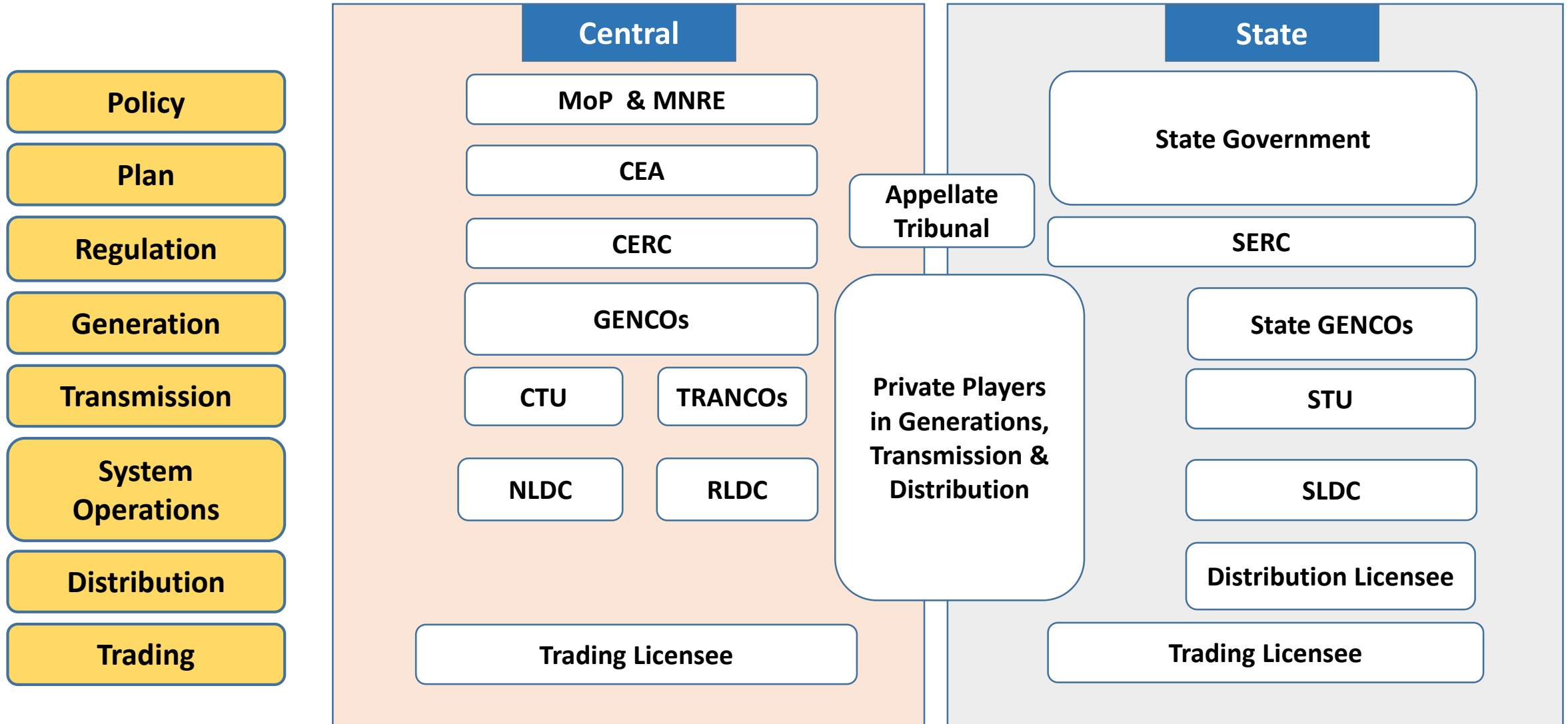


# Indian Grid and IT/ Digitalisation

# Institutional framework – Power Sector



# Digitization Historical Initiatives

Digitization has been primarily through Central Initiatives Public Utilities

- Asset & Operation management – GENCOs
- Transmission by Grid Operation Requirements → CTU
  - Unified load dispatch and communication (ULDC) Scheme 1998-2008 > 1500 (now 3500) RTUs and > 30 RLDC/SLDC

Power Exchange and attended data for Market (Exchange) 2008-onward

Digitization in distribution sector was optimization driven and gained momentum with schemes like APDRP, RAPDRP, IPDS.

• GIS	State → 16	DISCOM → 22		
• ERP	23	39		
• IT	24	→ 46	Towns → 1588	
• RT-DAS	21	→ 35	1643	S/S → 3936

One nation-One Grid initiative precipitated Situation Awareness (SA) Requirement

- URTDSM (2013-2016): Phasor Measurement Units (>1800 PMUs)
  - State/ Regional and National Operator
- Enhance RE awareness REMC (2015 -18) →
  - Whether Forecast and RE footprint

# Digitization Initiatives Contd...

## NSGM established 2015 → Policies and Programs Smart Grid

- Funding for ~ 1million smart meters
- Pay As You Save (OPEX) deployment > 10 million SM in progress.
- Target for 250 Million Smart Meters

## Retail Market Opportunity next step

- energy optimization /generation balance through DR pilots.
- EV infrastructure and EV markets emerging need deeper Digitalization upto consumer Premises

The transformation of market and tariff / DISCOM saving.

# NSGM Goals

## Access to affordable and quality power

- Aligning with the objectives of GoI
- Better power quality measurement and management
- Development of micro grids
- SAIDI/SAIFI indices management

## Reduction in AT&C losses to single digit

- Smart metering and AMI deployment
- Integrated communication and IT infrastructure

## Better peak load and outage management

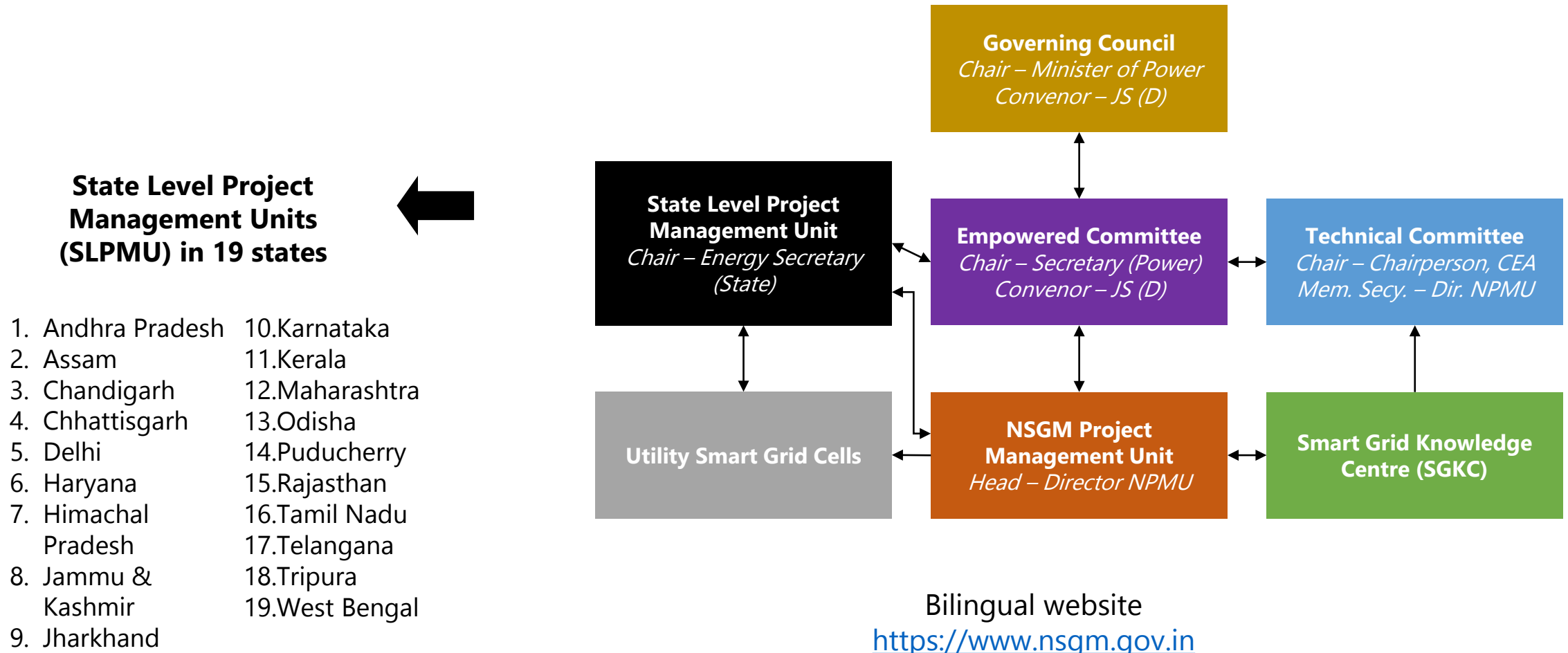
- Dynamic tariffs and incentives, peak load shifting
- Better asset management and proactive measures
- Demand Response programs and Demand Side Management

## Proliferation for EV and charging infrastructure

- Policies for facilitation of EV charging infrastructure

# National Smart Grid Mission

NSGM was established in 2015 with following institutional framework:



# Smart Grid – Early Institutional Initiative

- Realizing the growing importance of Smart Grid technologies in the Indian power sector, the Ministry of Power (MoP) had taken early steps in 2010 by constituting the **India Smart Grid Task Force (ISGTF)** and the **India Smart Grid Forum (ISGF)**.

## India Smart Grid Task Force

Inter-ministerial group created under MoP, Govt of India to provide policy direction to the Smart Grid initiatives in the country.

## India Smart Grid Forum

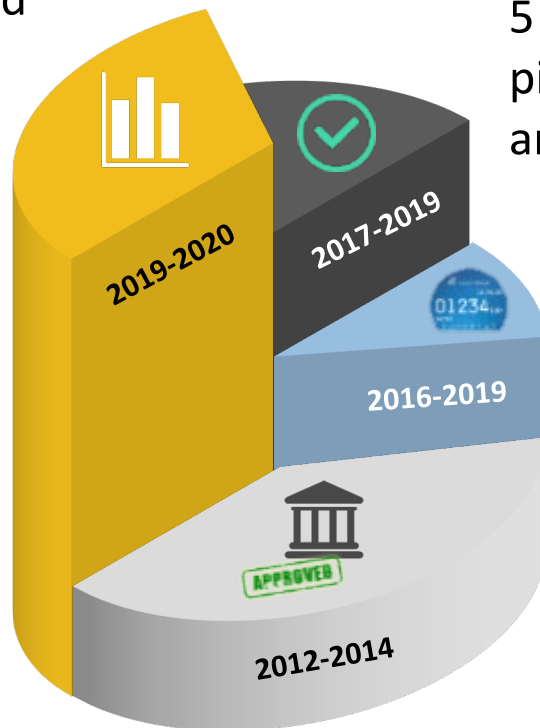
Non-profit voluntary consortium of public and private stakeholders with prime objective of accelerating development of Smart Grid technologies in Indian Power Sector.

## Other Institutions Supporting Smart Grid

**CEA** – Technical and operational expertise  
**BIS** – Standard development  
**CPRI** – Testing & Training  
**BEE, EESL** - EV & EE Implementation  
**REC, PFC, POWERGRID** - Project Management & Consultancy

# Smart Grid Pilot Projects

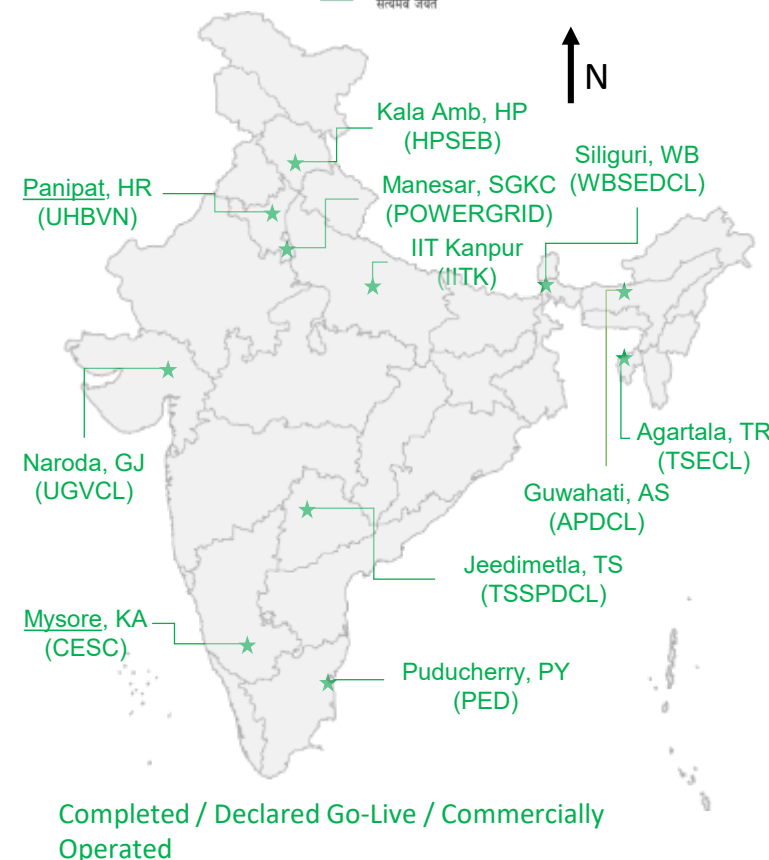
Impact Assessment  
Completed



5 Pilots completed. 6  
pilots declared go-live and  
are commercially operated

1.56 lakh Smart  
Meters installed

11 pilots including  
SGKC



Completed / Declared Go-Live / Commercially  
Operated

Map not-to-scale. Source: MEA

- New generation communication technology with improved performance based on RF mesh developed as an evolution of Technology deployed at CESC, Mysore
- Two new product (Smart Meter) developed & deployed
- Developed Products Sustainability especially in International Cooperation – Panipat Pilot Experience



# Stake Holders Perspective

## Asset Owners

- DISCOMs and State Entities
- Funding and Sustainability

## Funding Agencies

- PFC, REC, IREDA,
- Return, RE Targets

## Regulators

- Close to one Regulatory Body / State
- Why and What for Consumers

## Consumers

- Energy

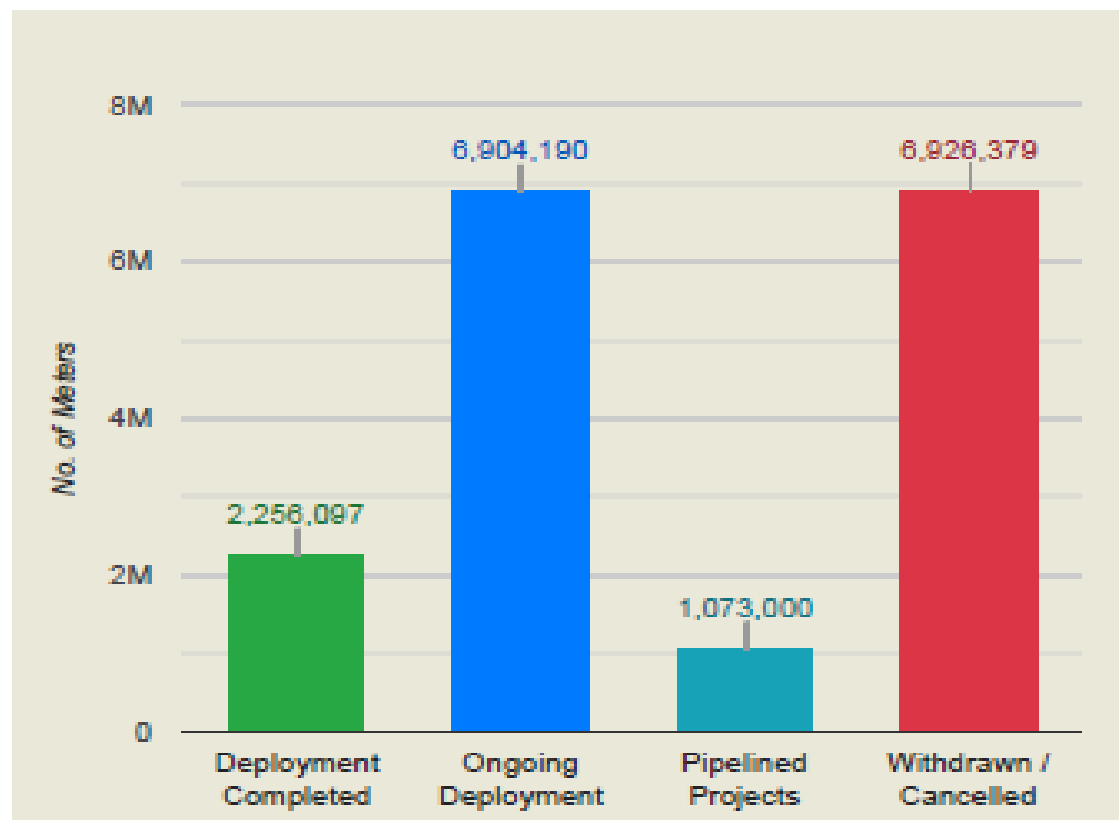


Performance



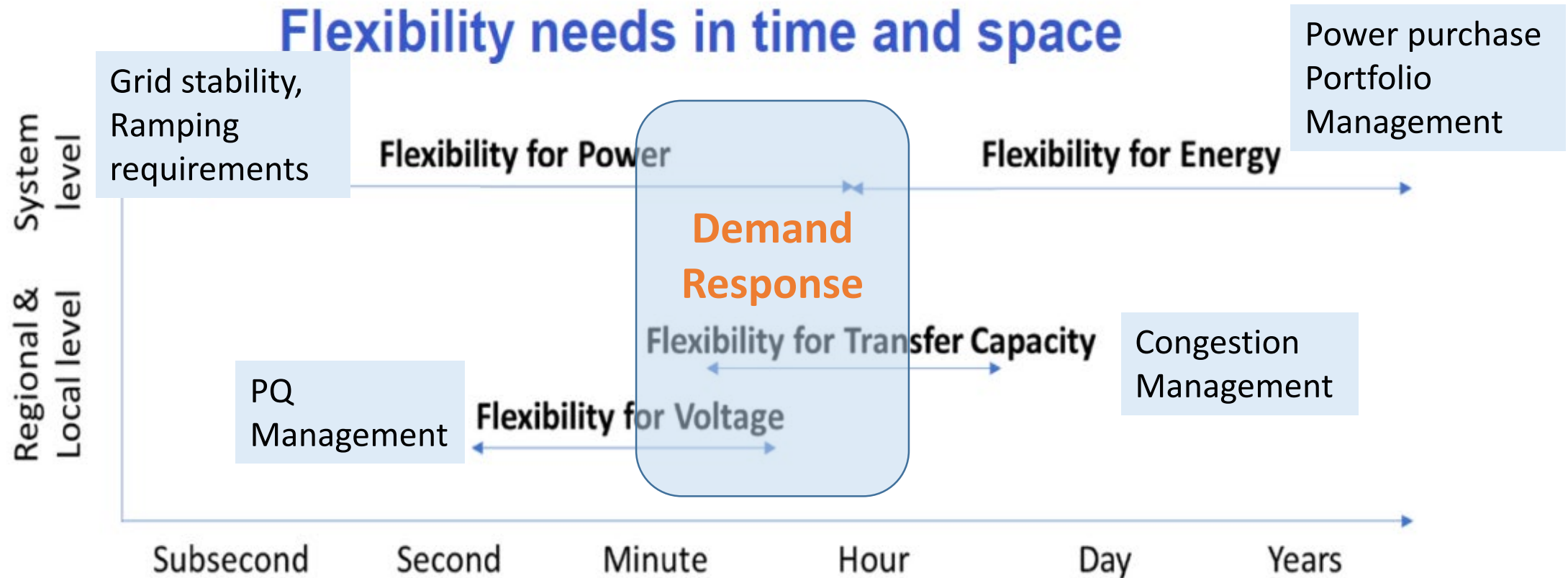
# Smart Meter Stats: Pan India Details

## Smart Meters (Nos.) Installed in India



Details accessible at <https://www.nsgm.gov.in/en/content/sm-stats>

# Flexibility Needs for System



# SGKC – Centre of Excellence



Smart City



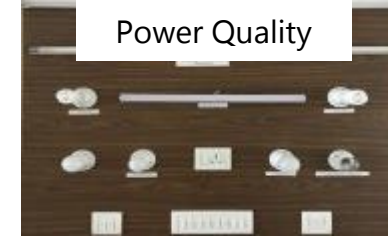
Micro Grid & Grid  
Connected RE



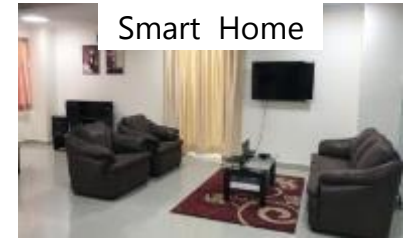
AMI



OMS



Power Quality



Smart Home

- Inauguration →
- 19<sup>th</sup> Sept 2018



US delegation & USAID  
Jun 2019 &  
Aug'2019  
SARI Jan 2020



Periodic Residential  
Trainings  
140 Execs, 6 Batches

# Thank You



<https://www.nsgm.gov.in>



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