENT THROUGH TECHNOLOGY

Policy Recommendations-I:

Municipal Energy Management via organizational & behavioral change

A governance perspective

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Policy Recommendations: Municipal Energy Management via organizational & behavioural change

A governance perspective

1 Preamble

This document outlines nine pivotal policy recommendations designed to drive the digitization of municipal operations in Pakistan, amplifying energy efficiency. These recommendations are the culmination of the comprehensive "Energy Efficiency through Digitization" project conducted by the Centre for Intelligent Systems and Networks Research (CISNR).

Initiated to address the pressing issues of energy wastage, rising costs, and municipal decarbonisation, this project, funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and supported by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, targeted nine municipalities across KP and Punjab.

Throughout the project's implementation, CISNR engaged in extensive activities. These included preliminary surveys, deployment of SCADA systems for water pumping and streetlights, and the installation of vehicle tracking systems. Notably, the project aimed not only to transfer technology but to generate knowledge, data, and evidence, forming the bedrock of subsequent policy recommendations.

The genesis of these policies arose from an acute observation—municipalities grappled with inadequate digitized control, lacked staff training, and operated without comprehensive energy efficiency plans or current data to guide decisions. Recognizing these shortcomings, CISNR endeavoured to harmonize energy-efficient best practices through a focus on behavioural shifts and governance improvements.

The resultant policies emerged from the crucible of practical implementation, specifically honing in on behavioural and governance perspectives. They stand as beacons, not just for efficiency but as catalysts for systemic transformation within Pakistan's municipal energy landscape.

2 Prerequisite Governance and behavioural policy recommendations for Energy Efficiency across Municipalities

Energy Efficiency and its application in Pakistan is not given enough attention. This was highlighted after nine municipalities of Punjab and KP were able to reduce their power bill by 10%-40% after the digitized interventions[1] made by Centre for Intelligent Systems and

[1] SCADA systems, VFDs, Flow meters (See: link to the Water SCADA case study)

Network Research (CISNR). This signifies considerable savings for the municipal organizations as well as a stepping stone towards energy efficient practices.

However, for these gains to be a commonplace, cross cutting policy measures are needed in governance, finance, and behavioural change measures. The good news is that on the federal level several significant strides are made to institutionalize energy efficiency and its practice in Pakistan. On federal level, the National Energy Efficiency and Conservation Authority (NEECA) has already laid foundations in terms of National Energy Efficiency and Conservation Policy and action plans. There is a robust accompanying plan to institutionalize energy efficiency practices so that they synergize with the other domains and policies.
However, this comes with the caveat that though broad reforms are favourably looked yet this policy memo doesn't ask for broad based reforms but rather implores to investigate the critical junctures within the action plan as well as other associated avenues which impede the intended effects of forward leaning policies. Recommendations such as these are a step further into supporting institutionalization of energy efficiency on a municipal level, at the most basic level of governance and service delivery. The benefits of these are manifold bearing in mind the scope and scale of these provisions which will have a diffusion effect towards wider energy efficiency and conservation adoption. These policy recommendations with their end goal of supporting system wide digitization are intended to help with the tangible savings of energy as well as increased control and transparency which is the need of the hour given the macroeconomic challenges which the country faces.

The following policy recommendations can be considered as prerequisite requirements to implementing an effective across the board energy efficiency action plan such as the NEECA Action Plan and the strategic plan.

3 Targeted policy avenues and stakeholders:

Federal Level	NEECA (NEEAP, NEECA Strategic Plan 2020-2023 (and subsequent versions))
	PPRA
	Ministry of Planning
	Ministry of Finance
Provincial Level	PEECA SEECA PEDO Balochistan Energy Department Respective Provincial Action Plans
Local Government level	Local Government Acts Rules/Conducts of business
Development Boards	Bylaws of development authorities (E.g., Capital Development Authority (CDA), Lahore Development Authority (LDA), Peshawar Development Authority (PDA) etc.)

4 Context and Evidence

The combination of energy wastage due to inefficiencies in Pakistan, a mounting circular debt, a rapidly growing urban population, limited resources, and a deteriorating climate, make for an immense challenge for the local governments and service providers to provide essential services.

CISNR found in various instances, on municipal levels, excessive avoidable energy inefficiencies. This was mainly owing to the lack of digitized control as well as lack of staff training and capacity. Often the municipalities did not have any plan towards energy efficiency in water management, streetlights, energy usage as well as current data to drive their decisions. On top, many had perpetually high running costs because of outdated equipment and practices. For example, in Islamabad during the evaluation of water supply management, it was found that that multiple inefficient practices were in place such as ill-fitted and capacity wise ill-suited equipment. In addition to the infrastructure issues, there were mismanaged pumping schedules which resulted in over pumping and ultimately considerable wastage of water. This was a surprising finding considering that these were the conditions prevalent in the capital city. Similarly, in the municipalities of Mardan and Abbottabad, due to manual operations of the water supply lines and streetlights, energy consumption was exceeding than what was required. This resulted in over pumping in water supply thereby wasting the precious natural resource as well as electricity. In the context of rising energy cost, these practices are deemed to be unacceptable especially when there are simple solutions available. After the installation of energy efficient apparatus such as Variable Frequency Drives (VFDs), SCADA systems by CISNR it was found that in WSSM Mardan 40% energy was saved. This is considerable given the fact that these percentages are not insignificant.

With the support of its development partners, CISNR aspired to investigate and alleviate the excess energy losses and inefficiencies. Implementation of small-scale infrastructural retrofits paved the way for digitized availability of data as well as functionality, immediate reductions in the energy usage was observed.

5 Expanding our findings

The question arises as to how to institutionalize these gains which were achieved within a short period of time? Furthermore, how can the institutional barriers to adopting these gains can be overcome? It was observed that some places had advanced systems in place whereas the others were lacking in knowledge. This led to further questions of how to harmonize energy efficient best practices across the board through cross arching policy provisions?

It is reassuring that the National Energy Efficiency and Conservation Policy (NEEC) and the resulting National Action Plan (NAP) have been updated and approved by the federal government. For these to be effective, the subsequent step of operationalization must be adequately addressed. This stage is essential to determine if the policy will be successful or not. To ensure constructive outcomes, further steps must be taken to operationalize the action plans especially in terms of data, starting from local governments, which are the primary service providers.

6 Area 1: Governance

6.1 Forming enabling frameworks

NEECA Strategic Plan is an ambitious document which provides concrete outcomes and divides the roles and responsibilities in between federal and provincial authorities. Through provision of these clear and time sensitive directions to energy efficiency, the laws and statutes need to be aligned to reach the intended policy outcomes. Role of strong accountability as well as clearly defined responsibilities embedded in the strategic plan will increase the chance of the plan succeeding. This is because well thought out policy measures, driven by evidence convey clear signals to energy consumers and private sector of the new direction and build investment confidence.

Recommendation 1:

Integrate and increase the role of local governments and municipal authorities into the NEECA, provincial strategic plan(s) to collect data, coordinate within departments and implement the action plan.

6.2 Data

The role of data and evidence in decision making is acknowledged in the NEEC Policy, Action plan and the strategic plan. However, there is a lack of detail on what kind of data and at what level that data is to be collected and managed. Appropriate attention is also missing towards the disaggregation and the indicators which must be developed after the establishment of appropriate parameters. Disaggregation of data at municipal and local level is crucial for implementing energy efficiency. This is because municipalities have the potential to motivate change in markets in their jurisdictions by the virtue of their proximity to the consumer. [2]

Recommendation 2:

Provision to be made in the National Strategic Plan Key Performance Indicators to develop indicators, collect desegregated data at municipal and local level and integrated into the provincial and national data hub.

6.3 Building synergies across different policy avenues

The NEECA strategic plan acknowledges mandate challenges between different national authorities and looks towards harmonizing them to move towards the implementation of the strategic plan. That is one of the aspects in the broader need for building cross policy harmonisations to effectively implement the action plan. In the public sector for example this could be done by taking into the consideration the procurement policies and the criteria under the respective Public Sector Development Programs (PSDP) operate. The procurement of

[2] NEECA Strategic Plan (2020-2023), p. 11

public infrastructure such as the equipment is usually done under Public Procurement Regulatory Authority (PPRA). The mandate of PPRA can be amended to include energy efficiency criteria in municipal public procurement wherever applicable. Similarly, the PC-1s for PSDPs can be mandated to include energy efficiency.[3] At present there has been no such incorporation into the PPRA and PC-1 templates.[4]

Recommendation 3:

Incorporate Energy Efficiency Criteria in Public procurement on municipal level.

Recommendation 4:

Incorporate Energy Efficiency criteria in Public Sector Development Programs (PSDP) on district level.

6.4 Pairing Incentivization with Taxation

For large scale adoption of energy efficient behaviours, it is imperative that incentivization for entities such as municipal corporations and private sector is paired with appropriate and specific taxation on energy usage. This is comparable to the slabs introduced in the domestic and commercial users of electricity and gas. Similar slabs can also be introduced for municipal corporations and supply entities. At present it was found that there are no appropriate incentives for the entities to adopt energy efficiency behaviours. Wherever the municipalities had adopted EE measures were completely on their accord.

Of course, the appropriate taxation is challenging to determine. In the context of local bodies' power of imposing new taxes and how it translates to the contribution to the federal pool is also to be amended. However, the essence is to use policy instruments in pairing to have a reenforcing effect towards the intended outcome.

Similarly, it is important to establish market mechanisms with regards to energy efficiency targets. Setting up Energy Efficiency Obligation (EEO) which are quantitative energy savings target for utility companies or in this case municipal corporations, who are obligated to achieve the targeted reduction in end-use energy consumption in each period. With this stipulation, Tradeable White Certificates (TWS) are the certificates which each of these entities receive and which can be traded off. In the above, the regulatory obligation paired off with an incentive.

An appropriate inclusion of this would be in case of NEECA and Provincial bodies to set this in their strategic plans.

[3] See: PC-1, section 11, Project benefits and analysis: https://www.pc.gov.pk/uploads/downloads/PC-Forms/PC-I-Infrastructure.pdf

[4] See: National Public Procurement Strategy 2013-2016, PPRA https://www.ppra.org.pk/doc/nps.pdf

Recommendation 5:

Mandate appropriate Energy Tax classes for public municipal entities based on the usage, similar to the domestic and commercial end users.

Recommendation 6:

Establish the market-based incentive mechanisms such as EEO and TWS on provincial and local levels.

Recommendation 7:

Remove subsidies for energy usage and replace the subsidies with preferential credit lines for municipalities rated top for Energy Efficiency

6.5 Capacity building: Awareness and reskilling current workforce.

One of the major impediments which was observed by CISNR in this pilot was the lack of awareness of leveraging current technologies in moving towards energy efficiency. In addition to the capacity challenge, it was also observed that there was a hesitation towards viewing technology as a direct threat to the jobs of the current workforce. Acknowledging the fact that there is a natural hesitancy towards change and that large public entities are reluctant to changes especially towards new methodologies, CISNR implores that exclusive focus should be given to the current workforce on municipal level. Continuous reskilling programs should be given attention to in the federal and provincial strategic plans. Information campaigns should also have focused outcomes such as imparting awareness towards certificates, labels, and audits findings. This will reduce the failures due to sub optimal information and behaviour outcomes.

Through CISNR's trainings and awareness interventions coupled with infrastructural support, five municipalities were able to save 83 MWh which is roughly the energy needed to power 18-20 homes. These gains are expected to be tenfold with minimal costs once wider adoption takes place and the ROIs are achieved.

Recommendation 8:

Mandate the reskilling of public utilities workers in Energy Efficiency such as energy audits, operating digitized energy efficiency and decision-making based on data.

Recommendation 9:
Mandate on local level for public organizations to invest into specific awareness and training programs to promote energy efficiency behaviour change.