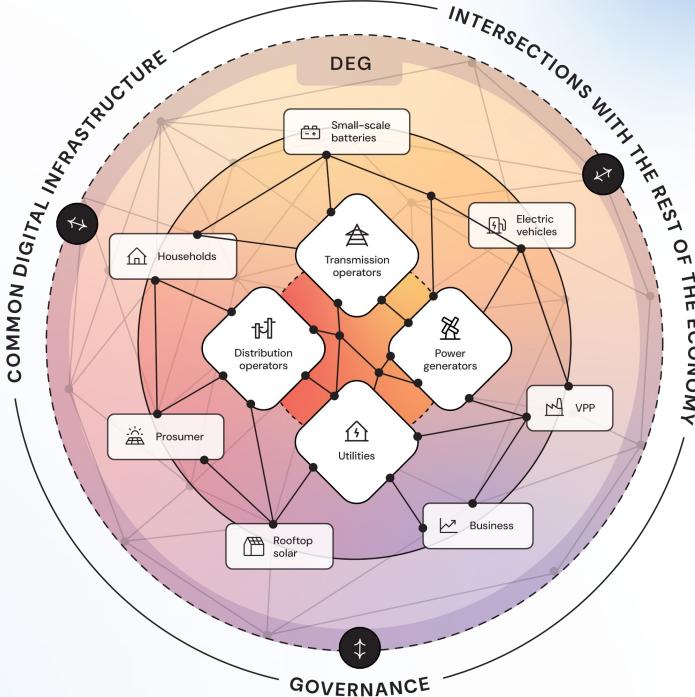


Digital Energy Grid

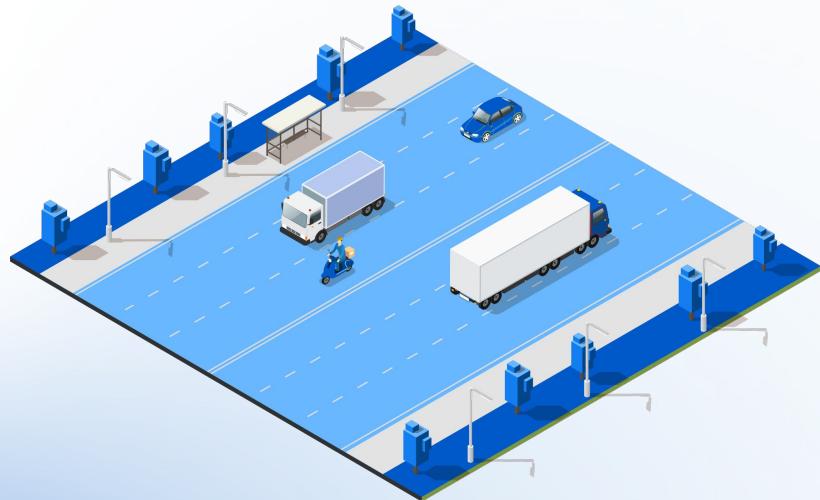
Sujith Nair
Co-creator, Beckn Protocol
Co-Founder, NFH | FIDE
Member, IES Task Force





The grid is unified electrically, but not digitally

Flow of electrons



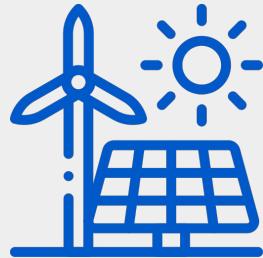
Flow of bits



Energy Impact Aperture: Dealing with the big shifts



Supply Transformation



400 Generators → 40M Prosumers (2025)

Demand Explosion



AI data centers will require 6+ GW by 2030

Coordination Challenge

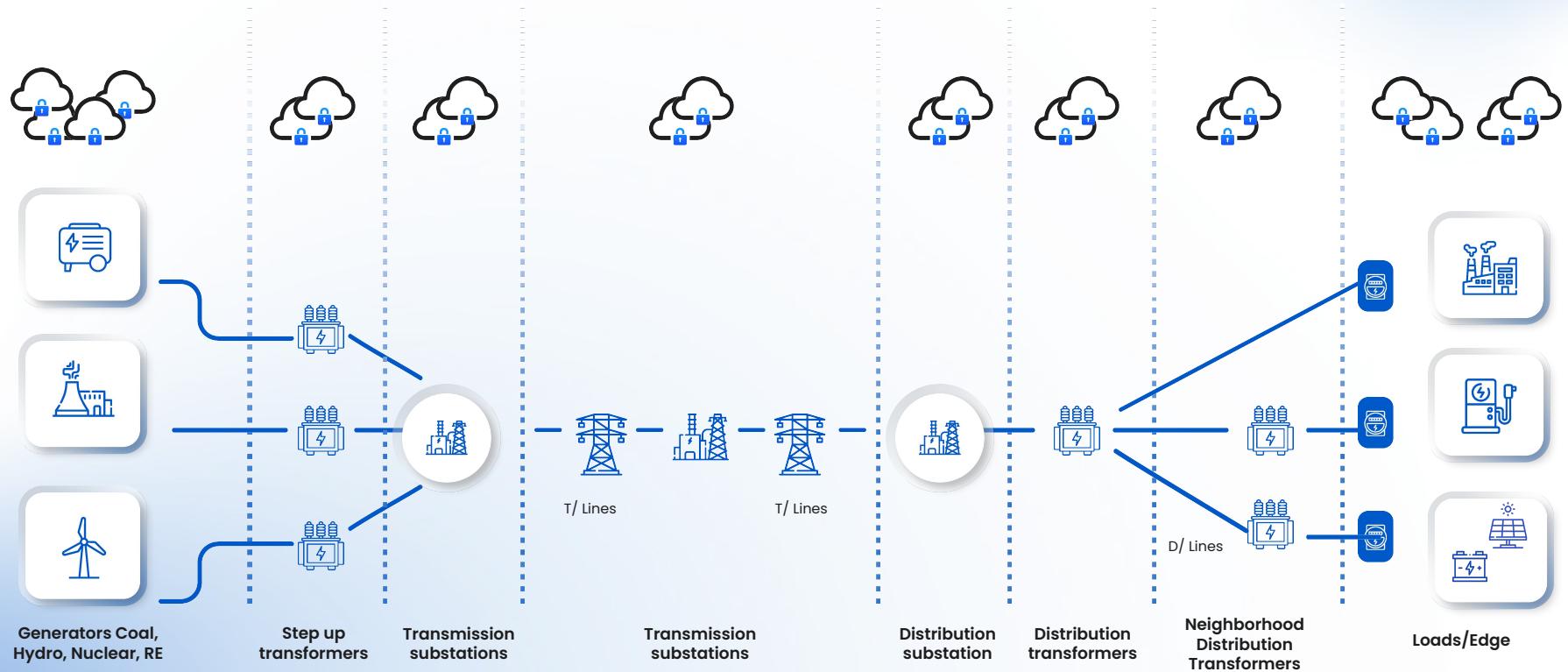


What was built for big plants, now faces millions of small distributed assets

Reliability | Flexibility | Resilience | Emergent Innovation



The digital side of the grid is broken into isolated trenches



What works at scale is different from scaling what works – Building Block – Each that works at Billion-scale



Digital ID



Payments



Commerce Networks



Sahamati



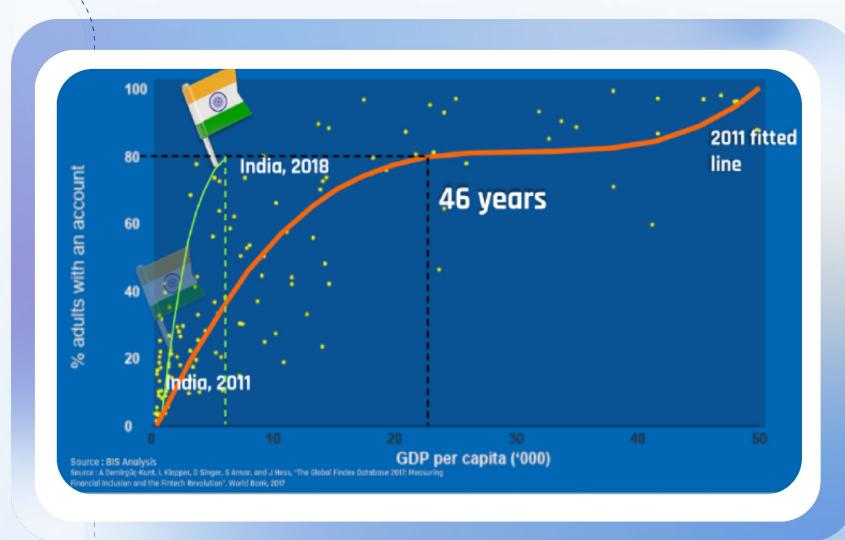
Tax Networks



Mobility Networks



Toll Networks



India's leapfrog in digital tech
(Repacked 46 years of growth in 8)



Principles that go beyond tech design in its application

Unbundle to foundational elements

Identify and implement as a series of 1+ Steps

Think ecosystem
Ecosystem,
ecosystem

Build only minimal, interoperable building blocks

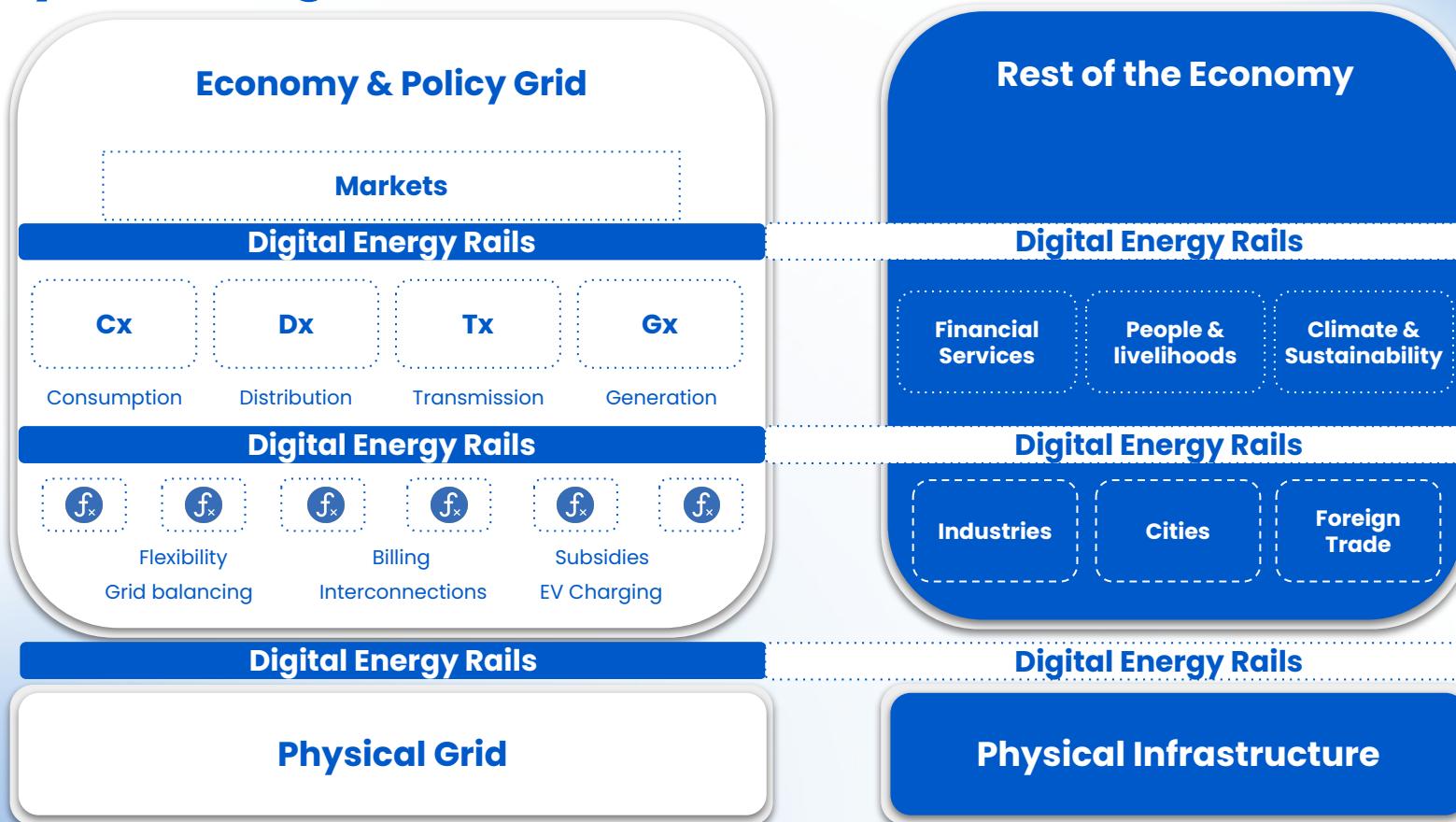
Design to unify, not make everything uniform

Do not try doing everything, catalyse innovations

From Six “First Principles” of DPI approach by Dr. Pramod Varma



Grid needs universal digital rails to bring the ecosystem together

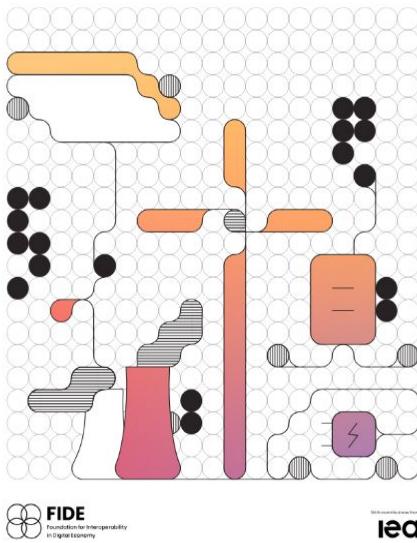


FIDE's joint vision with IEA

<https://energy.becknprotocol.io>

Digital Energy Grid

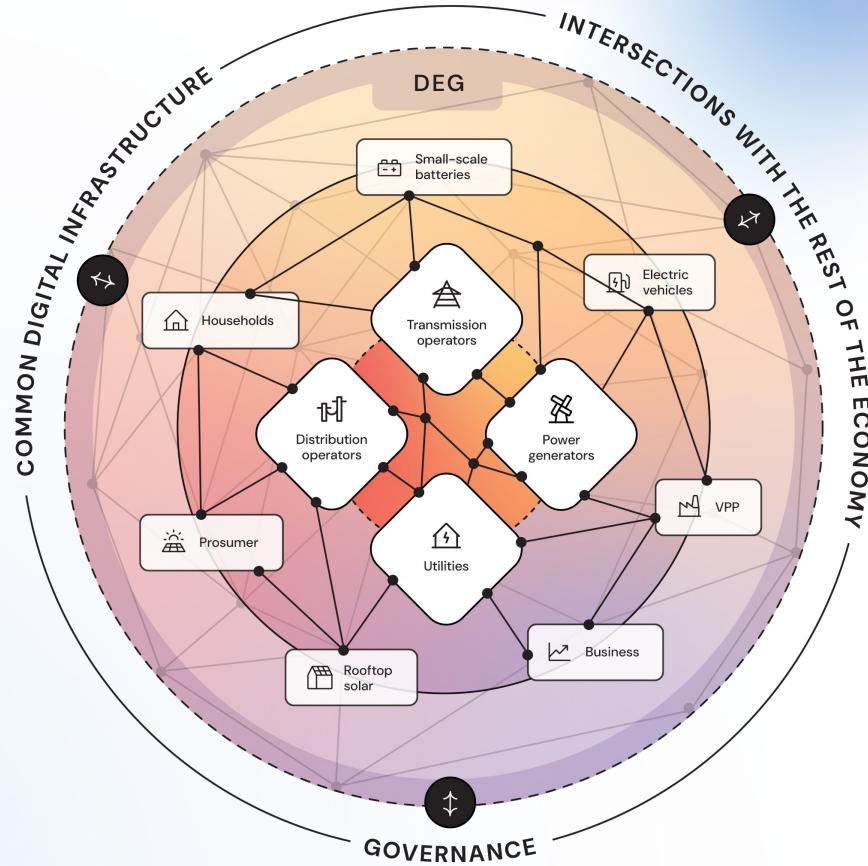
A vision for a unified
energy infrastructure



Feb 2025



Like roads, or like the internet **Digital Energy Grid (DEG)** proposes a common infrastructure that interconnects diverse digital energy systems





DEG implementations underway



Ministry of Power, India is building **India Energy stack** on **DEG**



Ministry of Heavy Industries, India is building **EV charging network** on **DEG**



Unified Energy Interface (UEI), a multipurpose energy network on **DEG**

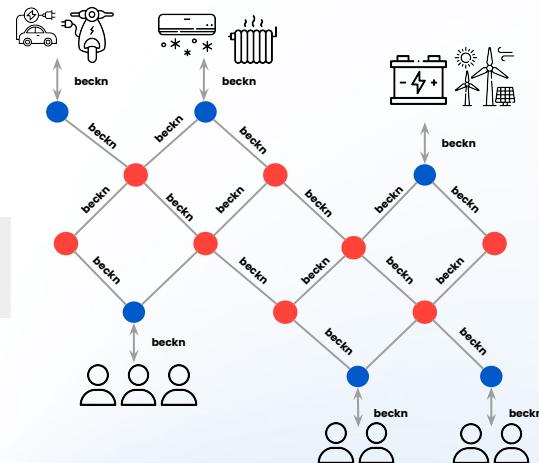


Market & aggregators are rolling out **National Grid Flexibility Platform** on **DEG**



Engagement with few utilities **globally**

The market is finding a way to take forward the idea



Since Feb '24

~6+ Mn
Orders on UEI

~32+ GWh
Energy
dispensed

Use cases



EV charging



Demand
flexibility



Peer to peer
energy trading



Virtual energy
warehouse



Rooftop solar



Community
solar

Utilities

BSES

उत्तर प्रदेश
पावर कारपोरेशन लिमिटेड

TATA POWER

Regulators



And few other state regulators



More than just a vision, its an application of a proven way of building for billions



What is DEG?

Universal **shared digital infra** for energy – universal, federated, interoperable



In what form?

As language / open **protocols** / open **specifications**



What does it contain?

Set of foundational **building blocks**



What is it informed by?

Design principles and approach for adoption **at scale**



The foundational building blocks of DEG



Universal
Identity



Machine
Readable Data



Verifiability and
Portability

Like we have seen in



Zip Codes



Electronic Health Record



Digital sign



Country Codes



Tax Invoices



QR code



IP Addresses



Billing Databases



API token



Electronic Passport



A universal digital representation of energy



Universal
identity of
assets



Interoperable
Information
flows



Digital
contracting



Transaction
schemas



Machine
readable
policies



Verifiable
credentials



Universal
Identity



Machine
Readable Data



Verifiability
and Portability



DEG makes any energy asset on the grid...



These assets are connected through interfaces that are baked in with



without impinging on
sovereignty and
autonomy

Battle hardened market-making playbook as key as tech design



Trust by Design

By cryptographic commitments
Policy-as-code
Frictionless onboarding
Ecosystem governance: reputation & dispute resolution



Aligned incentives & low transaction costs

New value pools through interoperability
Prefer low-value, high-volume flows
Data sharing as a by-product of exchange



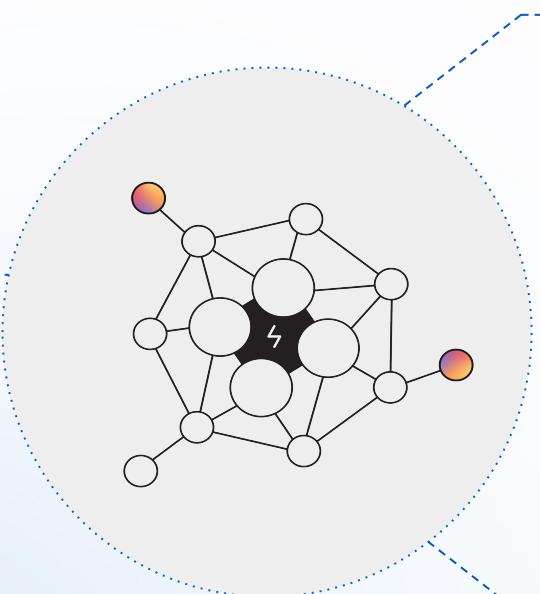
Recombinant innovation

Tool & point-solution remixing across sectors (e.g. energy × credit)
Open access lowers cost; competition lifts quality

DEG is not an 'Open-Heart Surgery' It builds on what is already there



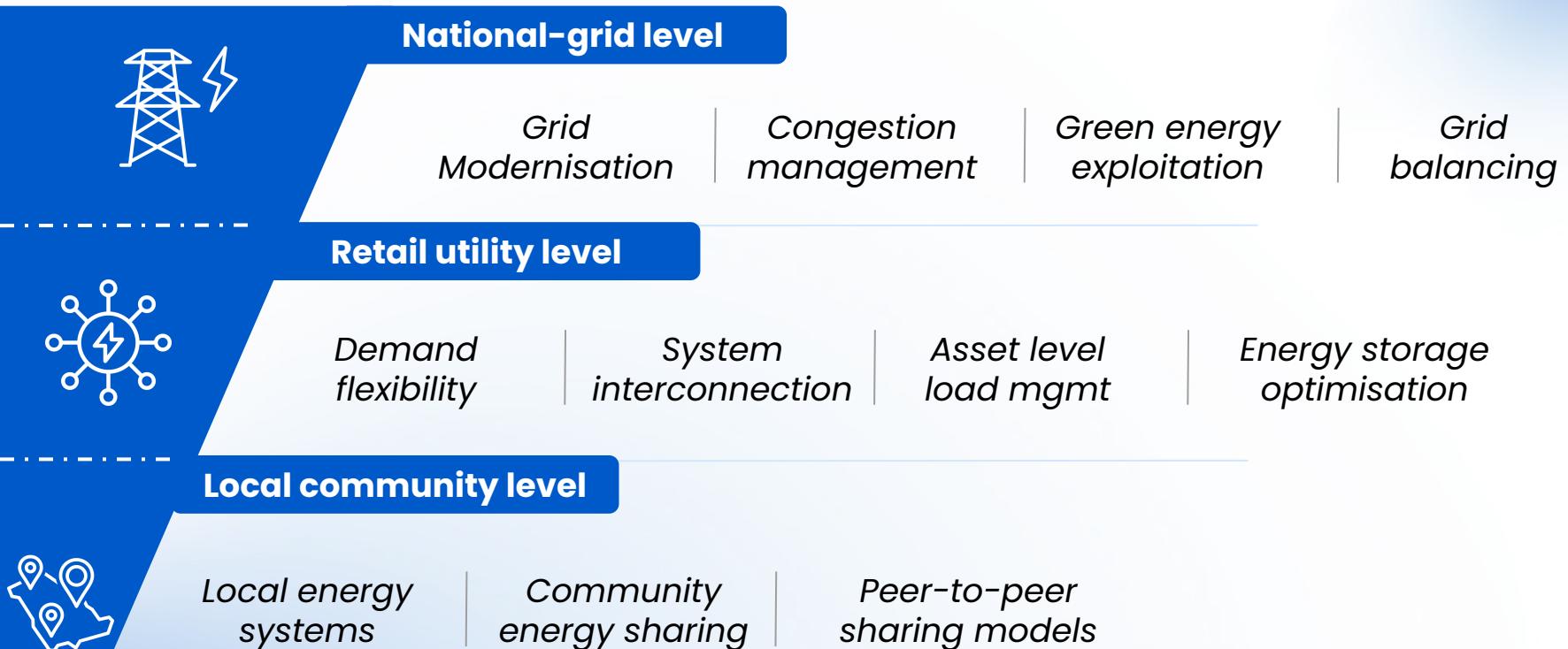
Enables **programmatic policy** and **regulatory overlay**



Scales up calibrated adoption for **any context: city, region, country**

Integrates with **all infrastructure: existing or new**

DEG can be adopted at any scale





Thank you

Digital
Energy
Grid

beckn