

**National Energy Efficiency and Conservation Authority  
(NEECA)  
Ministry of Energy**



**Strategic Plan  
(2020-2025)**

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## ACRONYMS

ADB	Asian Development Bank
APFC	Automatic Power Factor Controller
CAFÉ	Corporate Average Fuel Economy
CNG	Compressed Natural Gas
CPEC	China Pakistan Economic Corridor
CAGR	Compound Annual Growth Rate
EBC	Energy Building codes
EE	Energy Efficiency
ESMAP	Energy Sector Management Assistance Program
EVs	Electrical Vehicles
FERTS	Fuel Efficiency in Road Transport Sector
GoP	Government of Pakistan
ICE	Internal Combustion Engines
IEA	International Energy Agency
JICA	Japan International Cooperation Agency
LEDs	Light Emitting Diode
MEPS	Minimum Energy Performance Standards
NDCs	Nationally Determined Contributions
NEECA	National Energy Efficiency and Conservation Authority
NEPRA	National Electric Power Regulatory Authority
OGRA	Oil and Gas Regulatory Authority
PPRA	Public Procurement Regulatory Authority
PSCIR	Pakistan Council of Scientific and Industrial Research (PCSIR)
PSQCA	Pakistan Standard & Quality Control Authority
MOE	Ministry of Energy
MoPD&SI	Ministry of Planning, Development, and Special Initiatives
PSDP	Public Sector Development Program
QESCO	Quetta Electric Supply Company
SE4ALL	Sustainable Energy for All
T&D	Transmission and Distribution
TEVTA	Technical Education and Vocational Training Authority
UNDP	United Nation Development Program
UNFCCC	United National Framework Convention on Climate Change
VAT	Value Added Tax

## UNITS

DC	Direct Current
GHG	Green House Gas
GWh	Giga Watt Hour
MWh	Mega Watt Hour
KWh	Kilo Watt Hour
MMCFD	Million Meter Cubic Feet per Day
MPG	Miles per Gallon
MTOE	Million Tons of Oil Equivalents
MW	Megawatt
RMB	Renminbi
TOE	Ton Oil Equivalent

# NEECA's Strategic Plan

## 1. Introduction

National Energy Efficiency and Conservation Authority (NEECA) through its Strategic Plan (2020-25) sets to achieve the goal of 3 MTOE energy saving by 2025.<sup>i</sup> Pakistan has the potential to save up to 10-15% (10-12 MTOE) of primary energy supply through energy efficiency and conservation.<sup>ii</sup> The Strategic Plan (2020-25) will be implemented in three phases. The first phase (FY-2020) will be the 'institutionalization of the energy efficiency and conservation at the national and provincial levels. The second phase (FY-2021) will be the 'operationalization' of policy and actions and the third phase will be the 'implementation' of action plans.

The Strategic Plan (2020-25) is based on the NEECA Act. NEECA Act 2016<sup>iii</sup> provides the governance framework to facilitate and strengthen the wide-scale adoption of sound energy-efficient practices at the national level. The Act declares NEECA as the focal organization to coordinate and implement all the policies, programs and regulations to promote energy conservation.

NEECA will institutionalize energy efficiency and conservation through the establishment of provincial designated agencies, development of provincial and regional action plans, the establishment of Energy Conservation Tribunals, and formulation of National Energy Efficiency and Conservation Policy of 2020.

The operationalization will be through the development of Minimum Energy Performance Standards (MEPs), labeling schemes, certification of energy auditors, mandatory energy audits of energy-intensive industries, energy audits of public and private buildings, capacity building and coordination mechanism, research and education for promoting energy efficiency and conservation.

The implementation of the strategic plan for the key sectors of the economy<sup>iv</sup> will be consistent with the Act. The NEECA's mandate (See Fig. 1) includes:

- Initiate, catalyze, carry out and coordinate the implementation of all energy conservation programs in all sectors of the economy;
- Administer, implement and enforce all the provisions made under the NEECA Act 2016;
- Serve as a focal point for all the activities related to energy efficiency in national and international level engagements;
- Formulate, implement, inspect and regulate energy efficiency standards in Pakistan.

The preparation of NEECA's Strategic plan started in November 2019 through a series of brainstorming sessions, consultations, meetings, and internal reviews. In the process, some

critical cross-cutting challenges have been identified that are equally important for each sector which would be addressed. These include:

- Legal & financial framework for up-scaling energy efficiency and conservation measures.
- Federal & provincial departments collaboration, implementation, and communication;
- Inter-Ministerial / Institutional and regional cooperation and reporting.
- NEECA, OGRA (Oil & Gas Regulatory Authority), and NEPRA (National Electric Power Regulatory Authority) mandates are overlapping. This may have challenges for NEECA to implement its mandate.
- Energy Service Companies (ESCOs) can implement energy efficiency retrofits and process improvements through innovative financing mechanisms without burdening the consumers. ESCOs registration, capacity building, research, and defining scope will be a major challenge.
- Energy data collection at the consumer level, analysis to develop an Information House.
- Awareness-raising, education, and knowledge sharing about energy efficiency;

This is the first-ever energy efficiency and conservation Strategic Plan (2020-25) for Pakistan. Based on NEECA's mandate, this Strategic Plan is intended to set national-level targets and achieve energy efficiency gains. The sectoral analysis, vision, mission, and goals of NEECA are presented in the following sections.

## **2. Energy Efficiency in Pakistan**

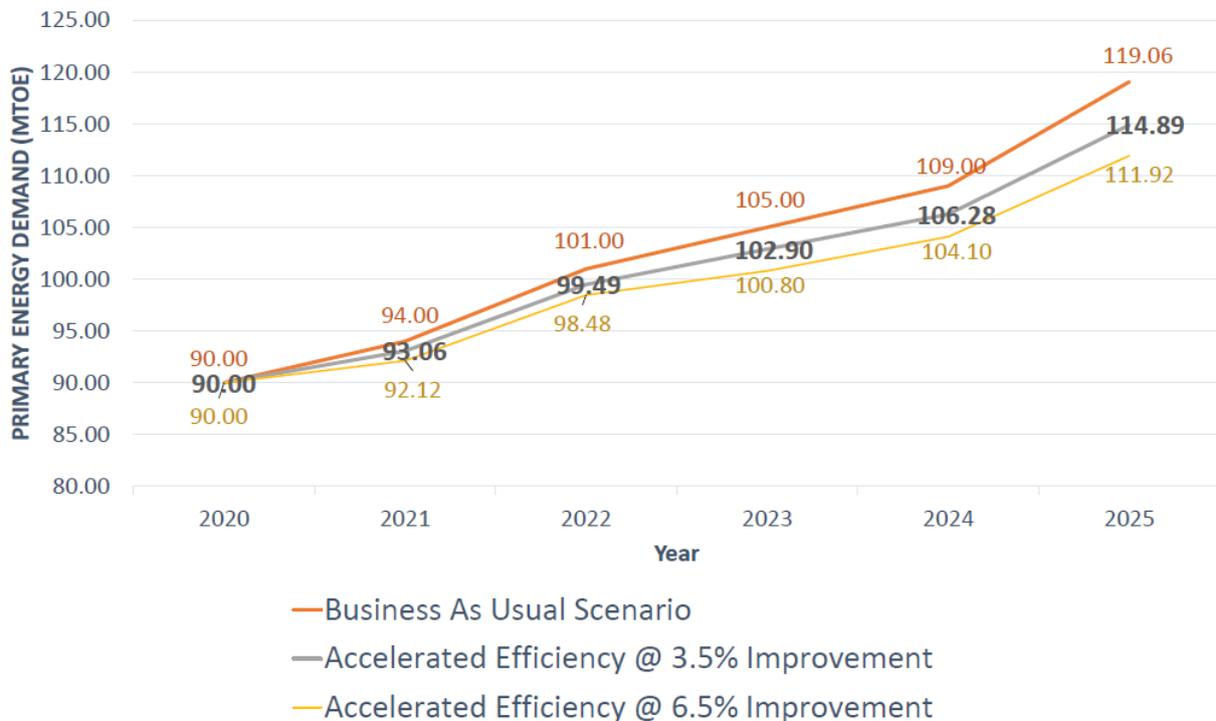
Among all sectors of the economy in Pakistan; industry, transport and the domestic sectors respectively are the most energy-intensive because of high energy losses, wastage in the supply chain, and lack of investment in replacing obsolete technologies, and overall aging infrastructure. Low energy productivity is not just putting additional pressure on the energy situation; it more specifically affects industrial competitiveness and the cost of doing business. The comparison with regional countries show Pakistan's industry uses 15% more energy than India and 25% more than the Philippines for each dollar of GDP<sup>v</sup>. This indicates a very high potential for energy efficiency improvements in the industrial sector.

International Energy Agency projection shows that Developing countries are expected to show an approximately 74% increase in global primary energy consumption by 2030. The projections, coupled with the ground realities of Pakistan, where, demand as well as, cost of energy is going up at a faster rate than the affordability, necessitates immediate action for correcting the situation through energy efficiency and conservation measures.

Pakistan's current primary energy supply stands at about 90<sup>vi</sup> MTOE in 2020. The country's overall primary energy supply will rise to 115.06 MTOE by fiscal year 2025, with a

Compound Annual Growth Rate (CAGR) of 5.8%. NEECA has taken 2020 as a base year to save 3 MTOE by 2025 from primary energy supply. The figure below shows the energy efficiency scenario for Pakistan by 2025.

**Figure 2: Energy Efficiency Improvement- BAU- Projected Scenarios**



Source: Author's Estimates Based on Energy Year Book 2018

Similarly, Pakistan's Vision 2025 and National Action Plan- SE4ALL 2030 highlight the importance of creating Demand-Side Energy Efficiency for Pakistan on a priority basis. In monetary terms, there is an investment potential of \$ 18 billion in energy efficiency by 2030<sup>vii</sup>, which can be achieved by using new and more efficient technologies along with effective demand-side management.

In terms of Paris Agreement to address global climate change, Pakistan's Nationally Determined Contributions (NDC's) also categorically point out climate change mitigation through energy-efficient appliances and improvement in the process as one of the highest priority areas to achieve CO2 emissions reduction.

### 3. Vision, Mission, and Goal

#### Vision

"To Steer Pakistan towards an Energy-Efficient and Environment-Friendly Tomorrow".

#### Mission

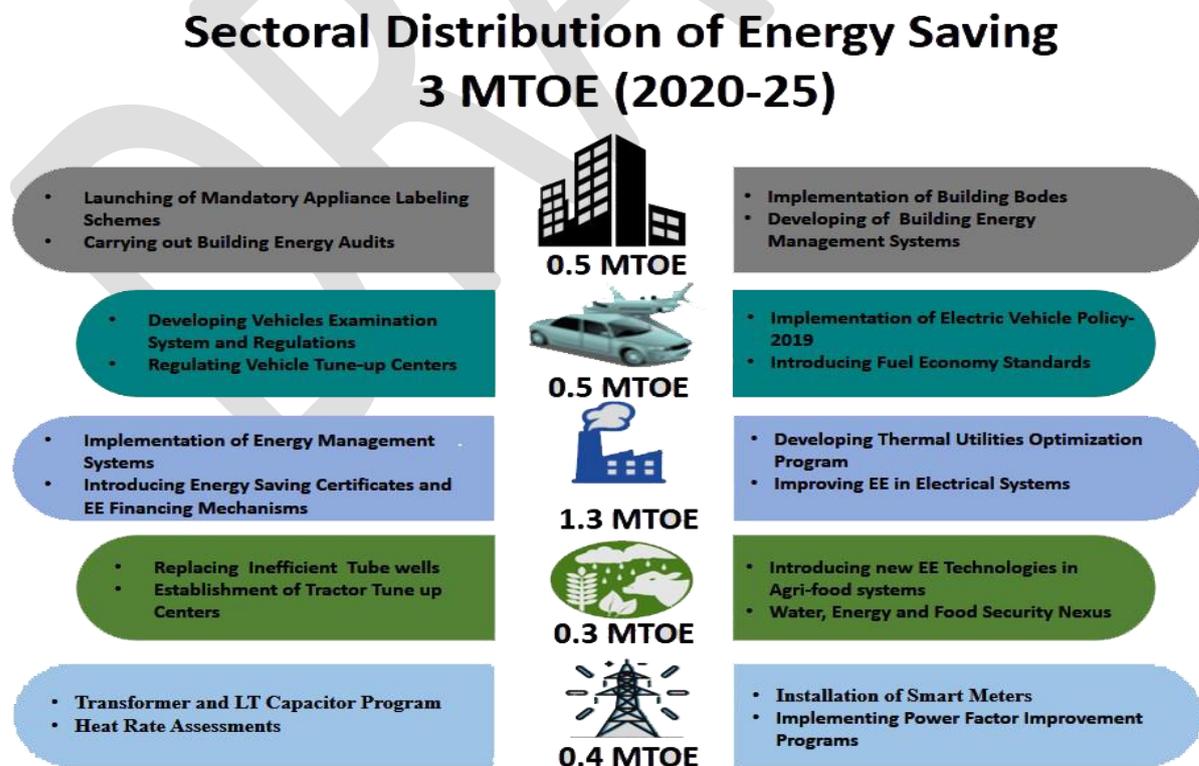
"Cultivating a new energy culture focusing on achieving sustainable development through conservation and efficient use of energy resources".

## NEECA's Goal

The goal of NEECA till 2025 is to save up-to 3 MTOE<sup>viii</sup> in the primary energy supply by introducing and implementing EE & C Programs in all major sectors of the economy. The following are sectoral objectives of the Strategic Plan (2020-25):

1. In industrial sector, a total saving up to 1.3 MTOE by improving energy efficiency in electrical systems, optimization of thermal utilities, and carrying out mandatory industrial energy audits.
2. In building sector, a total saving up to 0.5 MOTE by the implementation of building codes, development of building energy management systems, and launching of mandatory labeling schemes in all new buildings.
3. In the transport sector, a total saving up to 0.5 MTOE by developing vehicle examination system & regulation, the establishment of vehicle tune-up centers, development of fleet management mechanisms and supporting the implementation of electric vehicle policy-2019.
4. In power sector, a total saving up to 0.4 MTOE through the intervention of various EE programs which includes transformer and LT capacitor programs, carrying out heat rate assessments, and enforcement of mandatory energy audits.
5. In agriculture sector, a total saving up to 0.3 MTOE by replacing inefficient tube wells<sup>ix</sup>, establishment of agricultural tractor tune-ups centers, and by addressing water-energy-food nexus.

Figure 3: Sectoral Distribution of Energy Saving



## **4. NEECA's Strategic Sectors**

In the light of provisions made in the Act, NEECA targeted to achieve energy efficiency and conservation goals according to the following priority:

- ✓ Industrial Sector
- ✓ Building/residential Sector
- ✓ Transport Sector
- ✓ Power Sector
- ✓ Agriculture sector

### **4.1. Industrial Sector**

The industrial sector has great saving potential which can make export more competitive in global markets. Over \$4 billion investment opportunities exist only in energy efficiency improvements in the industrial sector of Pakistan with a typical payback of around 5 years<sup>x</sup>. The key areas of intervention for energy efficiency in industrial sector include; implementation of energy management systems, mandatory energy audits through certified energy auditors/Managers, energy saving certificate schemes and energy efficiency financing mechanisms. The energy efficiency financing mechanisms shall bring momentum in the energy efficiency drive and shall supplement in increasing exports by making export-oriented industries more competitive and productive.

Electric motor-driven systems (EMDS) in the industry consume almost half of the total electricity. The cost-effective potential to improve the energy efficiency of electric motor systems in the industrial sector is about 20% to 30%.

Textile Sector (accounting for 27.6% of the overall electricity consumed by industries & 40 % of the Natural Gas) and the Cement Sector (accounting for 68.9% of the total coal consumption by industries) has significant energy saving potential including the Steel sector which has the worst energy benchmarks in the region. The potential for energy saving and investments in the textile industry offers the highest efficiency gains with a total energy saving potential of 2,150 GWh by improving the efficiency of compressors, heat transfer & recovery systems, lights, motors, power factor correction panels., process control, steam system optimization and variable frequency drives (“VFDs”).

There are about 73 functional sugar mills in Pakistan and most of the sugar mills use outdated technologies and practices for sugar production. The majority of the sugar mills have a high specific energy consumption of over 1250 MJ/ton which is much higher than the average value of 935 MJ/ton for the regional sugar sector. The high value in Pakistan can be attributed to the use of antiquated sugar manufacturing systems which leads to a high steam-on-cane ratio in the order of 52%, and high electricity consumption to the tune of 24kWh/tons of cane crushed, as well as the use of inefficient low-pressure boilers which typically have efficiencies in the range of 65-75%. There are almost 22 industrial sectors in which Boilers and steam distribution systems are the main energy guzzlers. Sugar has a saving potential of 138,350 MWh per year.

The leather industrial sector has saving potential of 17,000 MWh per year respectively from heat transfer and recovery systems, motors, general process, and steam system optimization.

Informal energy-intensive industries energy optimization programs would be low hanging fruits to focus on e.g. Introducing Zig-Zag technology in Brick Kilns , Installation of APFC units in cottage industries, etc.

**Table 1: Energy and Cost Saving Potential in the Industrial Sector of Pakistan**

Industry	National Sector-Wide Energy Savings (%)	Energy Saving Estimates per year (MWh)	Associated Cost Saving per year (Million PKR)
Textile Spinning	3.50%	247,990	2,075
Textile Processing	18.40%	2,155,043	4,262
Sugar	3.60%	1,149,901	1,698
Leather	6.90%	9,776	14
Pulp & Paper	6.30%	167,176	142
<b>Total</b>		<b>3,729,886</b>	<b>8,191</b>

Source: Planning Commission of Pakistan (2019). “SE4ALL- National Action Plan”.

## 4.2. Building Sector

Pakistan is the most rapidly urbanizing country in Asia. By 2025, over 40 million people are expected to live in urban centers and towns in Pakistan<sup>xi</sup>. It represents a massive and fast transition from rural to urban settlements. Around 800 registered and unregistered housing societies exist in the federal capital territory only<sup>xii</sup>. Most of these societies are in the development phase. The pattern of traditional construction is shifting due to new construction technologies, so the opportunity exists for energy-efficient appliances and effective Energy Efficient Building Codes.

NEECA will be working on implementation of building codes and will ensure code compliance for energy efficiency in the building sector by the 2021. The building code provisions put forth the energy efficiency standards for building envelopes, heating, ventilation and air-conditioning (HVAC) equipment and lighting. Building Code of Pakistan existed but it does not address these energy efficiency issues in the building. NEECA in collaboration with Pakistan Engineering Council (PEC) – the statutory body for the development and implementation of building codes, has prepared Pakistan’s Building Code (Energy Provisions-2011), as an addendum to the Building Codes. Currently, the NEECA and PEC are revising the Building Codes which will be launched by the end of 2020 to achieve the 0.5 MTOE energy saving target. NEECA designated agency Punjab Energy Efficiency and Conservation Agency (PEECA) has also modified the Building code as per their province climatic conditions, which is also under review and will be implemented in Punjab.

NEECA has started various initiatives in the building sector such as the launching of Minimum Energy Performance Standards (MEPS) for lighting (the lighting alone consumes 15% of the total electricity generated). The MEPS and Energy Labels for fans have been launched. NEECA is working on the MEPS of air conditioners and refrigerators in coordination with Japan International Development Co-operation (JICA) and they will be launched by June 2020. These MEPs are voluntary and not mandatory at this stage. Effective regulation is needed to make them mandatory for which Energy Efficiency Tribunals will be set-up as the first step in this direction.

NEECA is in the consultation phase with the Naya Pakistan Housing Authority (NPHA) to ensure the construction of energy-efficient buildings and implementation of NEECA’s mandatory regime for home appliances in all newly constructed houses.

The adoption of NEECA Labeled energy-efficient appliances has been growing at an impressive rate. These energy efficient appliances are gradually penetrating the local market due to their cost competitiveness as their upfront costs have come down in the international market. The price point for these appliances and increased awareness for the energy efficiency gains are the two major forces, which will enable the market for favorable conditions for energy-efficient appliances.

#### **4.3. Transport Sector**

The transport sector accounted for 33.93% of the total final energy consumption in 2019<sup>xiii</sup>. With a contribution of over 13% to Pakistan's GDP, oil (liquid fuels) dominates in the transport energy consumption mix, while the share of natural gas is about 10%.

There is a pressing requirement to adopt a labeling program and establish a target for vehicle fuel efficiency standards and emissions. The vehicle fuel efficiency standards are essential to phase out inefficient and polluting vehicles. The fuel economy standards such as Corporate Average Fuel Economy (CAFE) as practiced in developed world will be formulated and adopted for the transport sector of Pakistan. Following that, establishment of model motor vehicle examination (MVE) Centers with the inclusion of Energy Efficiency parameters would also be focused.

Various other interventions would be taken in cargo and mass transportation modes such as railways, buses, etc. NEECA will be instrumental along with other stakeholders in the implementation of the recent Electric Vehicle (EV) Policy in Pakistan. NEECA has been mandated to establish center of research and development for electric vehicles in Pakistan by EV policy.

#### **4.4. Power Sector**

Transmission and distribution losses of Power and Natural Gas (Unaccounted for Gas Losses) in Pakistan are one of the highest in the region. The average power losses in Pakistan are as high as 20%. But for some DISCOs, these losses reach over 38%<sup>xiv</sup>. Similarly, the Unaccounted-for-Gas (UFG) Losses are around 11.4% for the gas sector<sup>xv</sup>.

There is huge potential to save energy by deploying smart metering technology for power consumers to avoid distribution losses, by expanding the electricity network to withstand pressures from demand & potential breakdowns, by upgrading and expanding the grid to minimize line losses, by operationalizing small and digital feeders for load management and replacement of old transformers with small, smart and digital transformers.

Targeted interventions like, Small Captive Power Units, heat rate improvement program, and demand-side load optimization programs for overloaded transformers/feeders would be developed and implemented with DISCOs. Similarly, a dedicated program in collaboration with Sui Northern Gas Pipeline Limited (SNGPL) and Sui Southern Gas Pipeline Limited (SSGPL) will be developed and operated.

#### **4.5. Agriculture Sector**

Agriculture sector only accounts for 2% of total final energy consumption in Pakistan, Water pumps for irrigation and tractors for soil preparation are major energy consumers in the agriculture sector. The process of irrigation through diesel and electric powered pumps is extremely inefficient in Pakistan. Besides, the use of commercial energy is also steadily

increasing with the growing number of mechanized practices to improve agricultural productivity.

Over 90% of the energy consumed in the agriculture sector is in the form of electricity, while 10% is supplied by oil in the form of High-Speed Diesel for irrigation pumps and machinery. On the contrary, the ratio of electricity versus diesel pumps installed in the country is 20:80. Electric tube wells offer high-cost advantages as running cost is much lower than diesel pumps. However, electricity supply in rural areas for irrigation purposes is highly irregular which negatively affects the farmers and reduces yields. MEPS for motors will be launched to ensure energy efficiency in the irrigation sector coupled with process optimization techniques to increase the yields. Training programs for farmers/tractor operators are being finalized to be conducted across Pakistan with the support of relevant stakeholders.

With the growing population, NEECA aims to improve energy efficiency in agri-food systems and to integrate food and energy products under the umbrella of Water-Energy-Food Nexus.

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## 5. NEECA's Objectives and Key Performance Indicators

#	Program	Major Activities	Responsibilities	Funds required and potential sources	Key Performance Indicators	Remarks
<b>Sectoral Objective 1: To save up to 1.3 MTOE by 2025 by the implementation of minimum energy performance standards (MEPs) in the industrial sector</b>						
1	Installation of meters control in the textile industry (350) to reduce leakages of compressed air	<ul style="list-style-type: none"> <li>✓ Facilitating preliminary energy assessment of industrial units to set benchmarks for energy efficiency</li> <li>✓ Establishing coordination mechanisms with industrial associations and other stakeholders</li> <li>✓ Implementation of rules and regulation related to energy audits and certification of standardized equipment</li> <li>✓ Developing case studies of various industrial units to replicate the energy efficiency practices</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Chamber of Commerce &amp; Industries</li> <li>✓ Industrial Association</li> <li>✓ Banks and SMEs</li> <li>✓ ESCOs</li> </ul>	<p><b>\$1.1 Billion</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Micro-financing</li> <li>✓ RLF</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ By 2021, More than 100 textile industries have installed meters control system for Energy Efficiency Targets</li> <li>✓ Energy audit reports on set standards available for 200 textile industrial units by 2023</li> <li>✓ Energy savings of up to .2 MTOE in the textile industry by 2025</li> </ul>	<ul style="list-style-type: none"> <li>✓ The Indirect interventions like acknowledgment letters, award distribution, awareness, oversight by NEECA and Provincial Designated Agencies are also expected to contribute to achieving energy efficiency targets in the industrial sector at the National level.</li> <li>✓ EE &amp; C Tribunal will be</li> </ul>
2	Installation of Heat Recovery Systems (HRS) from exhaust flue gases and High-Pressure Cogeneration (HPC) in 100 Sugar mills	<ul style="list-style-type: none"> <li>✓ Facilitating preliminary energy assessment of industrial units to set benchmarks for energy efficiency</li> <li>✓ Establishing coordination mechanisms with industrial associations and other stakeholders</li> <li>✓ Implementation of rules and regulation related to energy audits and certification of standardized equipment</li> <li>✓ Facilitating the financing mechanisms for installation Heat Recovery Systems for energy efficiency gains</li> </ul>	<ul style="list-style-type: none"> <li>✓ Ministry of Energy</li> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Chamber of Commerce &amp; Industries</li> <li>✓ Industrial Association</li> <li>✓ Banks and SMEs</li> <li>✓ ESCOs</li> </ul>	<p><b>\$30 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Revolving Loan Fund</li> <li>✓ State Bank of Pakistan – Green Banking Guidelines</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ Energy Audits of 50% Sugar mills are available by 2021</li> <li>✓ Technology transfer Industries by 2022</li> <li>✓ Energy savings of up to .1 MTOE in the Sugar mills by 2025</li> </ul>	

3	Installation of Variable-frequency Drive (VFD) or inverters on pumps and motors to reduce energy losses in 500 industrial units	<ul style="list-style-type: none"> <li>✓ Facilitating preliminary energy assessment of industrial units to set benchmarks for energy efficiency</li> <li>✓ Establishing coordination mechanisms with industrial associations and other stakeholders</li> <li>✓ Implementation of rules and regulation related to standards of motors</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Chamber of Commerce &amp; Industries</li> <li>✓ Industrial Association</li> <li>✓ Banks and SMEs</li> <li>✓ ESCOs</li> </ul>	<p><b>\$70 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Revolving Loan Fund</li> <li>✓ State Bank of Pakistan – Green Banking Guidelines</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ Capacity Building mechanisms for improvement of energy efficiency operations executed by 2021.</li> <li>✓ Variable-frequency Drive (VFD) or inverters on pumps and motors installed in 500 industrial units by 2025 to save .3 MTOE</li> </ul>	established to ensure implementation of mandatory labeling and certification regime for energy efficiency targets.
4	Thermal insulation of steam lines and valves in 500 industrial units in Pakistan	<ul style="list-style-type: none"> <li>✓ Steam leakage survey/ assessment for identification of compress air leakage points.</li> <li>✓ Establishing coordination mechanisms with industrial associations and other stakeholders</li> <li>✓ Implementation of rules and regulation related to EE standards</li> </ul>	<ul style="list-style-type: none"> <li>✓ Ministry of Energy</li> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Chamber of Commerce &amp; Industries</li> <li>✓ Industrial Association</li> <li>✓ Banks and SMEs</li> <li>✓ ESCOs</li> </ul>	<p><b>\$300 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Revolving Loan Fund</li> <li>✓ State Bank of Pakistan – Green Banking Guidelines</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ Coordination Mechanism established with Industrial Associations for Energy Efficiency Targets by 2021.</li> <li>✓ Industrial units have installed thermal insulation of steam lines and valves to save .3 MTOE by 2025</li> </ul>	
5	To improve the overall energy efficiency of the	<ul style="list-style-type: none"> <li>✓ Preliminary Energy Assessment of the industrial unit to identify the energy-saving potential</li> <li>✓ Establishing coordination mechanisms with industrial</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> </ul>	<p><b>\$500 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> </ul>	<ul style="list-style-type: none"> <li>✓ Coordination Mechanism established with Industrial Associations for Energy Efficiency Targets by 2021</li> <li>✓ Cement industry has improved</li> </ul>	

	Cementing process in 22 Cement Factories	<ul style="list-style-type: none"> <li>associations and other stakeholders</li> <li>✓ Implementation of rules and regulation related to EE standards</li> </ul>	<ul style="list-style-type: none"> <li>✓ Chamber of Commerce &amp; Industries</li> <li>✓ Industrial Associations</li> <li>✓ Banks and SMEs</li> <li>✓ ESCOs</li> </ul>	<ul style="list-style-type: none"> <li>✓ Microfinancing</li> <li>✓ RLF</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	energy efficiency processes to save .18 MTOE by 2025	
6	Tuning up boiler burners and adjusting air-to-fuel ratios in Pulp and Paper Units (100)	<ul style="list-style-type: none"> <li>✓ Facilitating preliminary energy assessment of industrial units to set bench- marks for energy efficiency</li> <li>✓ Establishing coordination mechanisms with boiler associations and other stakeholders</li> <li>✓ Implementation of rules and regulation related to energy audits and certification of standardized</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Chamber of Commerce &amp; Industries</li> <li>✓ Brick-Kiln Association</li> <li>✓ Banks and SMEs</li> <li>✓ ESCOs</li> <li>✓</li> </ul>	<p><b>\$70 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Microfinancing</li> <li>✓ RLF</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ Coordination Mechanism established with Industrial Associations for Energy Efficiency Targets by 2021</li> <li>✓ Pulp and Paper mills to reduce their gas demand by 7% and overall energy consumption by 5.6% percent just by 2022 to save .12 MTOE</li> </ul>	
7	Launching Energy efficiency steam reforming and Haber-Bosch synthesis in the Fertilizer industry	<ul style="list-style-type: none"> <li>✓ Facilitating preliminary energy assessment of industrial units to set bench- marks for energy efficiency</li> <li>✓ Establishing coordination mechanisms with fertilizers associations and other stakeholders</li> <li>✓ Implementation of rules and regulation related to energy audits and certification of standardized</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Chamber of Commerce &amp; Industries</li> <li>✓ Industrial Association</li> <li>✓ Banks and SMEs</li> <li>✓ ESCOs</li> </ul>	<p><b>\$600 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Microfinancing</li> <li>✓ RLF</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ Coordination Mechanism established with Industrial Associations for Energy Efficiency Targets by 2021</li> <li>✓ Energy saved up to .1 MTOE by 2025</li> </ul>	
8	Zig-Zag Technology	<ul style="list-style-type: none"> <li>✓ Consultative workshop on zig-zag Technology with stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ Ministry of</li> </ul>	<p><b>\$600 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> </ul>	<ul style="list-style-type: none"> <li>✓ Coordination Mechanism established with Industrial</li> </ul>	

	for 12000-18000 Brick Kilns.	<ul style="list-style-type: none"> <li>✓ Conduct of Training Workshops for brick kiln labors and workers at targeted brick kiln locations</li> <li>✓ Development of Project Proposal</li> <li>✓ Execution of Project for installation of VFD</li> </ul>	<ul style="list-style-type: none"> <li>Climate Change</li> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Chamber of Commerce &amp; Industries</li> <li>✓ Brick-Kiln Association</li> <li>✓ Banks and SMEs</li> <li>✓ ESCOs</li> </ul>	<ul style="list-style-type: none"> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ microfinancing</li> <li>✓ RLF</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>Associations for Energy Efficiency Targets by 2021</li> <li>✓ 30% of the energy efficiency gains from total energy used by brick kiln industry by 2025</li> </ul>	
<p><b>Sectoral Objective 2: To save up to 0.5 MOTE in the building sector by the implementation of building codes and mandatory labeling schemes in all new construction in domestic, commercial and public sector</b></p>						
1.	Implementation of Building Energy Codes in Naya Pakistan Housing Scheme (NPHS) (5 Million House units)	<ul style="list-style-type: none"> <li>✓ Establishing coordination and developing collaboration mechanisms with Naya Pakistan Housing Authority</li> <li>✓ Channelizing finances for energy-efficient home appliances under State Bank Green guidelines/ on-bill financing</li> <li>✓ Ensure implementation of Energy Efficient Building Codes in Construction of Houses as per provision of the NEECA Act</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Planning and Development Departments</li> <li>✓ NPH</li> <li>✓ Pakistan Engineering Council</li> <li>✓ State Bank</li> <li>✓ Manufacturers</li> <li>✓ Banks</li> </ul>	<p><b>\$500 Million</b></p> <ul style="list-style-type: none"> <li>✓ RLF</li> <li>✓ Commercial Banks</li> <li>✓ Microfinance Banks</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ By March 2020, MoU with Naya Pakistan Housing Authority on implementation of Energy Efficiency Building Codes.</li> <li>✓ By June 2020, the Coordination Mechanism for the financing of standardized home appliances established</li> <li>✓ Energy saved up to .5 MTOE by 2025</li> </ul>	<ul style="list-style-type: none"> <li>✓ Naya Pakistan Housing Scheme is a long-term project. If implemented successfully, it would help to save about .2 MTOE only in the residential sector by 2025</li> <li>✓ The major component of the building sector is residential/ household. As the home appliances</li> </ul>
2	Provision of clean and improved cook-stoves	<ul style="list-style-type: none"> <li>✓ Development and implementation of energy standards for mandatory labeling regime for Cook-stoves and monitoring mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ Provincial Designated</li> </ul>	<p><b>\$657.54 Million</b></p> <ul style="list-style-type: none"> <li>✓ Commercial Banks</li> <li>✓ Microfinance Banks</li> </ul>	<ul style="list-style-type: none"> <li>✓ By June 2020, Coordination mechanism established with the Ministry of Climate Change and provincial departments for</li> </ul>	

		<ul style="list-style-type: none"> <li>✓ Training and Capacity building of NEECA and Provincial Agencies</li> <li>✓ Certification and Registration of cookstove manufacturers associations</li> <li>✓ Certification and facilitation for the establishment of accredited testing laboratories</li> <li>✓ Development of web-portal for feedback to ensure compliance with set standards</li> <li>✓ Establishment of stars (labeling surcharge) rating system for cook-stoves</li> </ul>	<ul style="list-style-type: none"> <li>Agencies</li> <li>✓ State Bank</li> <li>✓ MoCC</li> <li>✓ Manufacturer associations</li> <li>✓ Donor Agencies like JICA</li> <li>✓ Banks</li> <li>✓ DISCOs</li> <li>✓ SNGPL &amp; SSGPL</li> </ul>	<p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<p>distribution of EE Cooking Stoves.</p> <ul style="list-style-type: none"> <li>✓ Energy saved up to .08 MTOE by 2025</li> </ul>	<p>consume a major share of electricity and gas, hence a realization for energy efficiency gains is necessary at the consumer level. As per the NEECA mandate, a comprehensive outreach and awareness plan about MEPs for Home appliances' will be implemented at various levels for energy efficiency gains.</p> <ul style="list-style-type: none"> <li>✓ Demonstration and pilot projects</li> <li>✓ Training Manual for energy audits for all home appliances</li> </ul>
3.	Mandatory labeling scheme for electric Fans at the domestic level	<ul style="list-style-type: none"> <li>✓ Development of energy standards for mandatory labeling regime</li> <li>✓ Training and Capacity building of NEECA and Provincial Agencies</li> <li>✓ Establishment of Monitoring mechanisms</li> <li>✓ Registration of manufacturers Fans associations</li> <li>✓ Development of web-portal for feedback to ensure compliance with set standards</li> <li>✓ Establishment of stars (labeling surcharge) rating system for domestic appliances</li> </ul>	<ul style="list-style-type: none"> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Ministry of Energy-Power Division</li> <li>✓ Ministry of Science &amp; Technology</li> <li>✓ MoPD &amp; R</li> <li>✓ Ministry of Finance</li> <li>✓ JICA</li> <li>✓ PSQCA</li> <li>✓ PCSIR</li> <li>✓ Manufacturing Associations</li> </ul>	<p><b>\$25 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed<sup>xvi</sup>)</li> </ul> <p><b>Donor Funded Projects:</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ By March 2020, Development of NEECA Registry Portal for Energy Efficient Fans</li> <li>✓ By June 2020, Launch of Mandatory Fans Labeling</li> <li>✓ Energy saved up to .5 MTOE by 2025</li> </ul>	
4.	Mandatory labeling scheme for	<ul style="list-style-type: none"> <li>✓ Consultation with stakeholders at the national and provincial level</li> <li>✓ Development of energy standards</li> </ul>	<ul style="list-style-type: none"> <li>✓ NEECA</li> <li>✓ Provincial Designated</li> </ul>	<p><b>\$30 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> </ul>	<ul style="list-style-type: none"> <li>✓ Launch of MEPs for AC and Refrigerators in March 2020</li> <li>✓ Launch of Mandatory Labeling</li> </ul>	

	Air-conditioners and Refrigerators	<ul style="list-style-type: none"> <li>for mandatory labeling regime and establishment of monitoring mechanisms</li> <li>✓ Registration of manufacturers associations and accredited testing laboratories</li> <li>✓ Trainings and Capacity building of NEECA and Provincial Agencies</li> <li>✓ Development of web-portal for feedback to ensure compliance with set standards</li> <li>✓ Establishment of stars (labeling surcharge) rating system for Air-conditioners, and Refrigerators</li> </ul>	<ul style="list-style-type: none"> <li>Agencies</li> <li>✓ Ministry of Energy-Power Division</li> <li>✓ Ministry of Science and Technology</li> <li>✓ MoPD &amp;R</li> <li>✓ MoF</li> <li>✓ PSQCA</li> <li>✓ Manufacturing Associations</li> <li>✓ MoF</li> <li>✓ MOPD&amp;R</li> <li>✓ JICA</li> </ul>	<ul style="list-style-type: none"> <li>✓ Energy efficiency surcharge (proposed)</li> </ul> <p><b>Donor Funded Projects:</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>for AC and Refrigerators in March 2020</li> <li>✓ Energy saved up to .12 MTOE by 2025</li> </ul>	
5.	Mandatory labeling scheme for lights	<ul style="list-style-type: none"> <li>✓ Consultation with stakeholders at the national and provincial level</li> <li>✓ Development of energy standards for mandatory labeling regime and monitoring mechanisms</li> <li>✓ Trainings and Capacity building of NEECA and Provincial Agencies</li> <li>✓ Registration of Lights Manufacturers Associations</li> <li>✓ Facilitating the establishment of accredited testing laboratories</li> <li>✓ Development of web-portal for feedback to ensure compliance with set standards</li> <li>✓ Establishment of stars (labeling surcharge) rating system for lighting</li> </ul>	<ul style="list-style-type: none"> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ MoE- Power Division</li> <li>✓ Ministry of Science and Technology</li> <li>✓ MoPD &amp;R</li> <li>✓ MoF</li> <li>✓ Provincial Development Authorities</li> <li>✓ CDA</li> <li>✓ Registered housing colonies</li> <li>✓ JICA</li> </ul>	<p><b>\$50 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> </ul> <p><b>Donor Funded Projects:</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ Launch of MEPS for LEDs in January 2020.</li> <li>✓ Launch of Voluntarily LEDs/ lights Labeling in February 2020</li> <li>✓ Development of NEECA Registry Portal for Energy Efficient lights</li> <li>✓ Launch of Mandatory LEDs/ lights Labeling in February 2020</li> <li>✓ Energy saved up to .1 MTOE by 2025</li> </ul>	

			<ul style="list-style-type: none"> <li>✓ PSQCA</li> <li>✓ PCSIR</li> <li>✓ PWD</li> </ul>			
6.	Mandatory labeling scheme for Electric Motors	<ul style="list-style-type: none"> <li>✓ Consultation at the national and provincial level and establishing a coordination mechanism with stakeholders</li> <li>✓ Trainings and Capacity building of NEECA and Provincial Agencies</li> <li>✓ Development of energy standards for mandatory labeling regime and facilitating accredited testing laboratories</li> <li>✓ Development of web-portal for feedback to ensure compliance with set standards</li> <li>✓ Establishment of stars (labeling surcharge) rating system for electric motors</li> </ul>	<ul style="list-style-type: none"> <li>✓ NEECA</li> <li>✓ Provincial Designated Agencies</li> <li>✓ Ministry of Energy-Power Division</li> <li>✓ Ministry of Science and Technology</li> <li>✓ Provincial Development Authorities</li> <li>✓ CDA</li> <li>✓ Registered housing colonies</li> <li>✓ UNEP</li> <li>✓ PSQCA</li> <li>✓ PCSIR</li> </ul>	<p><b>\$50 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> </ul> <p><b>Donor Funded Projects:</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ Launch of MEPS for Motors in January 2020.</li> <li>✓ Launch of Voluntarily Motors Labeling in February 2020</li> <li>✓ Development of NEECA Registry Portal for Energy Efficient Electric Motors</li> <li>✓ Launch of Mandatory Electric Motors Labeling in February 2020</li> <li>✓ Energy saved up to .1 MTOE by 2025</li> </ul>	
7.	On-bill financing mechanisms for the provision of energy-efficient home appliances	<ul style="list-style-type: none"> <li>✓ Consultations with stakeholders for developing mechanisms for the provision of energy-efficient appliances i.e. DISCOs, Banks</li> <li>✓ Drafting procedures for bulk procurement and pricing mechanism</li> <li>✓ Establishing financial channels (Banks, Investors, manufacturer)</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ State Bank</li> <li>✓ DISCOs</li> <li>✓ SNGPL &amp; SSGPL</li> <li>✓ Manufacturer</li> <li>✓ Donor Agencies</li> <li>✓ Manufacturers</li> </ul>	<p><b>\$ 200 Million</b></p> <ul style="list-style-type: none"> <li>✓ Commercial Banks</li> <li>✓ Microfinance Banks</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ By January 2021, on-bill financing channelized in IESCO</li> <li>✓ By January 2022, on-bill financing channelized in LESCO, FESCO, PESCO, MEPCO</li> <li>✓ Energy saved up to .5 MTOE by 2025</li> </ul>	

8.	Establishment of a revolving loan fund to channelize finances for energy-efficient products	<ul style="list-style-type: none"> <li>✓ Liaison with Micro financing Banks and other Commercial Banks</li> <li>✓ Consultation with Donor Agencies i.e. USAID</li> <li>✓ Establishing financial channels (Banks, Investors, manufacturer)</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ State Bank</li> <li>✓ Manufacturer</li> <li>✓ Donor Agencies</li> <li>✓ Banks</li> <li>✓ DISCOs</li> <li>✓ SNGPL &amp; SSGPL</li> </ul>	<p><b>\$ 200 Million</b></p> <ul style="list-style-type: none"> <li>✓ Commercial Banks</li> <li>✓ Microfinance Banks</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ By January 2021, small grants for SMEs for energy-efficient appliances production</li> <li>✓ Energy saved up to .5 MTOE by 2025</li> </ul>	✓
<b>Sectoral Objective 3: To save up-to 0.5 MTOE energy by 2025 in the transport sector</b>						
1	Establishment of Automotive Engine Diagnostic and & Tune-up Centers and Inspection mechanisms for quality insurance	<ul style="list-style-type: none"> <li>✓ Consultative Workshop and Training Program with stakeholders for automatic mechanics</li> <li>✓ Development and up-gradation of manuals on the establishment of tune-up centers and up-gradation of training manuals</li> <li>✓ Facilitating the establishments of tune-up centers at the national and provincial level</li> <li>✓ Formulation of revolving loan fund facility for procurement of diagnostic systems.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ NHA</li> <li>✓ NH&amp;MP</li> <li>✓ MVE</li> <li>✓ TEVTA</li> <li>✓ Provincial Transport Authorities</li> </ul>	<p><b>\$300 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Microfinancing</li> <li>✓ RLF</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ ECF/revolving funds are operational to finance Automotive Engine Diagnostic and &amp; Tune-up Centers</li> <li>✓ NHA/Provincial Transport Authorities coordination established</li> <li>✓ Minimum Energy Performance standards establish for vehicle emissions</li> <li>✓ Coordination with Donor agencies developed.</li> <li>✓ Energy saved up to .1 MTOE by 2025</li> </ul>	✓ The government of Pakistan has formulated the National Electric Vehicle Policy, 2019. NEECA will facilitate and liaison with all relevant departments, ministries, and stakeholders for energy efficiency targets in transports sectors
2	Establishment of Fleet Management system and Inspection mechanisms for quality insurance	<ul style="list-style-type: none"> <li>✓ Consultative workshop with stakeholders</li> <li>✓ Development and up-gradation of manuals on fleet management systems and up-gradation of training manuals</li> <li>✓ Facilitating the development of an inspection mechanism based on set standards/ energy audits.</li> <li>✓ Revolving loan fund facility for</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ NHA</li> <li>✓ NH&amp;MP</li> <li>✓ MVE</li> <li>✓ Provincial Transport Authorities</li> </ul>	<p><b>\$300 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Microfinancing</li> <li>✓ RLF</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank,</p>	<ul style="list-style-type: none"> <li>✓ NHA/Provincial Transport Authorities coordination established</li> <li>✓ Minimum Energy Performance standards establish for vehicle emissions</li> <li>✓ Energy saved up to .2 MTOE by 2025</li> </ul>	

		improvement of fleet management and inspection mechanisms.		ADB, JICA, KFW	
3	Rules and regulations for energy efficiency standards for electric vehicles instruments	<ul style="list-style-type: none"> <li>✓ Consultation with stakeholders at a various level including manufacturers, vehicle financing banks</li> <li>✓ Formulation and implementation of MEPS for electric vehicle instruments</li> <li>✓ Consultation with stakeholders for the implementation of MEPS.</li> <li>✓ Facilitating the establishment of electric charging stations and establishment of inspection Laboratories</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ PSQCA</li> <li>✓ PNAC</li> <li>✓ NHA</li> <li>✓ NH&amp;MP</li> <li>✓ MVE</li> <li>✓ Provincial Transport Authorities</li> </ul>	<p><b>\$300 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Microfinancing</li> <li>✓ RLF</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ NHA/Provincial Transport Authorities coordination established</li> <li>✓ Minimum Energy Performance standards establish for vehicle emissions</li> <li>✓ Energy saved up to .2 MTOE by 2025</li> </ul>
<b>Sectoral Objective 4: To save up to 0.4 MTOE through the intervention of various EE Programs in the Power Sector</b>					
1.	Deployment of smart metering technology	<ul style="list-style-type: none"> <li>✓ Consultation with DISCOs</li> <li>✓ Consultation workshops at the national and provincial level</li> <li>✓ Consultation with Donor Agencies</li> <li>✓ Trainings and Capacity building of NEECA and Provincial Agencies</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ MoPD &amp;R</li> <li>✓ MoF</li> <li>✓ Manufacturers</li> <li>✓ Donor Agencies</li> <li>✓ DISCOs</li> </ul>	<p><b>\$ 500 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ By September 2020, Coordination mechanism established with DISCOs and K-Electric for installation of Smart Meters.</li> <li>✓ Energy saved up to .1 MTOE by 2025</li> </ul>
2.	Upgrading and expanding the Grid to minimize line losses in the electricity sector	<ul style="list-style-type: none"> <li>✓ Coordinate in the consultation process with NTDC, Planning Commission and Ministry of Finance for energy efficiency gains</li> <li>✓ Consultation with Donor Agencies</li> <li>✓ Trainings and Capacity building of NEECA and Provincial Agencies to facilitate the up-gradation of National Grid to achieve national-</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ MoPD &amp;R</li> <li>✓ MoF</li> <li>✓ Donor Agencies</li> <li>✓ Banks</li> <li>✓ DISCOs</li> </ul>	<p><b>\$ 700 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ By January 2021, Coordination mechanism established with NTDC for installation up-gradation of electricity grids.</li> <li>✓ Energy saved up to .1 MTOE by 2025</li> </ul>

		level targets				
3.	To operationalize small and digital feeders for load management	<ul style="list-style-type: none"> <li>✓ Consultation with DISCOs</li> <li>✓ Consultation workshops at the national and provincial level</li> <li>✓ Consultation with Donor Agencies</li> <li>✓ Trainings and Capacity building of NEECA and Provincial Agencies</li> <li>✓ Demonstration and pilot projects</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ MoPD &amp;R</li> <li>✓ MoF</li> <li>✓ Donor Agencies</li> <li>✓ DISCOs</li> </ul>	<p><b>\$ 700 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ By January 2021, Coordination mechanism established with DISCOs and K-Electric for the identification or overloaded feeder and program development for Power Factor improvement.</li> <li>✓ Energy saved up to .1 MTOE by 2025</li> </ul>	
4.	Replacement of old transformers with small smart and digital transformers	<ul style="list-style-type: none"> <li>✓ Consultation with DISCOs, K-electric and NTDC</li> <li>✓ Consultation with Donor Agencies</li> <li>✓ Trainings and Capacity building of NEECA and Provincial Agencies</li> <li>✓ Demonstration and pilot projects</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ MoPD &amp;R</li> <li>✓ MoF</li> <li>✓ Donor Agencies</li> <li>✓ DISCOs</li> <li>✓ NTDC</li> </ul>	<p><b>\$5 Billion</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ By June 2020, Coordination mechanism established with DISCOs and K-Electric for Replacement of Copper wire transformers with smart/efficient transformers.</li> <li>✓ Energy saved up to .1 MTOE by 2025</li> </ul>	
<b>Sectoral Objective 5: To save up to 0.3 MTOE in the agriculture sector</b>						
1.	Replace maximum possible tube wells pumps (out of 180,000) with more	<ul style="list-style-type: none"> <li>✓ Consultation at the national and provincial level and establishing a coordination mechanism with stakeholders</li> <li>✓ Trainings and Capacity building of NEECA and Provincial Agencies</li> <li>✓ Development of energy standards</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Division</li> <li>✓ NEECA</li> <li>✓ NESPAK</li> <li>✓ ZTBL</li> <li>✓ Provincial Agriculture Departments</li> </ul>	<ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Microfinancing</li> <li>✓ RLF</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank,</p>	<ul style="list-style-type: none"> <li>✓ Launch of MEPS for Tube-wells in January 2020.</li> <li>✓ Launch of Voluntarily Tube-wells Labeling in February 2020</li> <li>✓ Development of NEECA Registry Portal for Energy</li> </ul>	

	efficient pumps	<p>for mandatory labeling regime and facilitating accredited testing laboratories</p> <ul style="list-style-type: none"> <li>✓ Development of web-portal for feedback to ensure compliance with set standards</li> </ul>	<ul style="list-style-type: none"> <li>✓ Provincial Designated Agencies</li> </ul>	ADB, JICA, KFW	<p>Efficient Electric Tube-wells</p> <ul style="list-style-type: none"> <li>✓ Launch of Mandatory Tube-wells Labeling in February 2020</li> <li>✓ Energy saved up to .2 MTOE by 2025</li> </ul>	
2.	Tune-up center for 20k Tractors having power greater than 66HP	<ul style="list-style-type: none"> <li>✓ Consultation with stakeholders at a various level including manufacturers, vehicle financing banks</li> <li>✓ Formulation and implementation of MEPS for electric vehicle instruments</li> <li>✓ Consultation with stakeholders for the implementation of MEPS. Development of manuals for the establishment of tune-up centers specifically for tractors</li> </ul>	<ul style="list-style-type: none"> <li>✓ NEECA</li> <li>✓ Provincial Agriculture Department</li> </ul>	<p><b>\$700 Million</b></p> <ul style="list-style-type: none"> <li>✓ PSDP</li> <li>✓ Energy efficiency surcharge (proposed)</li> <li>✓ Micro-financing</li> <li>✓ RLF</li> </ul> <p><b>Donor Assistance</b> USAID, World Bank, ADB, JICA, KFW</p>	<ul style="list-style-type: none"> <li>✓ Automotive Engine Diagnostic and &amp; Tune-up Centers</li> <li>✓ Minimum Energy Performance standards establish for vehicle emissions</li> <li>✓ Energy saved up to .1 MTOE by 2025</li> </ul>	

## Endnotes

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- <sup>i</sup> Energy savings potential assessment is based on available data and information from Pakistan Energy year Book 2018, Pakistan's SE4ALL-National Action Plan, World Bank Energy Efficiency Roadmap for Pakistan and various other documents. The Inputs of consultative meetings with selected stakeholders are also included.
- <sup>ii</sup> (a) Report and Recommendation of the President to the Board of Directors, Energy Efficiency Investment Program, August 2009.  
(b) USAID Pakistan: Energy Efficiency and Capacity. <http://www.usaid.gov/pk/sectors/growth/epec.html>  
(c) Report of the Energy Expert Group, Integrated Energy Plan 2009-2022, March 2009
- <sup>iii</sup> In the light of the NEECA Act approved on 26<sup>th</sup> February 2016, the notification for the establishment of the National Energy Efficiency and Conservation Authority (NEECA) was issued on 6<sup>th</sup> October 2016.
- <sup>iv</sup> Industrial Sector, Transport Sector, Building Sector, Power Sector, and Agriculture Sector are the five sectors, specified in NEECA's Act 2016.
- <sup>v</sup> Friends of Democratic Pakistan-Integrated Energy Sector Recovery Report and Plan
- <sup>vi</sup> SAARC Country reports, *CRISIL Research*
- <sup>vii</sup> Ministry of Planning, Development and Reforms "SE4ALL- National Action Plan" December 2019.
- <sup>viii</sup> Minimum threshold saving subject to enabling Environment and available financial resources
- <sup>ix</sup> At this 29000 tube wells in Balochistan will be targeted to ensure energy efficiency in Agriculture.
- <sup>x</sup> Conducted by International Finance Corporation of World Bank
- <sup>xi</sup> UNHABITAT, 2005. "Energy-Efficient housing in Pakistan. A case of RC Roofs in Pakistan"
- <sup>xii</sup> Official Statistics of Federal Ministry of Housing and Works published in daily dawn December 2017.
- <sup>xiii</sup> Ministry of Planning, Development and Reforms and UNDP- Pakistan (2019) "SE4ALL- National Action Plan".
- <sup>xiv</sup> National Electric Power Regulatory Authority
- <sup>xv</sup> Ibid
- <sup>xvi</sup> Energy efficiency surcharge is also a way to promote energy conservation and the use of renewable resources. Energy surcharge in Pakistan needs to be revitalized to align with international best practices. For example, China has an EE surcharge of 0.30 RMB per KWh and India has 0.01 INR per KWh.