EU-INDIA
CLEAN ENERGY & CLIMATE PARTNERSHIP

The EU Energy Performance of Buildings Directive (EPBD): the story, a continuing journey and its learnings for India

Kevin O'Rourke

Webinar

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Structure of presentation on EU experiences

1. EU EPBD: legal & policy background, key requirements
2. ORIGINAL EPBD: focus, implementation
3. 'RECAST' EPBD: new requirements, implementation
4. IMPACT: What has EPBD achieved?
5. CONTINUING CHALLENGES: steps, actions, experiences
6. PROPOSALS FOR EPBD 3: new requirements
7. SUMMARY – success factors, lessons
8. Possible application to implementing ECBC in India?

28 EU Member States: Context, diversity, status

500 M population in 28 Member States:

- Not a federal Union
- Diverse sizes – from 0.4 M population to 80 M population
- Diverse levels of economic development
- Diverse climates and architectural idioms
- Diverse political/ administrative/ regulatory traditions
- Diverse educational systems
- Diverse approaches to setting building codes
- Diverse systems and cultures of compliance enforcement

BUT ALSO:

Many common and shared principles

European Directives

- A Directive is issued by the European Commission and approved by European Parliament and Council of Ministers
- It contains mandatory instructions to the Governments of all **Member States**
- State laws by must be adapted or produced in line with the requirements of the Directive and before the specified deadline/s
- A **'principle of subsidiarity'** applies, whereby much implementation detail is at the discretion of individual Member States, allowing a diversity of approaches

EPBD 1 (2002): Key requirements on Energy Performance

The Directive obliges all Member States, by specified dates*, to:

1. Adopt an Energy Performance (EP) calculation methodology that complies with EU guidelines

2. Set **Minimum Energy Performance Standards** for new buildings and 'major renovations'
   - Standards to be reviewed at least every 5 years

Cf. ECBC

3. Establish Energy Performance Certification** (energy label) mandatory for all new buildings &/or all buildings offered for sale or rental

** Up to 3-year extension was originally allowed on full implementation of some requirements*

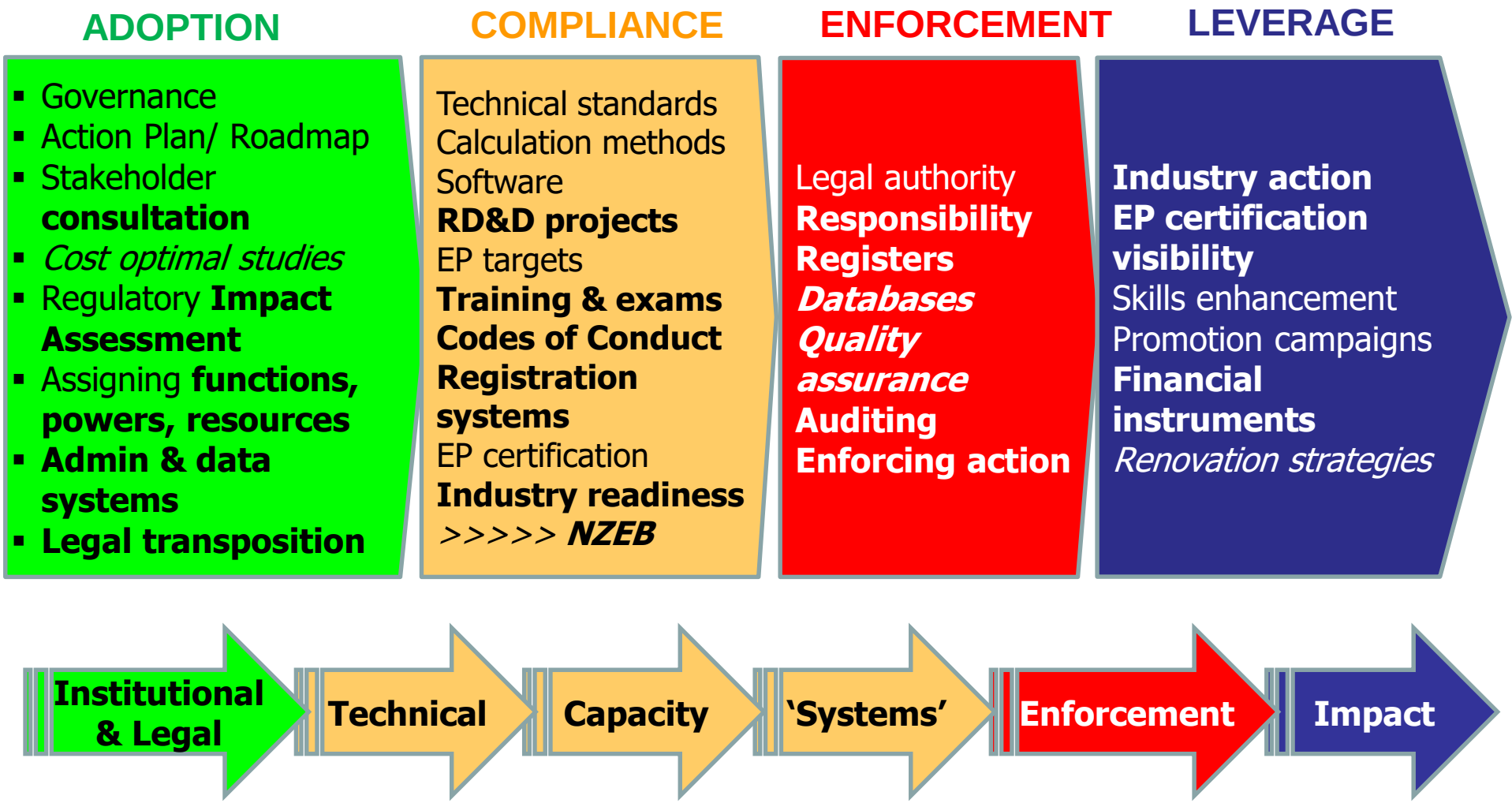
*** Must be done in an independent manner*

A key support to implementation: The EPBD collaborative forum/ framework

(= 'Concerted Action')

Launched by EU Commission to promote dialogue and exchange of best practice between Member States

EPBD implementation steps
Approaches/ experiences from EU and its Member States



National calculation methodologies and software

Dual role of calculation procedure and software

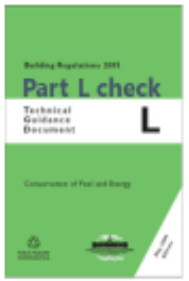
Aligned with EN standard

Calculation method

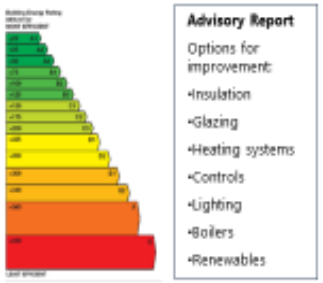
SOFTWARE

- Official method
- DSM1
- DSM2
- DSM3
- DSMx

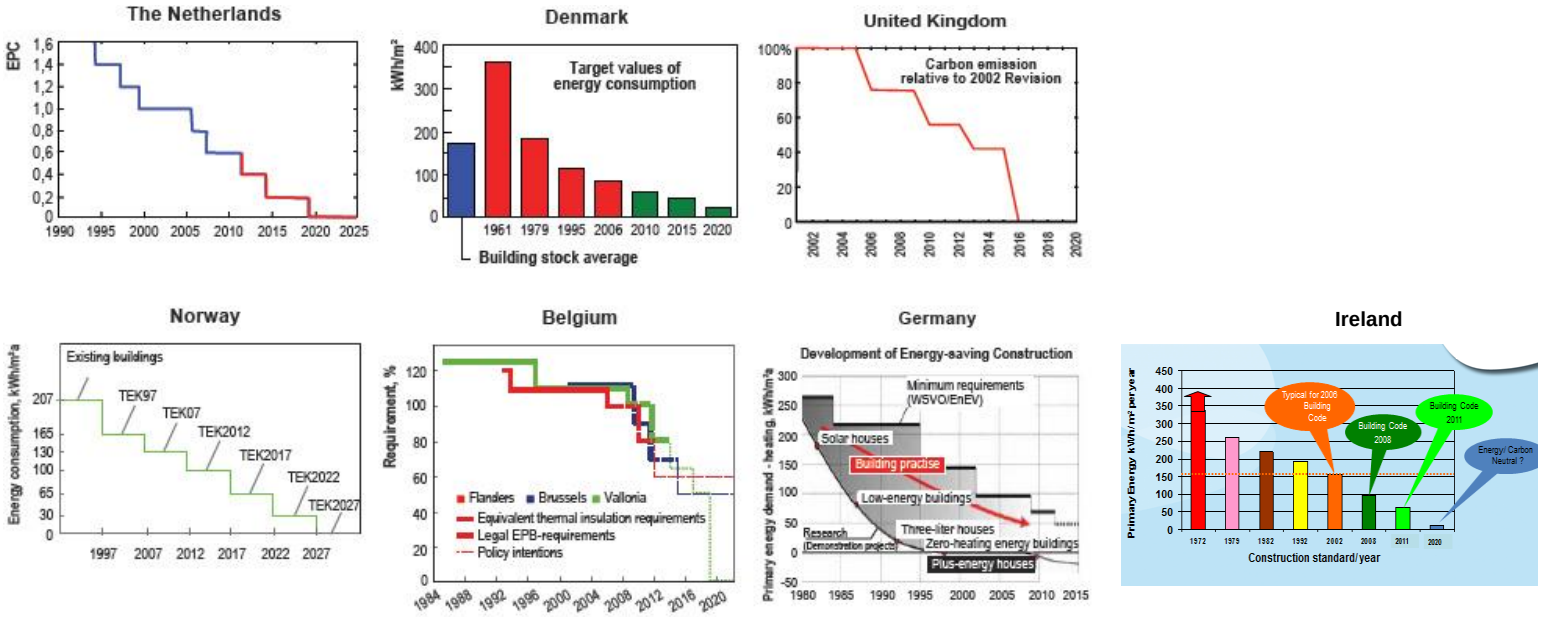
EP compliance



EPC generation



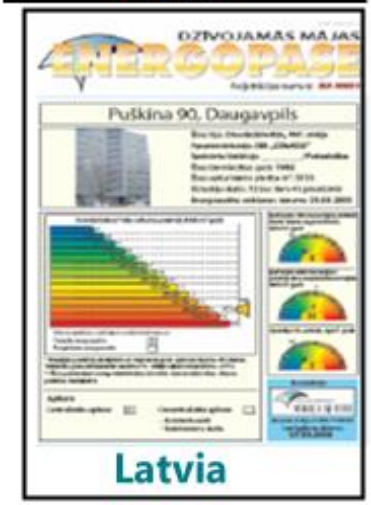
EPBD: accelerating the progression in EP targets



After 31 December 2020 all new buildings occupied are to be ‘nearly zero’ (NZEB) energy buildings (31 December 2018 for public buildings)

Design formats for some EP certificates (labels) in Europe

Many variations ….



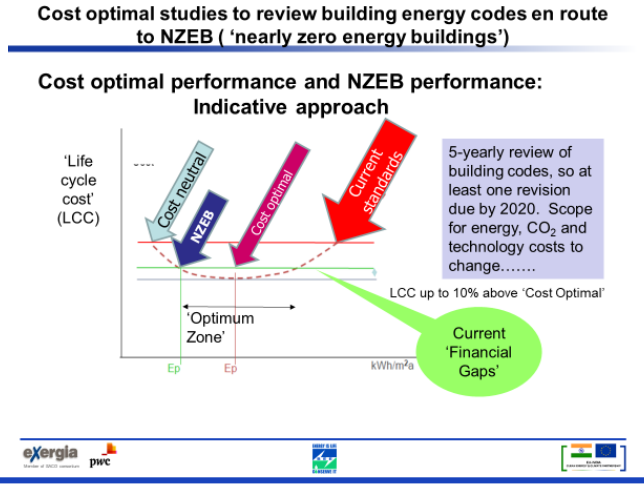
Public consultation on design, scales etc.

But, despite differences, we can all "read" similar message in any of the certificates…

EPBD 2 (‘recast’) (2010): New requirements

- Establish and apply a ‘cost optimal’ methodology* in 5-year review of EP standards
- Define and achieve a ‘Nearly Zero Energy Buildings’ (NZEB) standard by 2019-2021 – including publishing ‘roadmap’ to this goal
- Mandatory inclusion of EPCs in adverts of property for sale or rental
- Establish independent monitoring and control systems for EPCs

* A form of ‘Life Cycle Analysis



Defining 'Nearly Zero Energy Buildings' (NZEB)

Performance Criterion ('Primary Energy'):

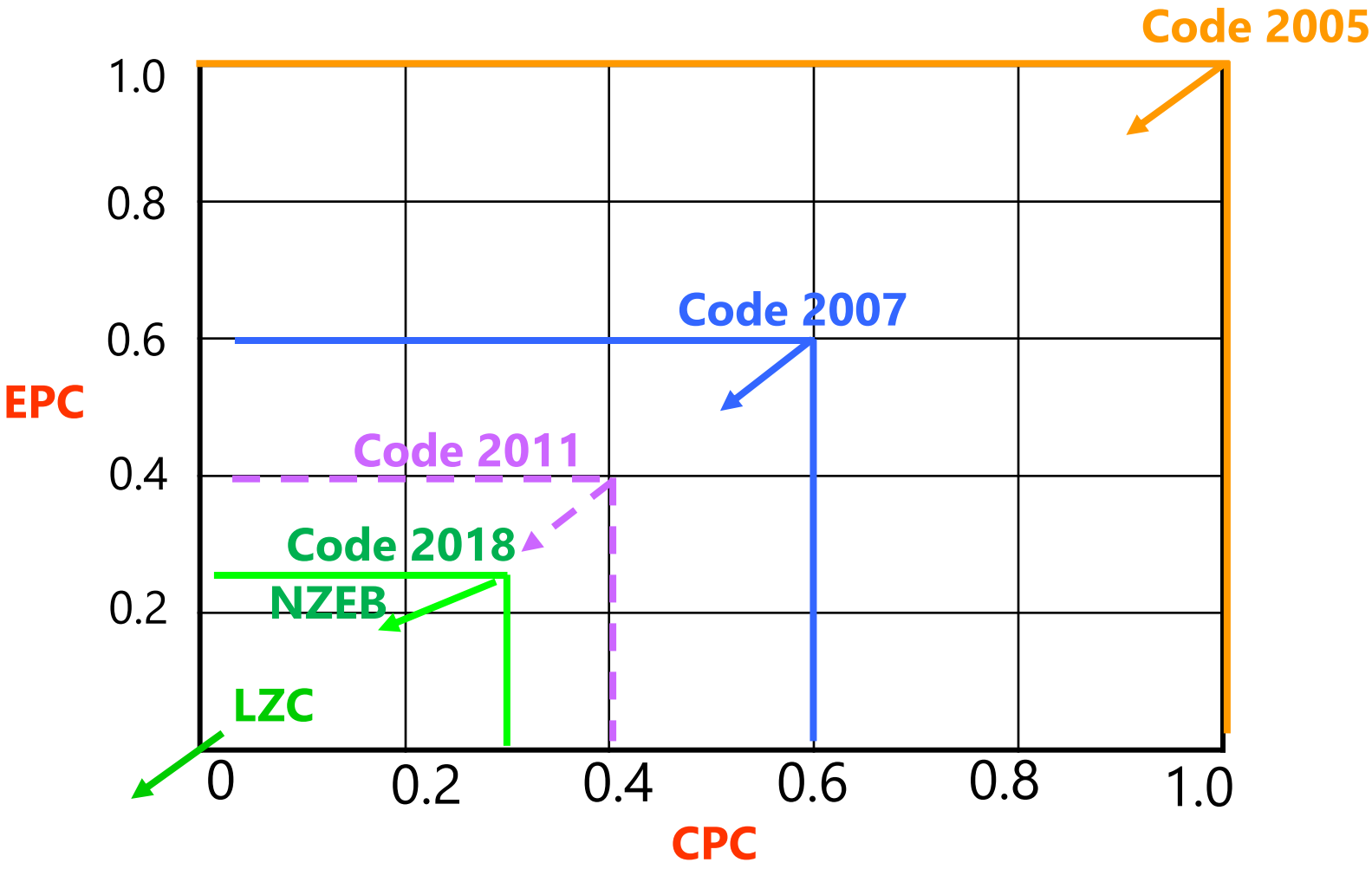
- New buildings: less than 50 kWh/m^2 for most buildings (possibly 150-200 kWh/m^2 for intense activity buildings such as hospitals)
- Renovations to existing buildings: less than 150 kWh/m^2 for most buildings (possibly 250-300 kWh/m^2 for intense activity buildings such as hospitals)
- Potentially 'energy positive' (from export of renewable energy surplus…..)

'Significant' **Renewable Energy** contribution

Comfort criteria - Maintain acceptable levels of:

- Internal environmental temperature
- Humidity
- Air quality and movement
- Lighting levels and quality
- Noise

Simplified example of ‘roadmap process’ to ‘NZEB’

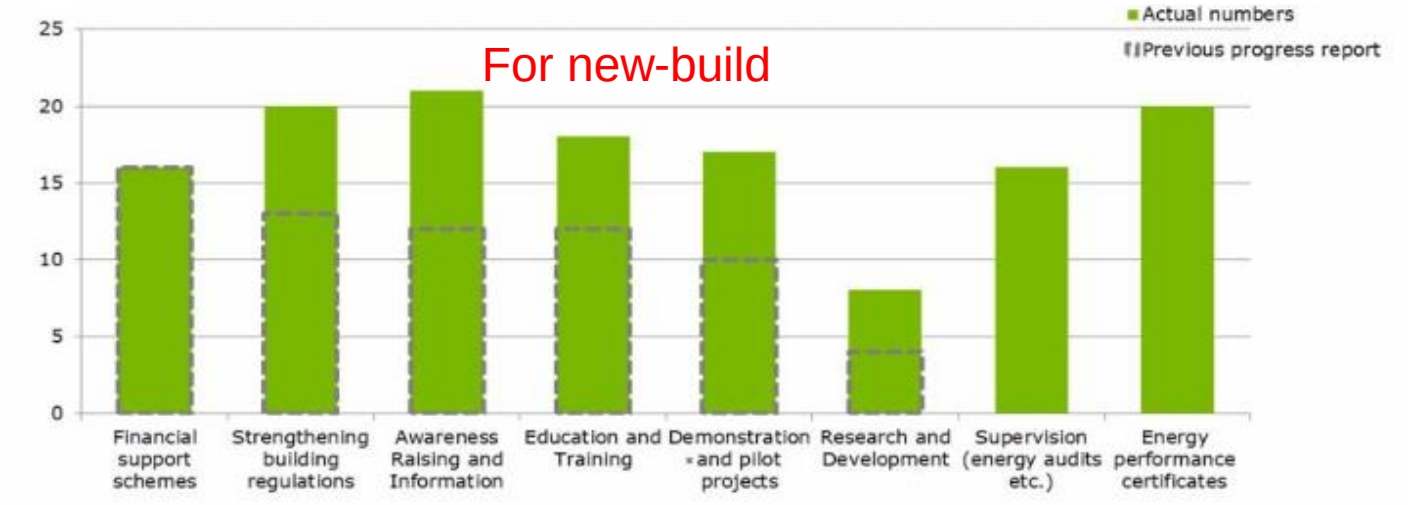


RD&D projects: helping to build capacity & confidence

Low energy building demonstration projects in Europe:
30 examples from 19 Member States

Main policies & measures in support of improved EP standards

No. of Member States



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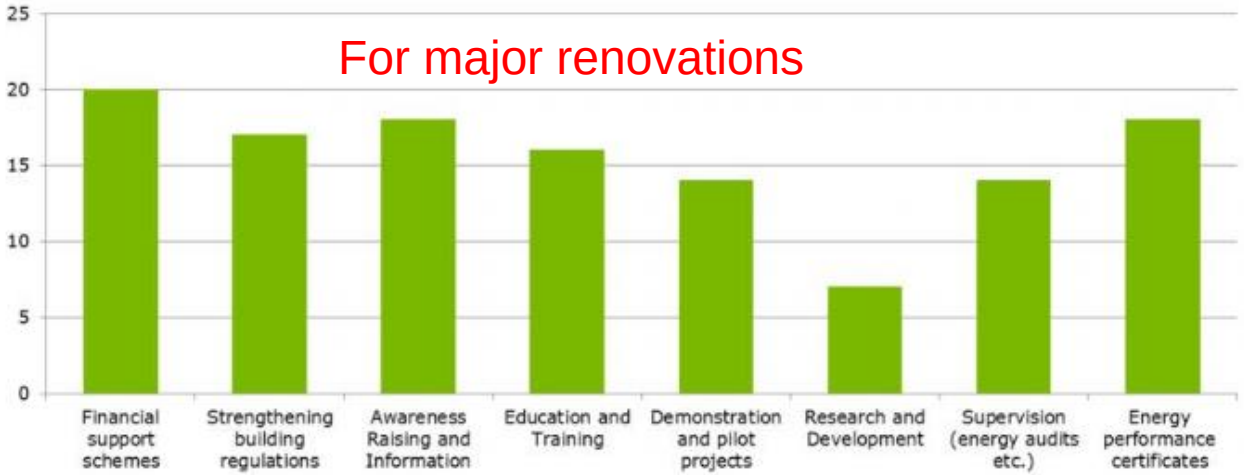


Visibility of EP Certificates

Influencing buyer choice & valuation: Emerging research from a number of EU countries indicates that a better energy rating on the EP certificate translates into a higher building price or rental rate

Linking to rules on ‘Green Public Procurement’ (another EU Directive)

Roles of key-players in a well-functioning market of EE buildings

Well-informed citizen
asks to live and work in energy efficient building

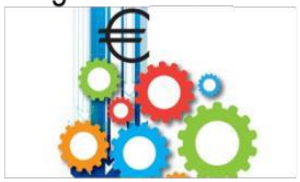
Information

Energy Performance Certificate

Inspection

Laws, Regulations, Standards impose…

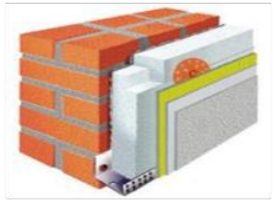
Financing mechanisms facilitate



Construction company offers…

Quality

New construction materials and techniques



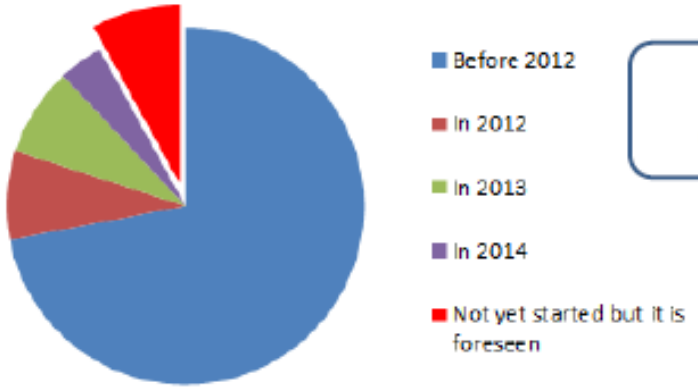
The industry: Role, readiness, opportunity

EP (ECBC) targets are a ‘LEVEL PLAYING FIELD’ for developers/ builders

Construction is a sector where REGULATION drives INNOVATION

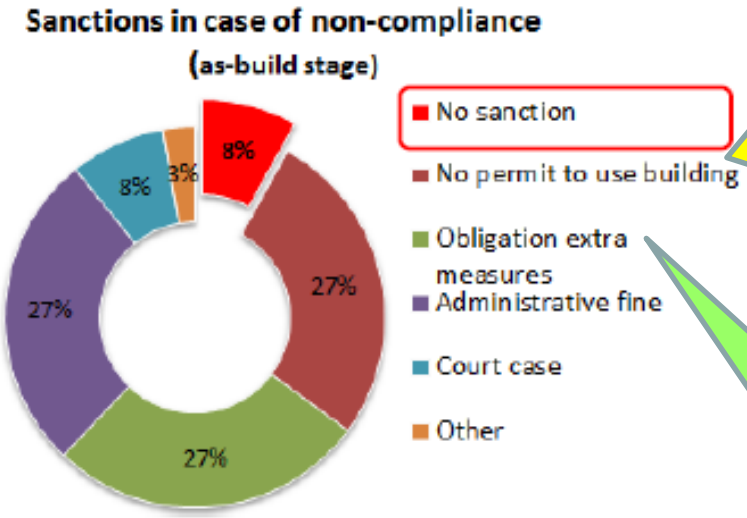
Enforcement and sanctions profiling for EU Member States

When did your country/ region start to enforce the requirements for new buildings?



For some EU Member States, the enforcement of this requirement is recent

Without sanctions, enforcement cannot be effective



Most powerful sanction: denial of permit

Obliges corrective action to comply

Examples of technologies driven by building energy codes

- Higher performance insulation materials
- Vapour barriers, draught sealing
- High performance glazing
- Solar shading and control products
- Passive ventilation products, mechanical ventilation heat recovery, hybrid ventilation systems
- Smarter heating controls
- DHW insulated storage, heat exchangers
- Condensing boilers
- More efficient chillers
- More efficient motors, variable speed drives
- Solar water heating
- Biomass boilers
- Heat pumps
- Group heating for apartments, heat metering, heat exchangers
- Energy efficient lighting: LED lamps, luminaires, controls
- Comprehensive building systems/ offsite construction

EPBD achievements: IMPACTS

1. Energy, cost and emissions **savings**, plus more energy security
2. **Step change** in code standards of energy performance in many countries – but not all
3. EP established as an **integral** requirement in building design, specification, procurement and marketing processes
4. Helping to drive **renewable** energy deployment
5. Widespread market **visibility** and awareness of EP of buildings (EPC)
6. Evidence of impact on **property values**
7. **Impetus to innovation** (better quality & cost) by designers, developers
8. **Upskilling** of other service providers within the building industry
9. A clear policy commitment and **path to 'nearly zero' energy buildings**

EPBD 3: PROPOSALS

EC announcement of 'Clean energy for all Europeans' package (2016) – adopted in 2018:

1. EPBD contents extended/ modernised
2. Stronger requirements on databases to enable QA and enforcement
3. Encouraging exploitation of ICT for automation & control
4. New obligations on electro-mobility facilities in buildings
5. New 'smartness indicator' on readiness for new dynamic technologies & grid interaction
6. Emphasis on long term renovation strategies, with milestones leading to 2030 & 2050 (incl. alleviating 'energy poverty')
7. 'Smart finance for smart buildings' initiatives

EPBD implementation: SUCCESS FACTORS

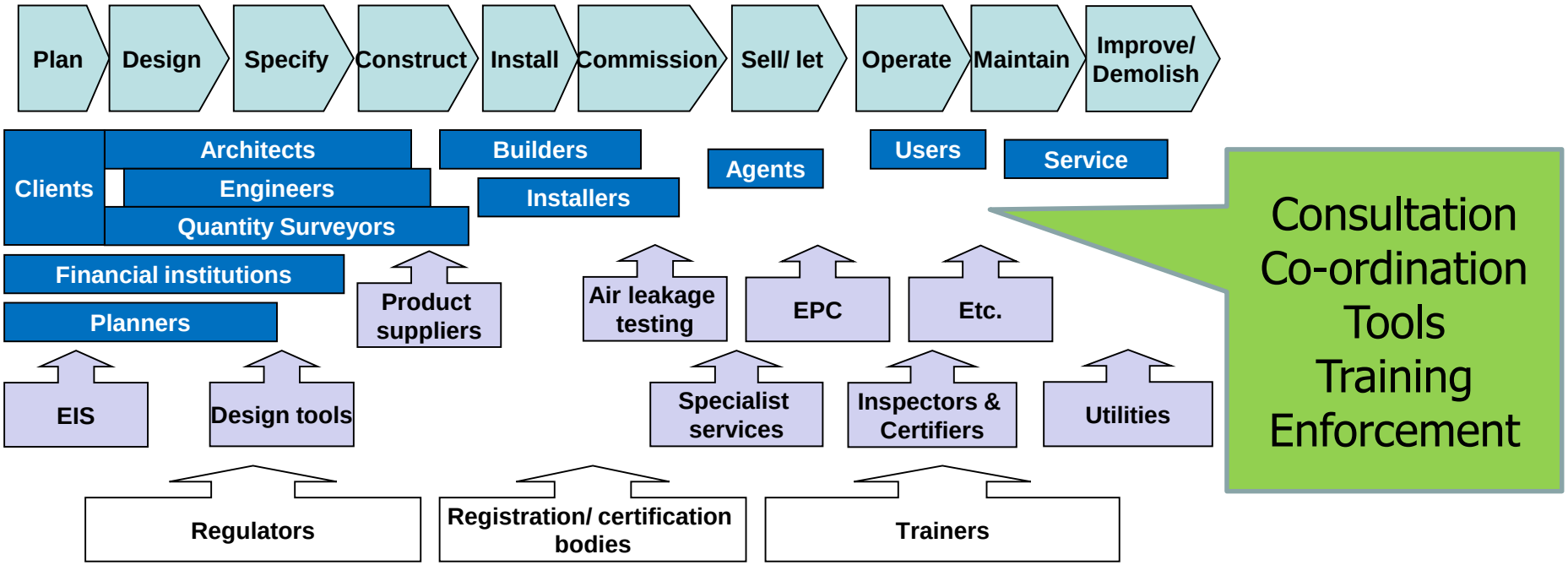
1) **Leadership**, commitment & coordination in governance
2) **Clear action plan/ roadmap**
3) **Consultation** and consensus on both legislative & operational details
4) Coordinated structures, clear responsibilities (**compliance chain**)
5) Clear and **realistic (but sufficiently ambitious) targets**, timetables
6) **Allied policy activities** (e.g. demonstration projects) – capacity, confidence
7) Technical criteria based on **robust evidence** –research, market trials, international
8) Coordinated **training** programme ensuring sufficient numbers upskilled
9) **Tools** – good quality support documentation & software tools which are validated & compatible with the official administrative systems software
10) Investment in on-line databases & ICT **smart administrative systems** - enable monitoring, verification, enforcement & future initiatives and strategies
11) Well designed monitoring, validation, QA & **enforcement** systems
12) Sustained **communication** campaigns through multiple channels – with the industry & general public (including political representatives)
13) Active collaboration & **sharing of best practice** experiences

SUMMARY

- EPBD in its third phase of evolution
- A key policy instrument driving market change:
  - Accelerating EP standards
  - Making EP visible
  - Stimulating innovation
  - Paving the path to 2030+ targets
- But variable ambition and enforcement levels across Member States
- Beginning to extend its impact into the renovation sector
- EPBD 3 has new proposals, extending to:
  - Emphasis on renovation strategies
  - Emphasis on finance
  - Electromobility
  - 'Smart buildings'
- A continuing work in progress……

Lessons for India?: Stakeholders in a complex arena

The 'supply chain' = the 'skills chain' = the 'quality chain'

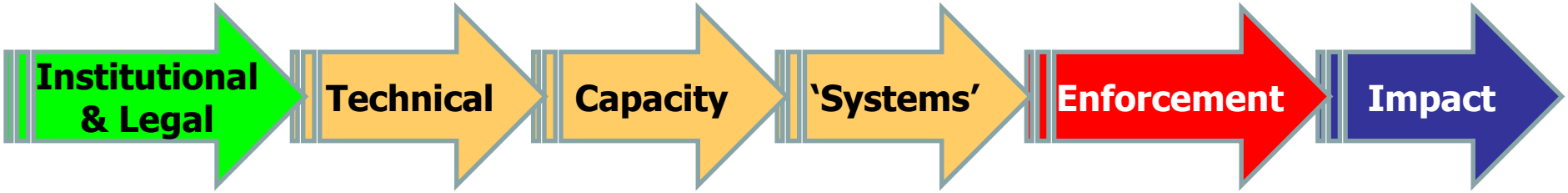


An industry arena of diverse, fragmented, sometimes disconnected sets of skills

Multiple market players & influencers

Lessons for India?: The ingredients for success

ADOPTION	COMPLIANCE	ENFORCEMENT	LEVERAGE
▪ Governance ▪ Action Plan/ **Roadmap** ▪ Stakeholder consultation ▪ *Cost optimal studies* ▪ **Regulatory Impact Assessment** ▪ **Assigning functions, powers, resources** ▪ **Admin & data systems** ▪ Legal transposition	Technical standards Calculation methods Software **RD&D projects** EP targets **Training & exams** **Codes of Conduct** **Registration systems** EP certification **Industry readiness** >>>>> ***NZEB***	Legal authority **Responsibility** Registers ***Databases*** ***Quality assurance*** Auditing **Enforcing action**	Industry action **EP certification visibility** Skills enhancement Promotion campaigns **Financial instruments** *Renovation strategies*

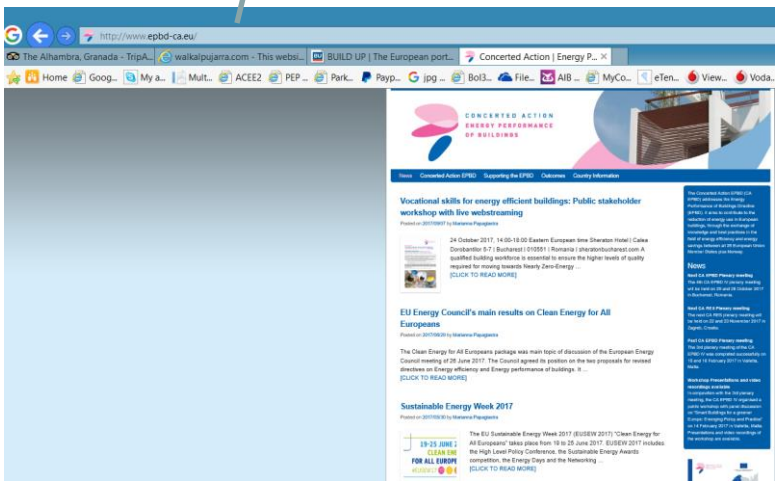


REFERENCES

ACE: E2 Position Papers #1&2

EU 'BUILD UP' website
www.buildup.eu

EPBD 'Concerted Action' website
www.epbd-ca.eu



Thank you for your attention

ACE:E2 project website www.ace-e2.eu

EXERGIA Energy and Environment Consultants

Omirou Str. & Vissarionos 1, 106 72 Athens

Tel: +30210 6996185, Fax: +30210 6996186

www.exergia.gr

In collaboration with

Price Waterhouse Coopers India

Building 10, Tower C, Floor 17th, DLF Cyber City

Gurgaon 122002, Haryana| India

Tel. +91 0124 3306259

www.pwc.in

Questions & Discussion Session

If you have any queries after the webinar, please send to:

webinars@exergia.gr

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Adoption, Compliance, Enforcement for Energy Efficiency

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