The Future of Building Energy Codes

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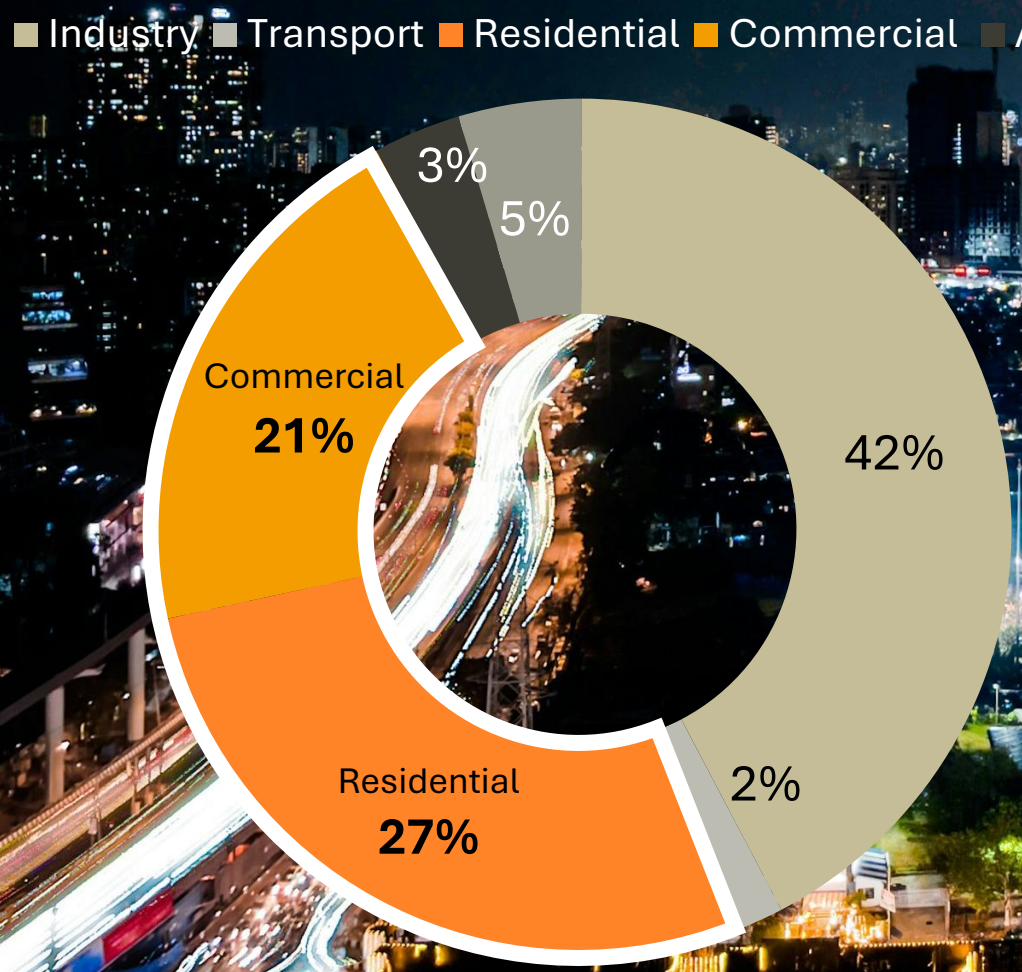
Environmental Design Solutions [EDS]

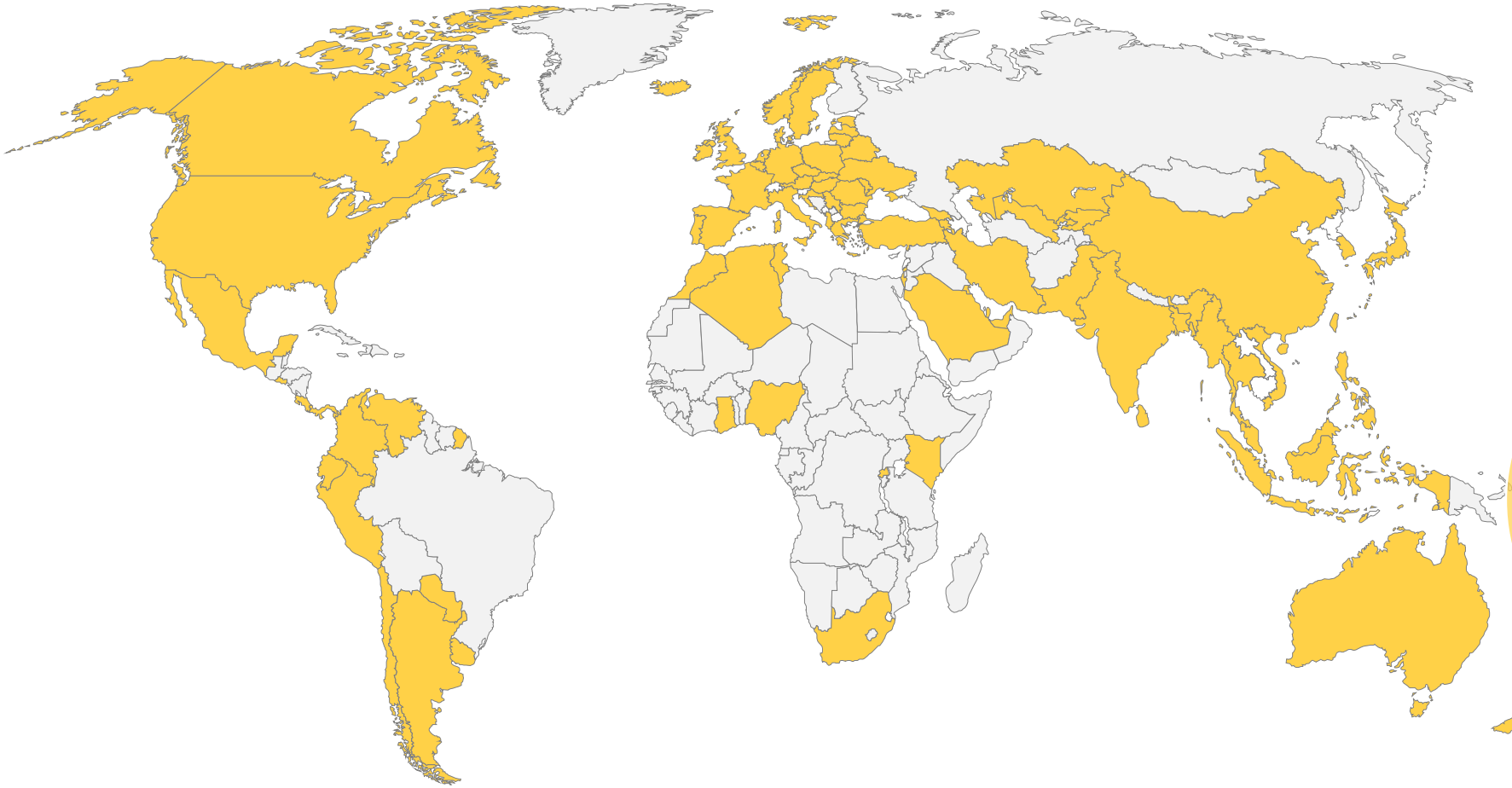
Building Energy Codes

Most popular policy instrument for addressing **building energy use**

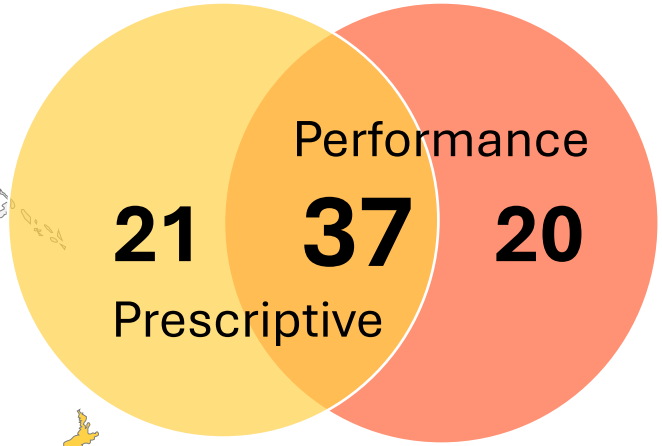


Source: IEA, Global Electricity Consumption by Sector

Status of Building Energy Codes

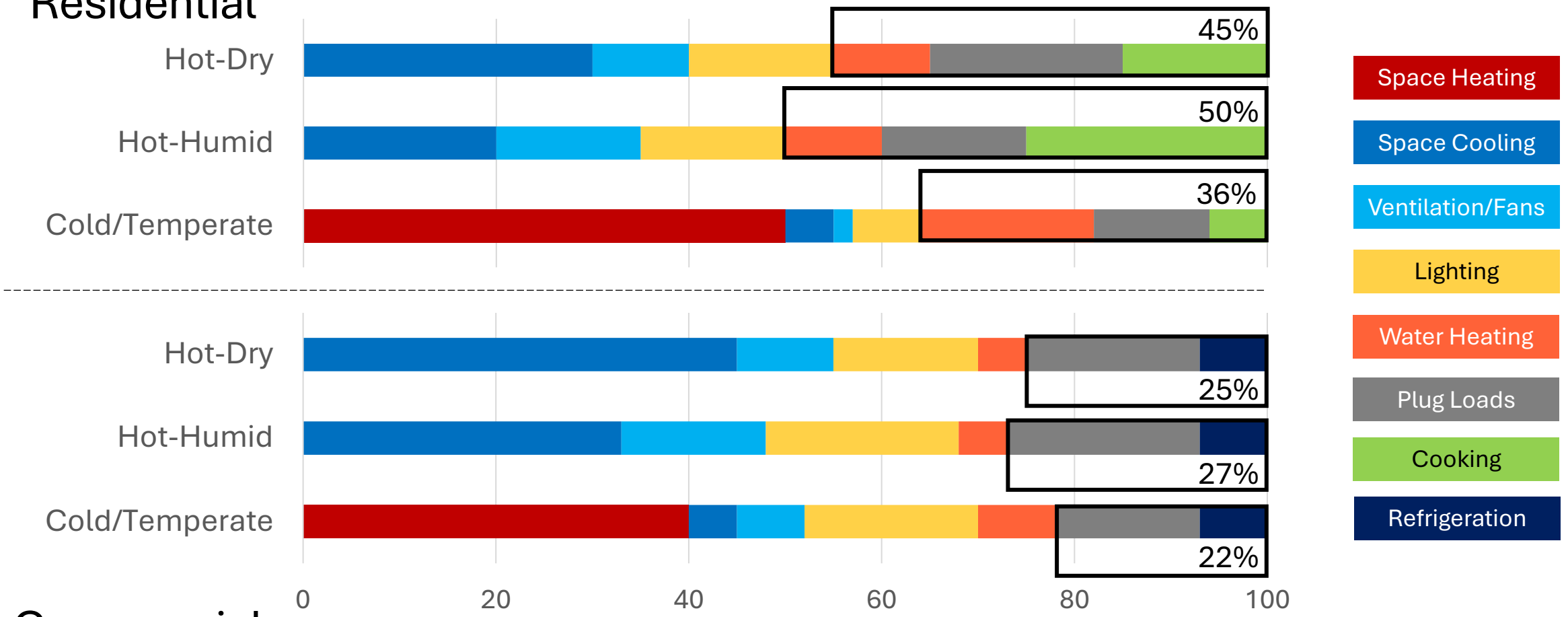


~88 countries have either mandatory or voluntary building energy codes in place.
100+ countries do have any building energy codes.

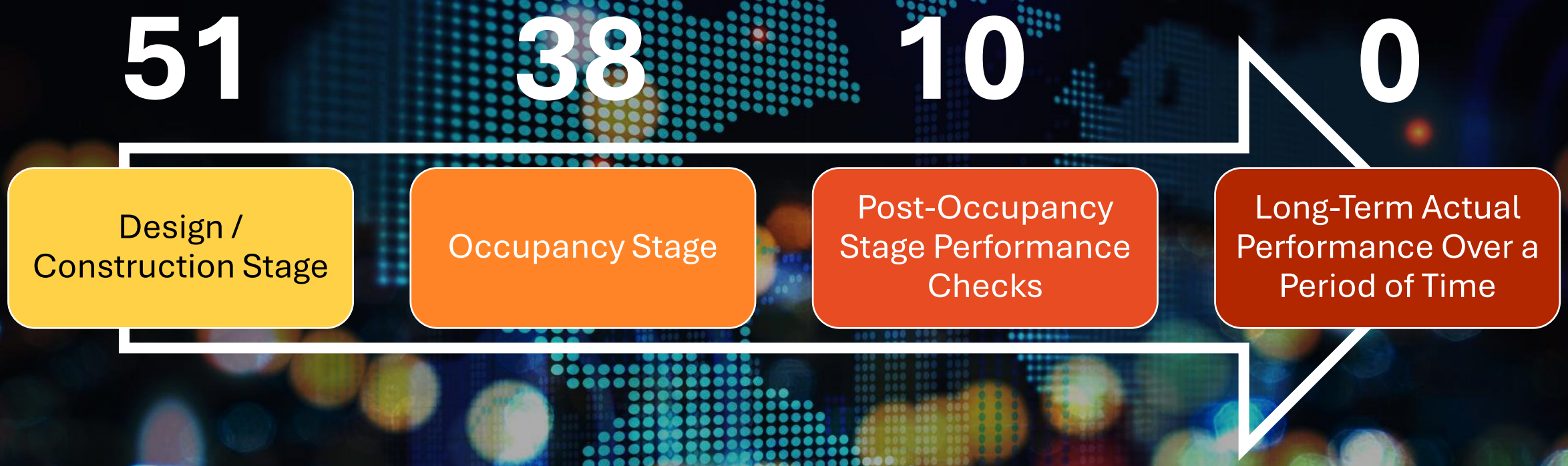


Source: World Bank 2025, IEA 2022

Limited scope covered by building energy codes…



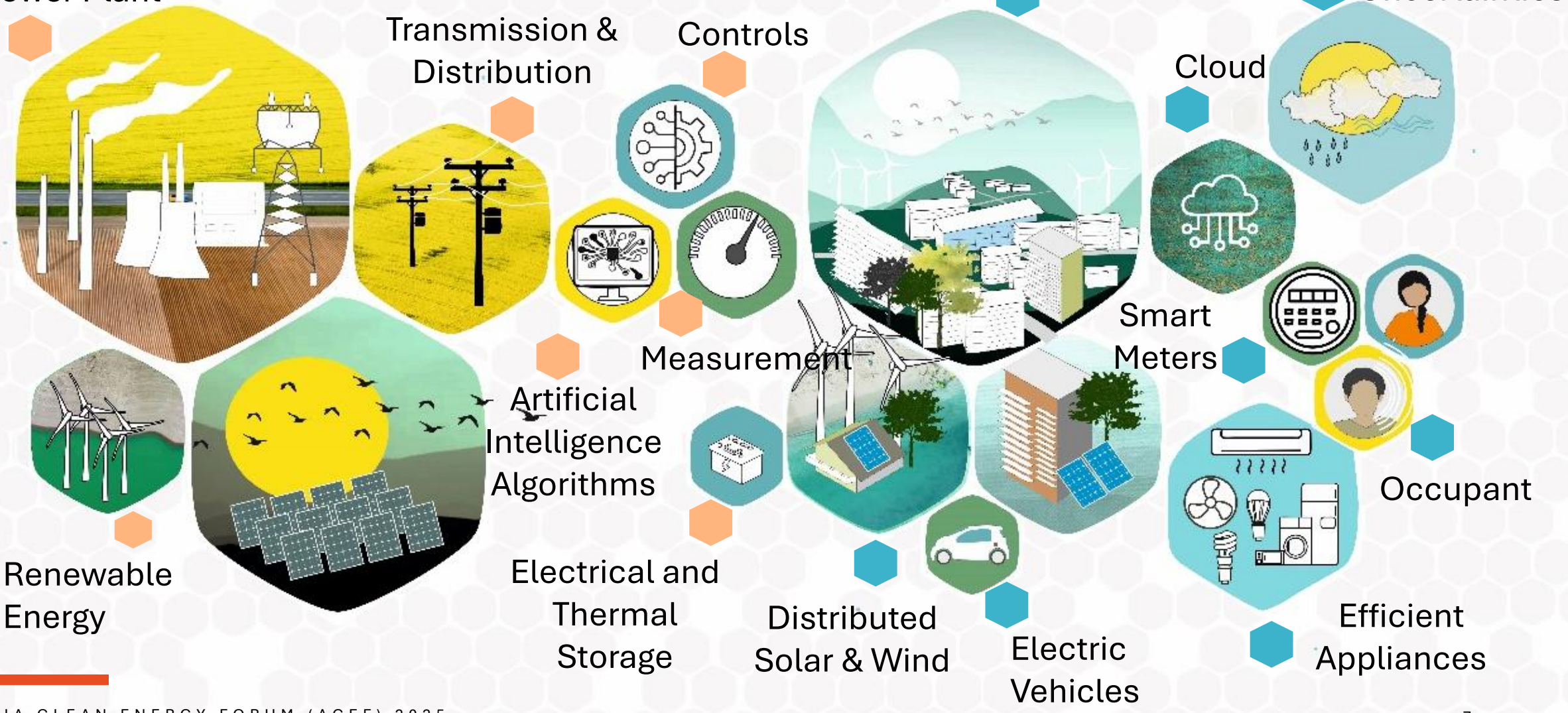
Extent of real-world performance covered..



Missed Opportunities of Energy Savings in New Buildings

1. **Scant data** on the compliance & actual performance.
2. **Real word conditions** - occupancy, weather and operational parameters can be very different from code assumptions.
3. **25-50% of end-uses** are not regulated.
4. **Degradation** of equipment & system **performance.** New technologies & systems are not upgraded till the obsolescence of existing equipment
5. **Building management and controls** are rarely integrated and operate on ideal conditions.

Energy Efficiency → Decarbonisation

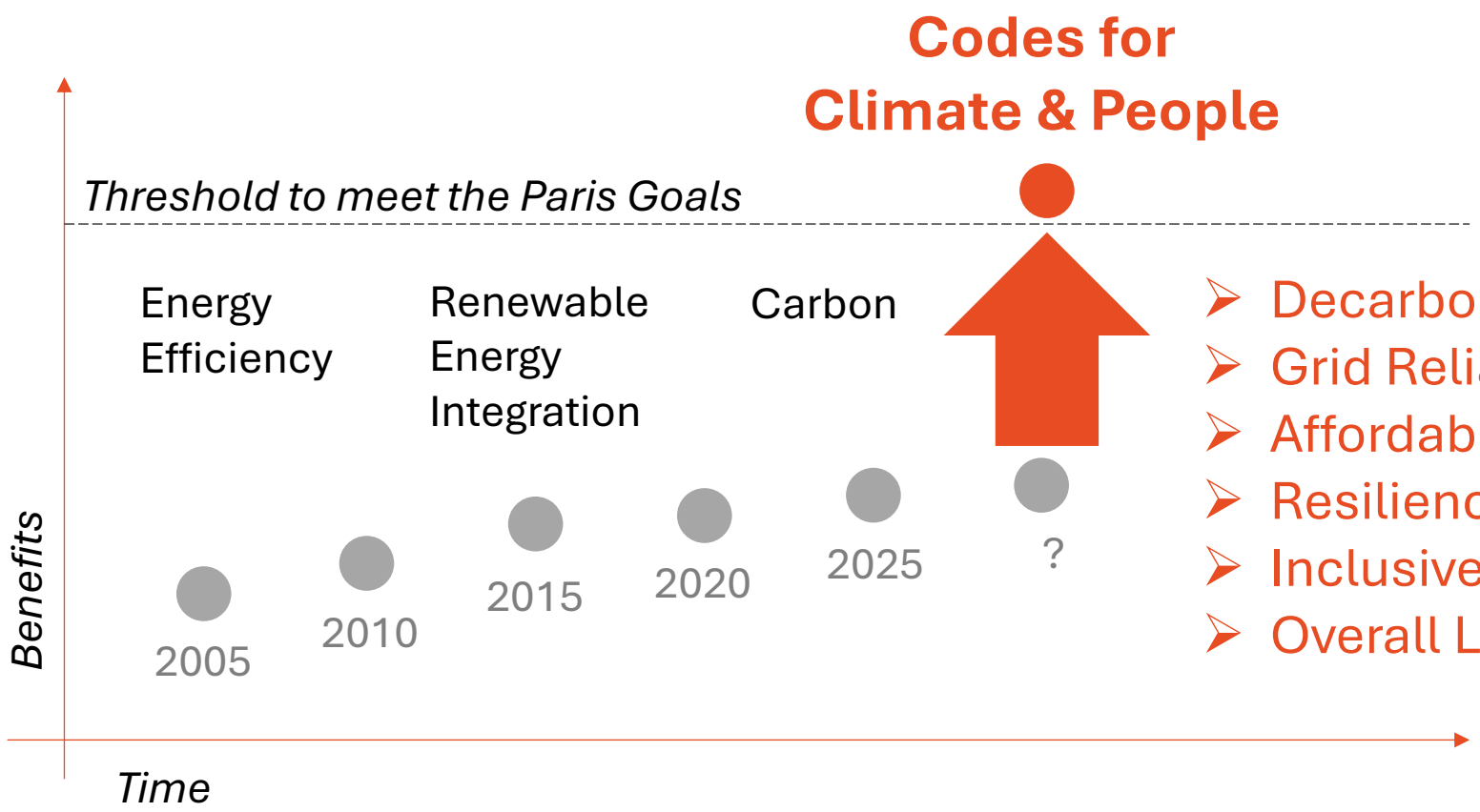


Traditional codes are no longer the best tools

1. Codes are static and focused on design compliance
2. Difficult and complex codes –
   - Take long time to develop and update.
   - Are difficult to understand by municipal authorities.
   - Increase costs of compliance and enforcement.

Strategy for Future Building Energy Codes

Energy Efficiency & Net Zero → Decarbonization and Climate Goals



- Decarbonisation + Electrification
- Grid Reliability + Flexibility
- Affordability + Comfort
- Resilience + Health
- Inclusiveness + Equity
- Overall Life Cycle Climate Impact

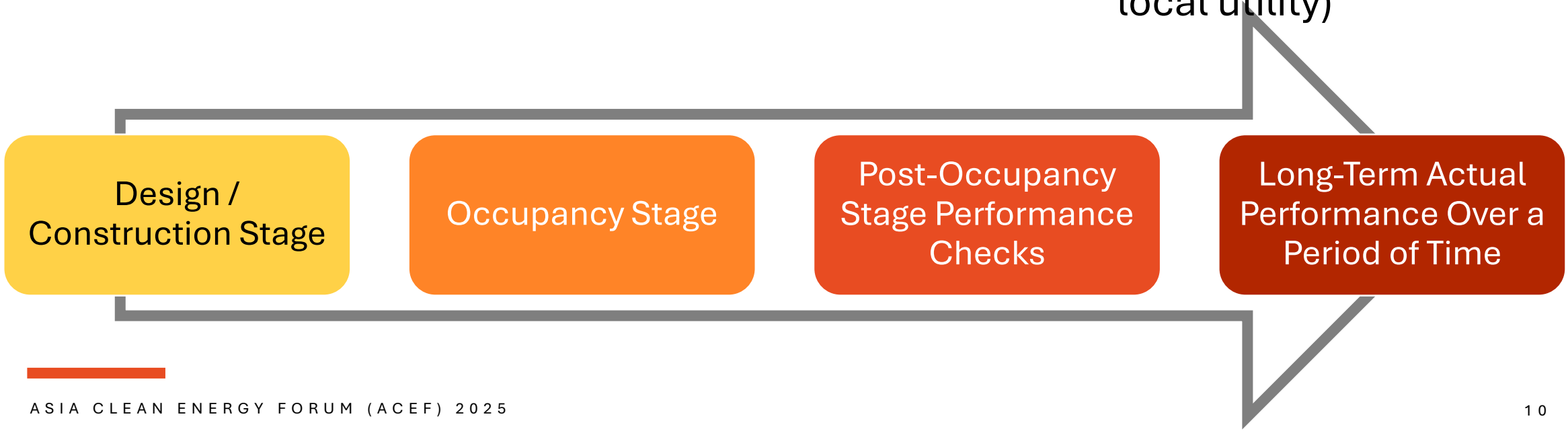
Framework for Future Building Energy Code

Responsive to Multiple Variables : Climate, Occupancy, Usage, Comfort, Utility Requirements

Simple design requirements

Commissioning check

Smart-meter enabled and AI-based compliance for
a) Carbon Emissions
b) Grid-flexibility (requirements of local utility)



Now

Design Intent
Limited Coverage
Complicated

Low Compliance Rate
Disconnected from Real Performance → Absence of feedback loops

Future

Efficient, Connected, Smart, Flexible

Simple design requirements

Compliance based on Real-time tracking → As a default

AI-enabled & Progressive → Continuous feedback loop

Behaviour

Adaptation

Frugality

Sufficiency

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Thank You

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