

# Energy Efficiency Lighting in Residential, Commercial, Industrial & Outdoor sectors of Pakistan

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# Background

## Energy Scenario of Pakistan

<b>Pakistan Population</b>	<b>180 Million</b>
Total Power Generation Capacity 2012	23,538 MW <sup>[1]</sup>
Projected Power Generation capacity 2030	162,500 MW <sup>[2]</sup>
Current Energy shortfall of Electricity in system	5000 MW
Energy Conservation by proposed NAMA in 3-5 years	2000-3000 MW
Load shedding	12 Hours in urban areas and 18 to 20 Hours Rural area per day
Share of electricity consumption in the country: <sup>[3]</sup>	
Domestic/ Residential sector	42.15 %
Industrial sector	23.92 %
Agricultural sector	14.03 %

### Sources:

[1] State of Industry report, NEPRA, 2012

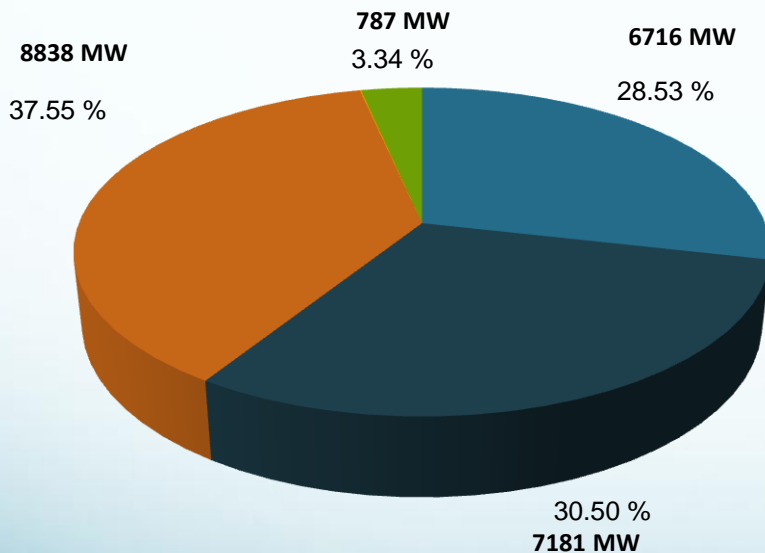
[2] Task Force on Climate Change Report, 2010

[3] National Economic & Environmental Development Study, 2011

# Source of fuel for Power Generation in Pakistan

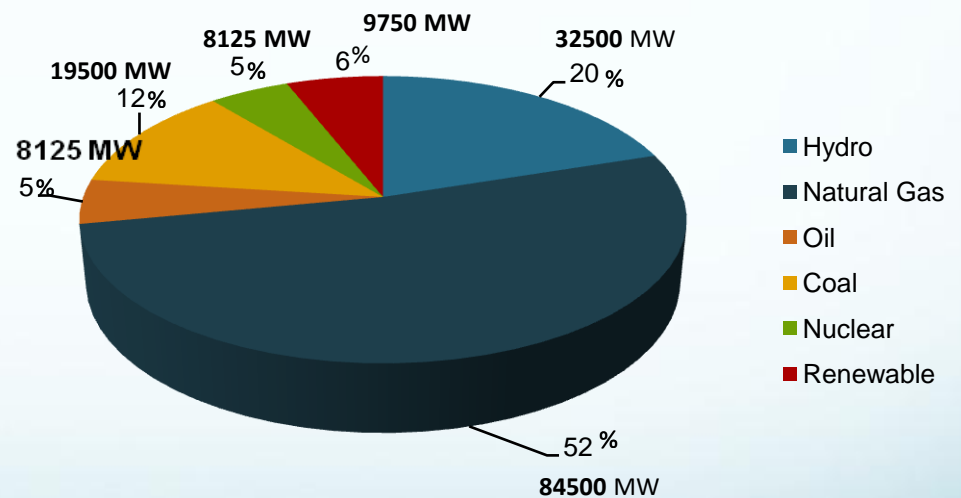
## Year 2012 (Current) \*

Total Installed Capacity 23,538 MW



## Year 2030 (Projected) \*\*

Total Installed Capacity 162,500 MW



\* State of Industry Report, NEPRA, 2012

\*\* Task Force on Climate Change Report, 2010

# Greenhouse Gases (GHG) Emissions

## Pakistan's overall GHG Emissions

- Total GHG emissions **310 MtCO<sub>2</sub>e**
- Contribution in total global GHG emissions **0.8%**
- Global ranking on a per-capita basis **135<sup>th</sup>**
- Annual GHG emissions per capita **1 tons of CO<sub>2</sub>**
- Expected Energy related emissions in 2050 **2,730 MtCO<sub>2</sub>e**

## Sectoral GHG Emissions

Energy Sector 51 %

Agriculture & Livestock 39 %

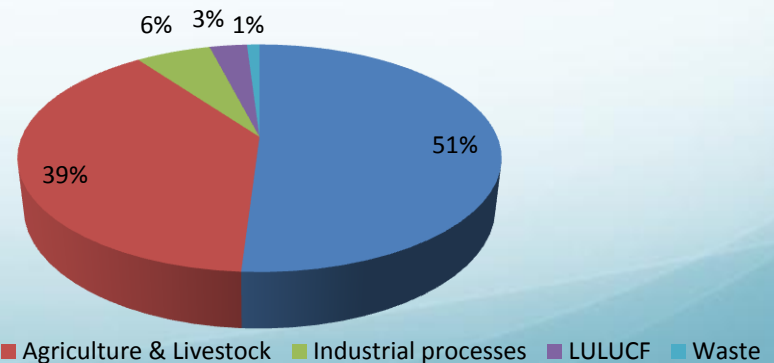
Industrial Processes 6 %

LULUCF 3 %

Waste 1 %



## GHG Emissions by sectors



# Current Policies

The proposed NAMA activities supported by various policies of Government of Pakistan are mentioned below:

- **National Climate Change Policy, 2012**

- Conserve energy and improve energy efficiency
- Enact/ enforce energy conservation legislation and audit standards
- Improve energy efficiency in building by:
  - Standardizing building
  - Legislating / creating incentives for retrofitting lighting
  - Maximum use of natural light
  - Better insulation and use of energy efficient lights and other appliances

- **National Energy Conservation Policy, 2007**

- Encourage and facilitate energy audits in commercial buildings
- Encourage adoption of energy efficiency in the domestic sector
- Encourage use of energy efficient equipment, fixtures and appliances in the buildings

# Barriers

- Absence of National EE Lighting Strategy
- Absence of national energy codes and standards
- High upfront costs of EE appliances
- Non availability of appropriate standard technologies
- Lack of Awareness, technical knowledge and skills
- Lack of market competition for energy efficient equipment/appliances
- Non-availability of local financing due to absence of standards, codes and high upfront costs of equipment
- The proposed NAMA is intended to remove the above mentioned barriers

# NAMA Objectives

- Transition to Energy Efficient lighting technologies in all sectors
- Create a strong base for EE lighting market in Pakistan
- Enabling and supportive environment for private investment
- Trigger future EE lighting projects/ programmes
- Replicate EE standardization in future for other energy consuming appliances

# Key Policy Elements

- Development of a National Efficient Lighting Strategy, Standardization regulations, and Minimum Energy Performance Standards (MEPS).
- Development of a Measurable, Reportable and Verifiable (MRV) system
- Design and deployment of an integrated waste management system for destruction of ICLs and recycling of CFL bulbs.
- Establishment of a Revolving Loan Fund (RLF)
- Public awareness campaign on transition to energy efficient lighting sectors



# Revolving Loan Fund (RLF)

- ENERCON established an Energy Conservation Revolving Loan Fund (ECF) to promote energy conservation in the transport sector
- Demand for EE in lighting demonstrated by frequent financing requests from ECF, but outside scope of the fund
- Since 2002, the well managed fund has grown by **approximately 5%**

## **Proposed RLF for EE lighting – Sustainable, Catalytic, Replicable**

- The RLF is a long-term, sustainable funding window under ECF for EE lighting
- Overcomes local financing barriers by providing financing for purchasing EE lighting technology, which is currently unavailable through private lenders, across sectors
  - Mark up rates at 3-10% /annum, to be finalized after stakeholder consultations
  - Collateral covers the exposure/credit risk
  - Additional expenses to be met by bank returns for ensuring sustainability
- Serves as a model for other EE technology (appliances, HVAC, etc.) to replicate success and multiply impact, building on previous ECF model to ensure success
- **RLF will be implemented in two phases:**
  - Public, Industrial and Commercial sector (high, immediate impact)
  - Residential sector (longer-term strategy)

# Expected Outcomes

- Pathway to low carbon economic growth
- Energy conservation of 2000-3000 MW to be achieved in 3-5 years
- Reduction in GHG emissions of approx 1.97 million tons of CO<sub>2</sub> annually
- Annual energy savings in the country:
  - 5.5 % of total electricity consumption
  - 35 % of electricity consumption from the lighting sector
- Pakistan meeting its obligations under the UNFCCC
- Annual savings of \$4 billion by year 2019, corresponding to 3% of the GDP
- Lower electricity bills for consumers over the 7-8 year expected lamp lifetime
- Catalyzing private sector investment
- Jobs created in distribution and installation of EE lighting equipment
- Pakistan supply and demand deficit in the electricity sector will be reduced in short period of time

# Support Requested

No	Project Component	Grant Amount (US\$)
1.	Development of National Energy Efficient Lighting Strategy, MEPS	500,000/-
	Development of national energy codes, standards for components/ appliances, labeling and energy reporting	500,000/-
2.	Development of MRV system for lighting sector (residential, commercial, industry and outdoor)	500,000/-
3.	Destruction mechanism of ICLs in sustainable manner	500,000/-
4.	Mechanism for Recycling of CFL bulbs	500,000/-
5.	Collection mechanism with district authorities and distribution companies	1,000,000/-
6.	Awareness Campaigns Electronically, Seminars/ Workshops	150,000/-
7.	Capitalizing Revolving loan Fund (RLF)	3,000,000/-
8.	Project Management Cost	350,000/-
	<b>Total Project Costs</b>	<b>7,000,000/-</b>

**Government of Pakistan will facilitate implementation of NAMA activities through policy and regulatory incentives in the form of tax exemptions on EE lighting equipment**

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