LEVERAGING SMART METERS AND DATA ANALYTICS

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The Reality Check

DEPLOYMENT

~5 Crore

Smart meters installed nationally

≠

ANALYTICS USAGE

~10-12%

of potential utilized (est.)

"Deployment has happened. Value extraction has not."

Current usage: primarily billing & revenue collection

Why Analytics Isn't Scaling

Three institutional barriers

Fragmented IT Systems

No data interoperability between billing, MDM, and operational platforms.

Data Ownership Ambiguity

Unclear boundaries between MSPs, utilities, and regulators create friction.

Talent Discontinuity

Officers rotate every 2-3 years. Knowledge walks out. No permanent cadre.

The Data Access Question

"Bihar has **80 lakh prepaid meters.** Where's the data? Who controls it? Why can't DISCOMs use it for forecasting?"

ACCESS

MSPs hold data, DISCOMs lack real-time access

FORMAT

No standardized data exchange protocols

RIGHTS

Ambiguity on ownership and third-party use

The Regulatory Gap

Incentives don't align with analytics adoption

CURRENT FOCUS

- Billing efficiency
- Revenue collection rates
- AT&C loss reduction

→ *Output-based metrics only*

OUTCOME SIGNALS NEEDED

- Reliability KPIs (SAIDI/SAIFI)
- Demand response participation
- Loss diagnostics & prediction

→ *Value-linked incentives*

Building Institutional Capacity

THE SILENT KILLER

Every 2-3 years, trained officers rotate out. Institutional memory walks out the door. **New officers start from scratch.**

Dedicated Analytics Teams

Permanent smart meter/IT verticals within DISCOMs. Not project-based, but institutional.

Long-Term Cadre Development

Career tracks for smart grid specialists. Minimum 5-year tenure commitments in analytics roles.

Clear Role Definitions

Who does what: MSPs, utilities, regulators. Accountability without overlap.

Reality check: A 5-person analytics team costs ~₹50L/year. The data they're sitting on is worth crores in planning savings.

The Path Forward

Three enablers to unlock smart meter value

01

Data Interoperability

Standardized APIs, clear ownership, mandatory access in MSP contracts

02

Outcome-Based Regulation

KPIs tied to reliability, demand response—not just billing

03

Institutional Capacity

Permanent analytics cadres, long-term skill development

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INDIA ENERGY STACK (IES)

A Digital Public Infrastructure for India's Power System

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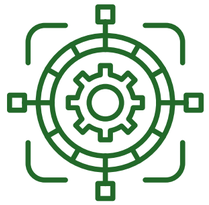
INDIA ENERGY STACK is a digital public infrastructure designed to

identify and **connect** stakeholders and assets, thereby facilitating **open data exchange** in the power system through uniform **specifications** and **standards**, unlocking transparent, reliable, inclusive, efficient, and affordable access to energy.

**Working Definition

IES IS



A **set of protocols or specifications** enabling **uniform, reliable, and trustworthy interoperability** between grid entities and consumers.

A set of services (API definitions and calls) and a **taxonomy/architecture** describing how components interact.

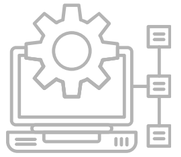
IES IS **NOT**

A centralised
database or **data lake**

A centralised service
pulling data from entities

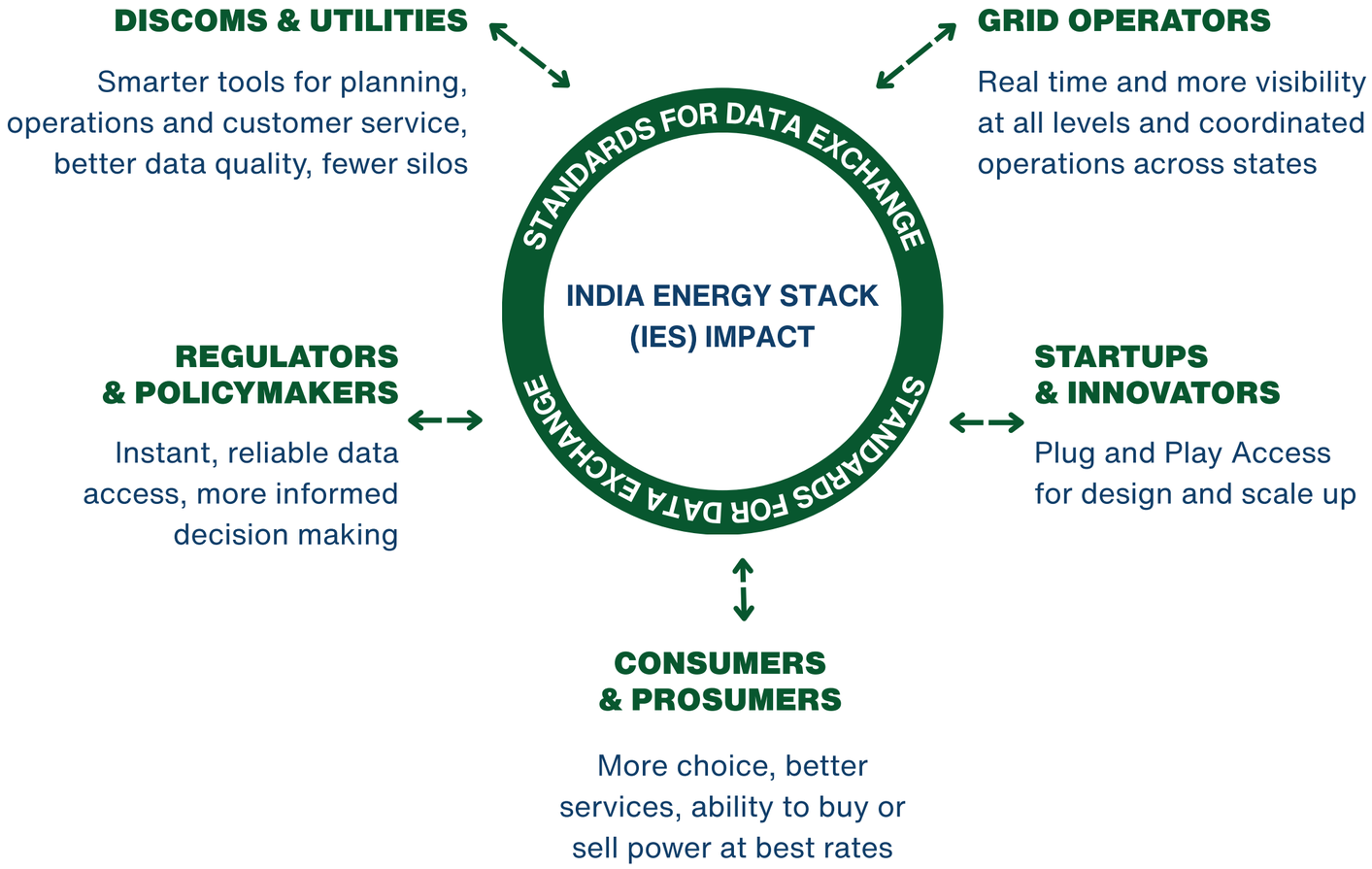
A software **product**

Dependent on strict hierarchy in the
energy sector



A **tool** to **integrate internal systems**
of any stakeholder

IES IMPACT ON STAKEHOLDERS



IES WILL BE ROLLED OUT THROUGH THREE KEY INITIATIVES:

IES Architecture

— Defines the overall IES ecosystem architecture, including the blueprint, core building blocks, protocols, and supporting specifications.

— Establishes the framework that enables transactions and data exchange across all ecosystem actors.

IES Adoption Strategy

— Identifies programs and policy initiatives to incentivise and encourage adoption across the IES ecosystem.

— Targets relevant entities and stakeholders to drive ecosystem-wide participation.

IES Accelerator

— Implements sandbox environments, tools, and reference solutions to support ecosystem readiness.

— Provides key enablers needed to accelerate IES adoption across all stakeholders.

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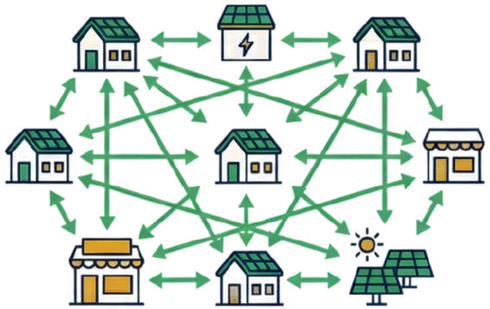
IES connects everyone on **one interoperable energy grid**, driving choice, acceleration, innovation, and adoption.

Household **Peer-to-Peer** Energy Trading

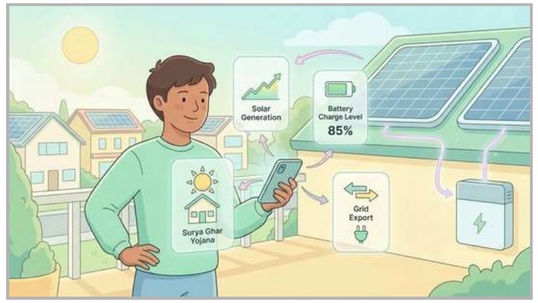


Seamless **Consumer Experience** Across States

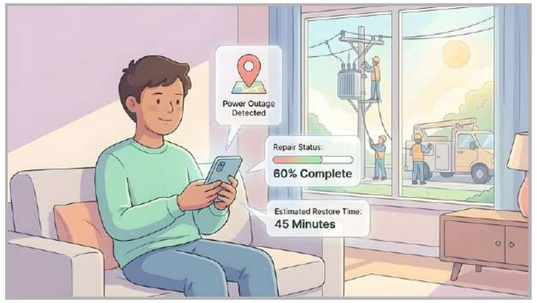
Sharing Innovation Across All Utilities

Ease of Changing DISCOMs/Accounts

DER Integration



Efficient **Outage Management**



Demand **Response**

+ 50 more use cases

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16+ Stakeholder Meetings —

— **10+ Engagements**
(EWGs + DISCOMs Deep Dive + Chairs + Chief Architect + Ad-hoc TSP Working Groups + Review Meetings)
IES VERSION 0.2 RELEASE

IES VERSION 0.1 RELEASE

— **12+ Engagements**
(Chief Architect + Executive Committee + Review Meetings)

— **15+ Engagements**
(EWGs + DISCOMs Deep Dive + Chairs + Chief Architect + Ad-hoc TSP Working Groups + Review Meetings)

23+ Engagements —
(EWGs + DISCOMs Deep Dive + Chairs + Chief Architect + Technology Providers)

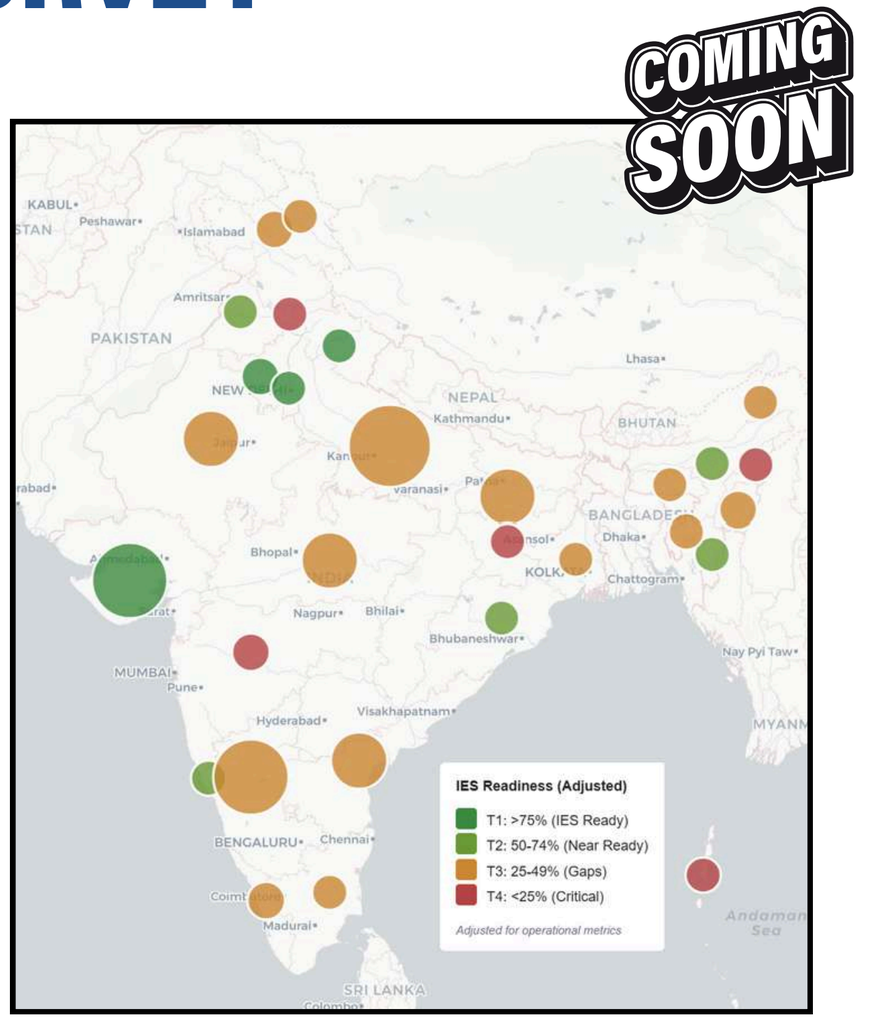
35+ Engagements —
(EWGs + DISCOMs + Partners)

DISCOM READINESS SURVEY

MoP conducted a survey to assess the digital readiness of all distribution companies (discoms) in the country and to determine the distance to the frontier.

Stages of Assessment

- **Stage 1 (Self-Assessment):** Establish a baseline using self-reported data from discoms, identify key gaps, and agree on focus areas for a more in-depth assessment.
- **Stage 2 (Lite Test):** Enhance credibility through selective checks and light field engagement, refining indicators based on practical applicability on the ground.
- **Stage 3 (Deep Test):** Perform comprehensive boots-on-the-ground verification to generate robust, decision-ready insights and a mature assessment framework.



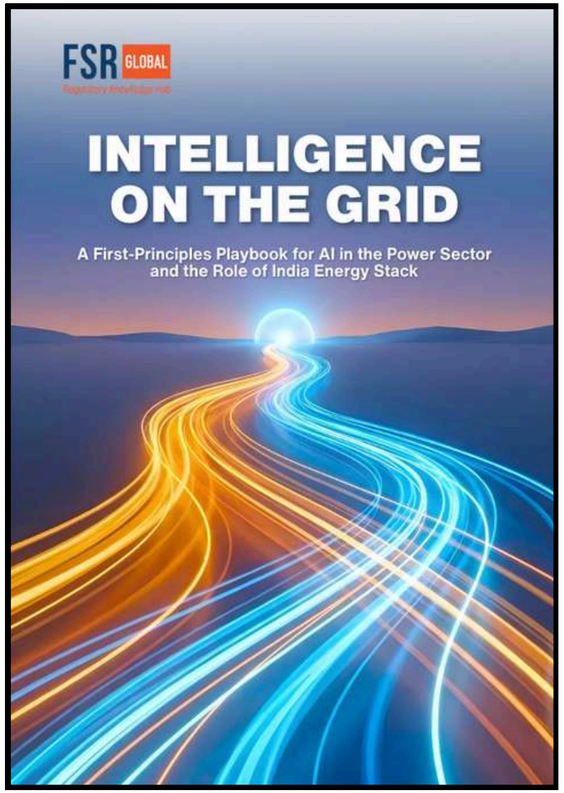
INTELLIGENCE ON THE GRID - ROLE OF IES

IES is the “AI scale layer” for the power sector—turning pilots into repeatable, governable deployments.

Why AI stalls today (the real bottleneck): operational “digital islands” (SCADA/OMS/MDMS/GIS/billing) with inconsistent identifiers and bespoke, vendor-specific integrations make end-to-end analytics and deployment hard.

How IES accelerates AI adoption: with common identifiers + shared schemas + standard “verbs”, AI services plug into multiple utilities/markets without rewriting plumbing each time—moving from bespoke pilots to reusable building blocks.

Operating principle for scale: default to open, interoperable interfaces so models/workflows can be reused across states, utilities, and vendors.



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SNAPSHOTS


Smart Grid Observatory (SGO/Invit)

India Energy Stack (IES)
One digital grid. Infinite possibilities.

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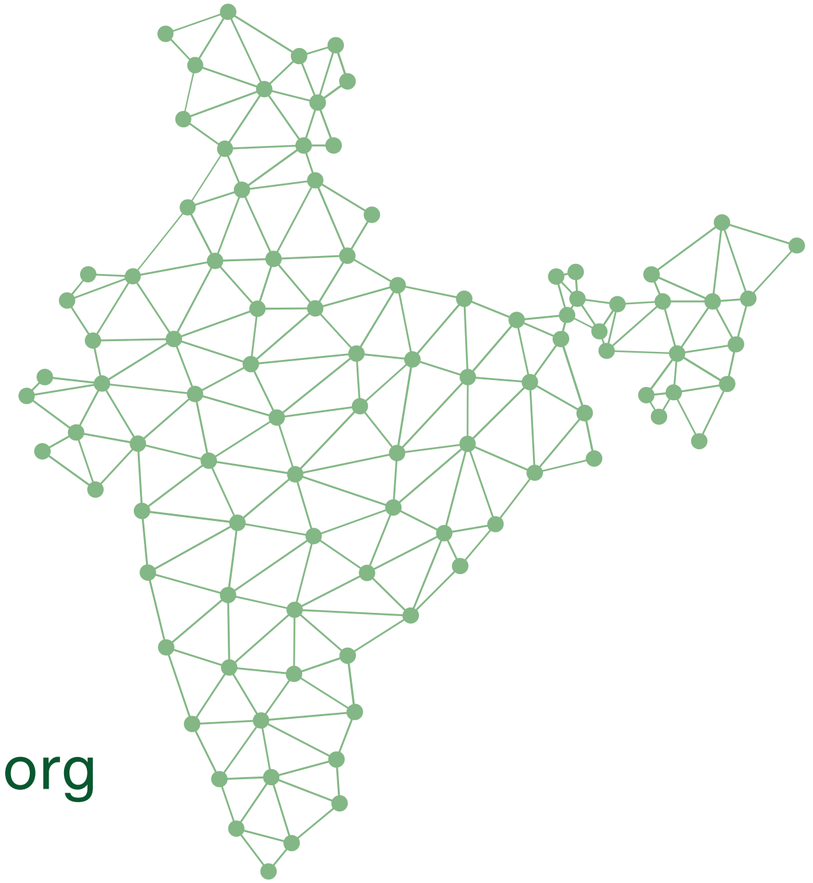
THANK YOU



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