

The new EU Cost-optimum Regulation: What Impact will it have on EU and Global Building Codes?

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Main points



1. **Why Cost Optimality ?**
2. **Strengths of Methodology: Some Questions that Need to be Answered First**
3. **Impacts, Challenges & Considerations**
4. **State of Play of Legislation**

Background



1. **EU-level codes considered in 2006 EE Action Plan**
2. **Concrete requirement in Buildings Directive 2010**
3. **Wide Stakeholder Consultation & "Concerted Action" between Member States**
4. **Regulation (Delegated Act) adoption ca. 30.11.11**

Why Cost Optimality?

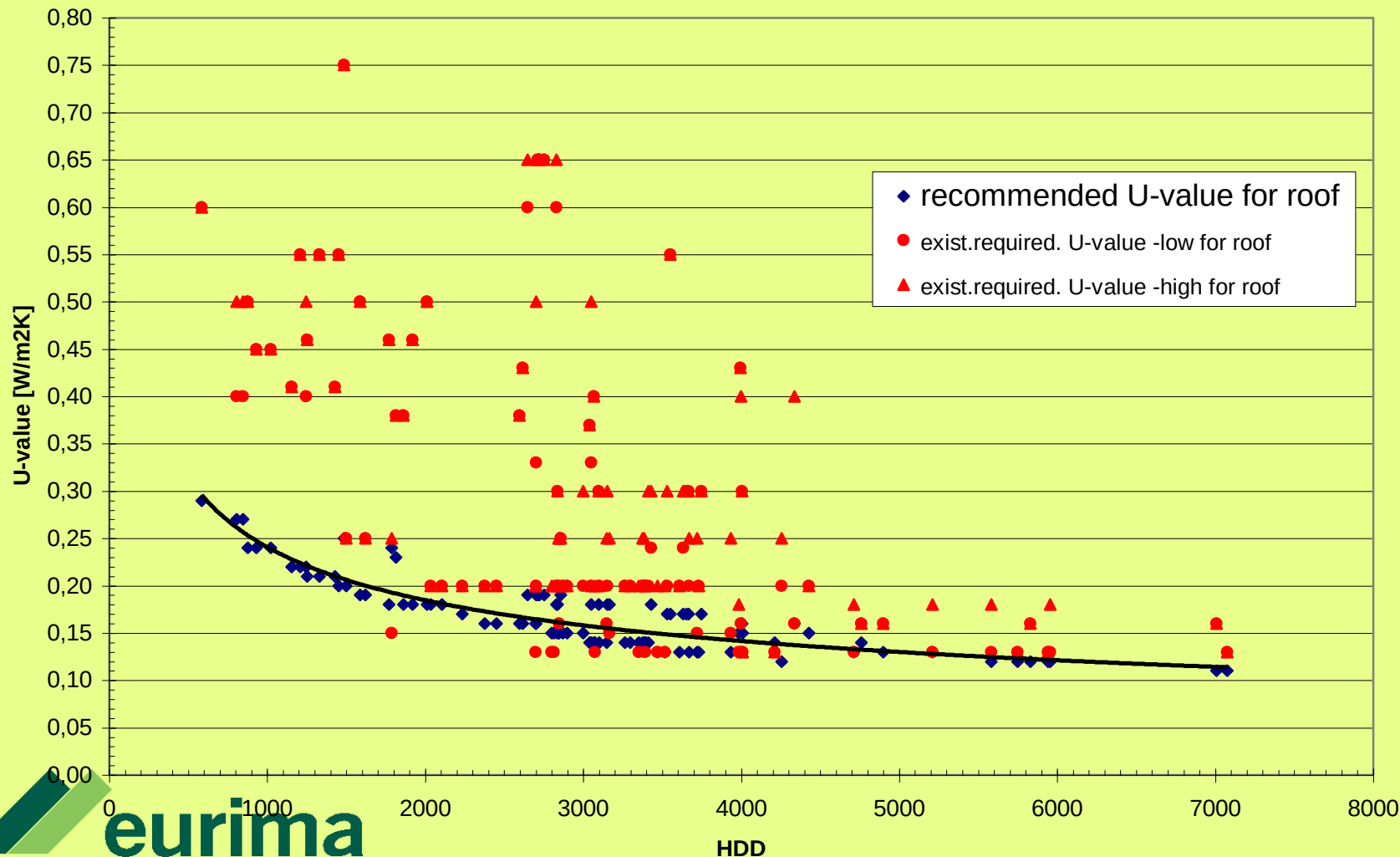


- 1. Most EU Member States have much weaker building codes than can be justified by cost of energy & corresponding cost of investment for saving this energy**
- 2. Performance levels (e.g. kWh/M2, U-values, etc.) are set at national (regional) level**
- 3. Possible to establish benchmarking system at EU level & ask Member States to compare own codes to codes calculated to be cost optimal**

Cost-optimal & Current Required U-values (H & L) roofing insulation, prevailing energy prices, heating d.d.



Peak price - roof



Examples of EE investment packages

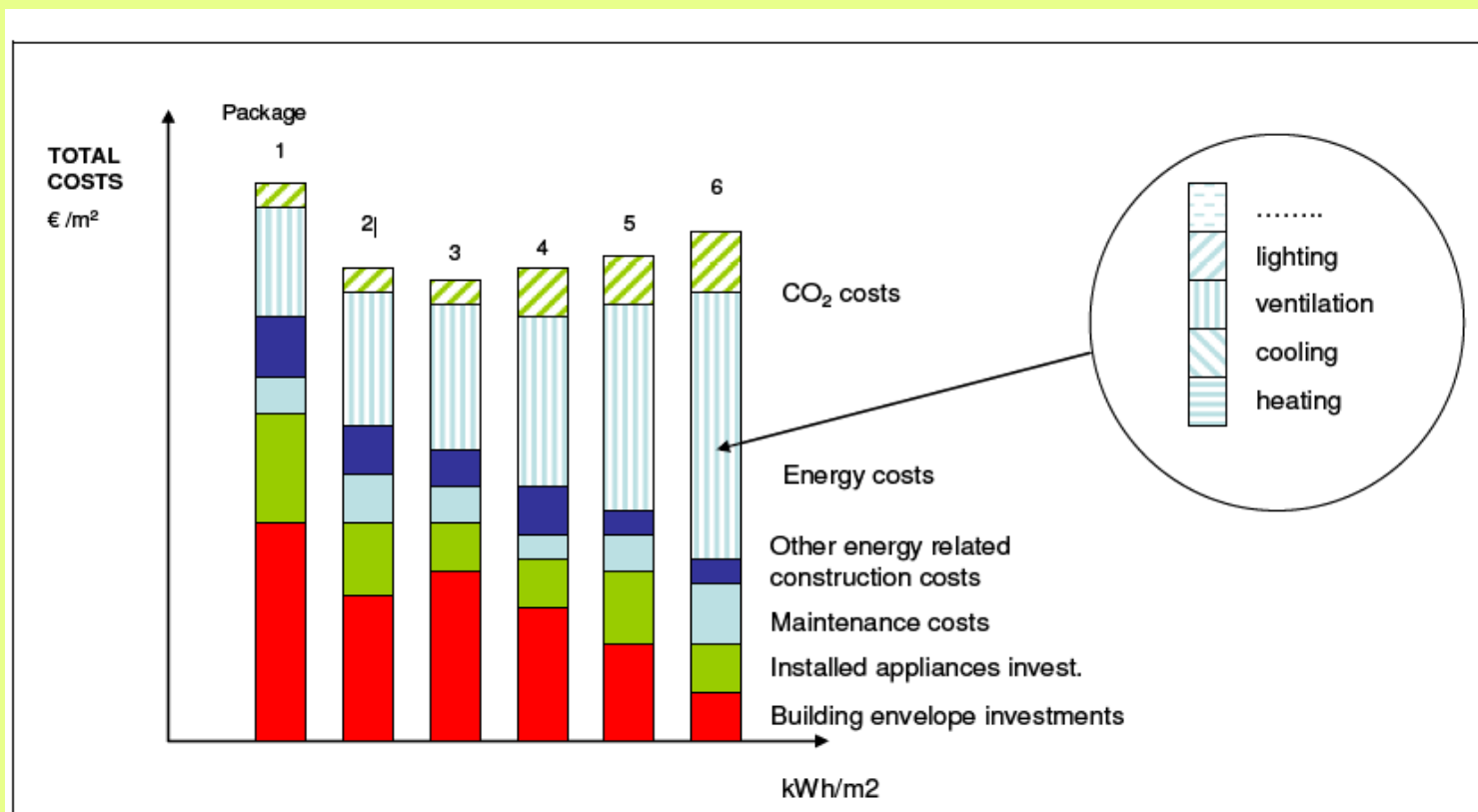
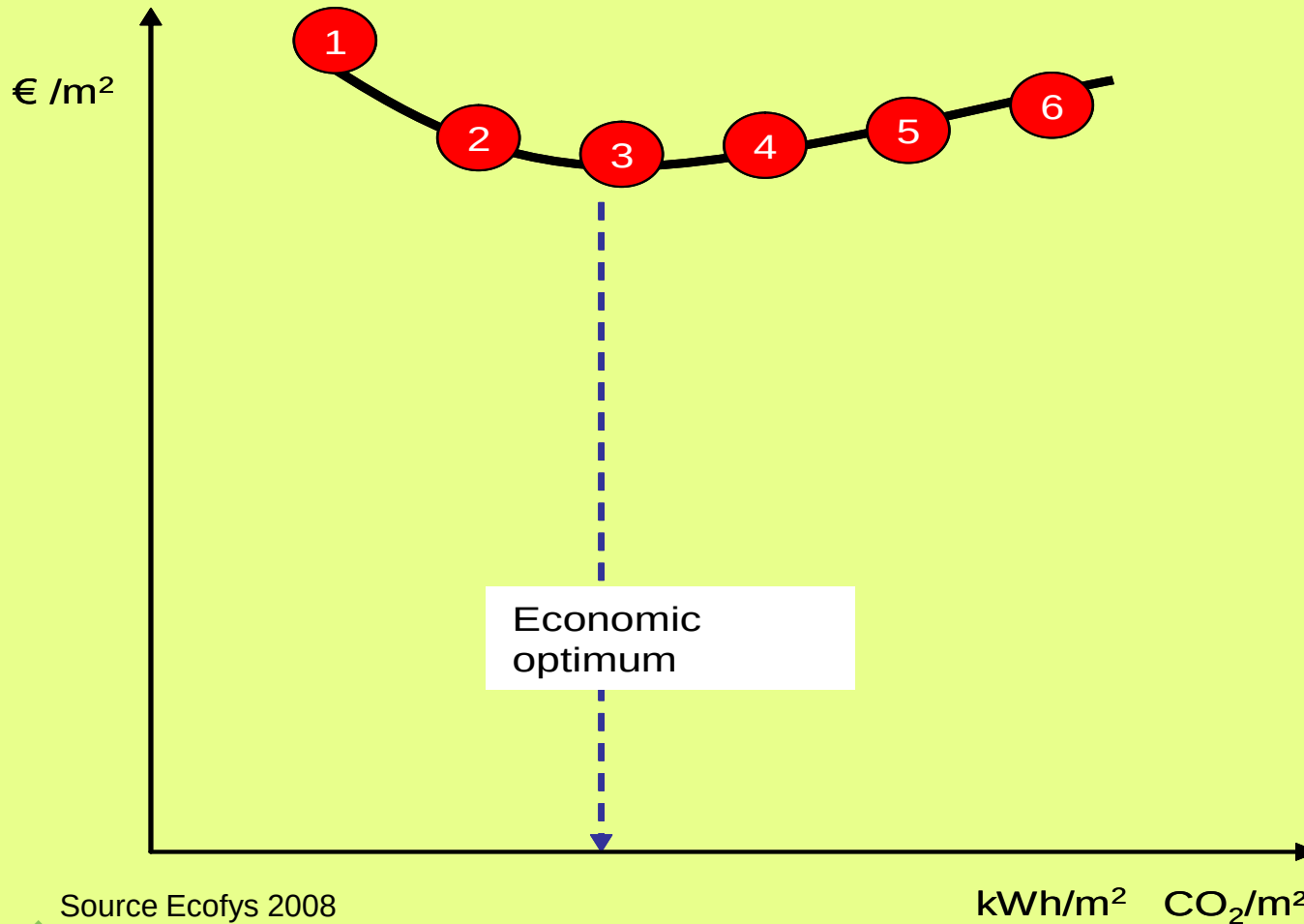


Figure 1: Cost calculations of different packages (example only)

Source Ecofys 2008

Finding the economic optimum of packages



Source Ecofys 2008

Net present value approach (global cost approach)



$$C_g(\tau) = C_I + \sum_j \left[\sum_{i=1}^{\tau} (C_{a,i}(j) \times R_d(i)) - V_{f,\tau}(j) \right]$$

$C_g(\tau)$ global cost (referred to starting year τ_0)

C_I initial investment costs

$C_{a,i}(j)$ cost during year i for energy-related component j (energy costs, operational costs, periodic or replacement costs, maintenance costs and added costs)

$R_d(i)$ discount rate for year i

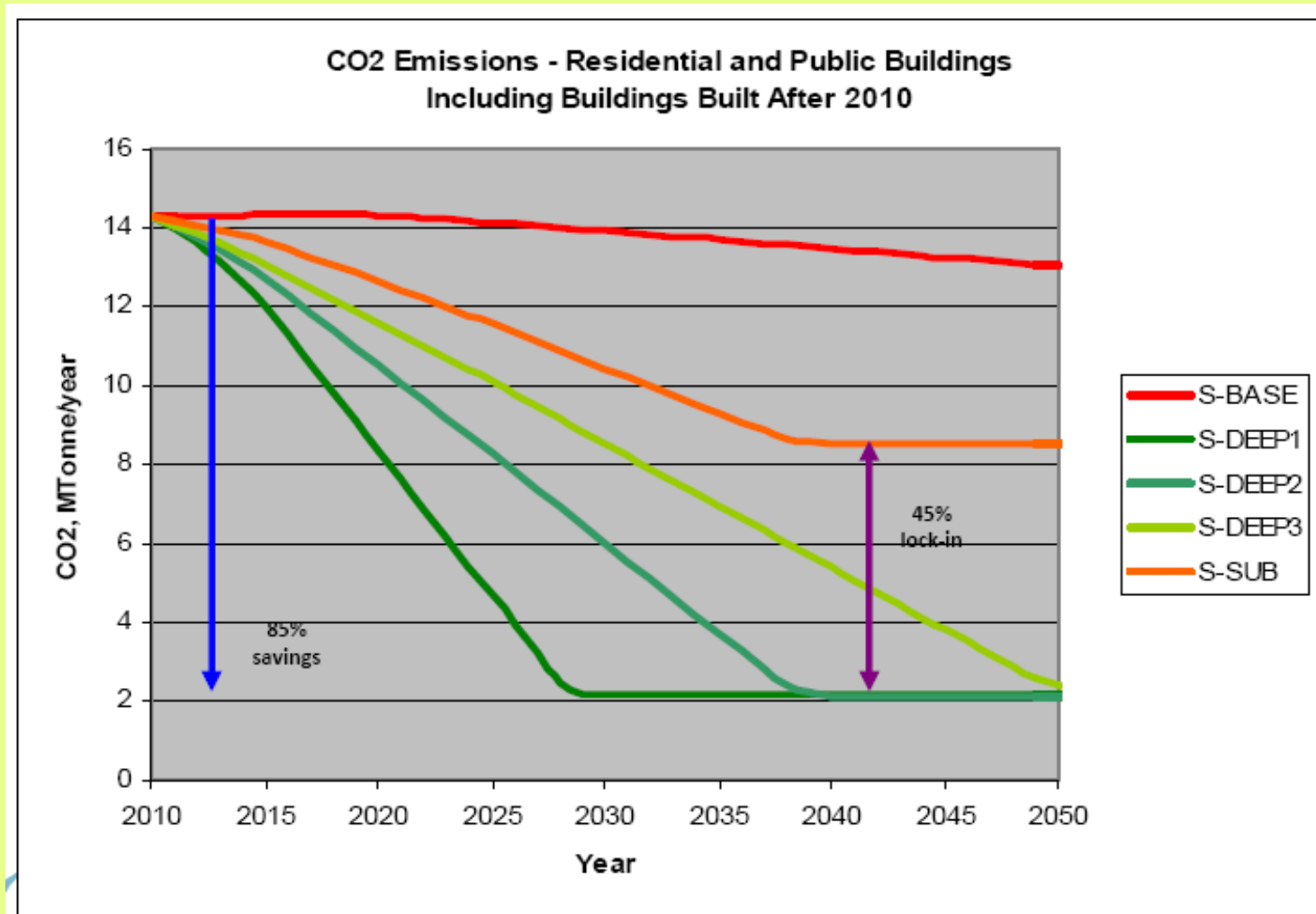
$V_{f,\tau}(j)$ final value of component j at the end of the calculation period (referred to the starting year τ_0)

Justification for cost optimality benchmarking framework



- ☐ Can ensure similar and comparable levels of energy performance in MS
- ☐ Can save large amounts of energy, CO2 and unnecessary costs
- ☐ Still allows for subsidiarity & regard for national conditions, climate differences, building cultures, local costs & local energy prices
- ☐ Life cycle costing allows inclusion of full service life of long-term investments (e.g. deep renovations w/insulation; residuals)

Lock in effects from shallow renovations: Avoided by Use of Cost optimality & LCC



Impacts, challenges & considerations



- ☐ Future energy prices? EC forecast
- ☐ Both societal (extern.) & private perspective calculation required (NZEB & other goals)
- ☐ Reference buildings (function, size, age) decided by MS. Minimum number. Guidance document
- ☐ The greater the number of packages of measures, the better the curve
- ☐ New Member States need technology transfer
- ☐ Future innovation & learning curves included

Some More Challenges & Considerations



- ☐ Renovate or demolish? Can cost optimal calculation decide? No, but codes can!
- ☐ Are deep renovations to NZEB level cost optimal? Yes, when allow for learning curve & productivity of labour improvements! Dynamics!
- ☐ Can cost optimal levels for components (building elements) be found with NPV & LCC? Required. Place elements in building (software model)
- ☐ Should energy price include peak load costs (kW), as well as kWh costs? Yes!

Some Final Considerations



- ☐ Are “dry runs” (i.e. test cases) of the cost optimal methodology run in Member States?
 - Yes, some. Must include as many “building cultures”, climate zones, & energy mixes as possible!

- ☐ Is sustainability (imbedded energy) included?
 - No, but “disposal costs” in EPBD opens door !
NOx & VOC discussed.

- ☐ New questions will likely arise in future!

Can the Cost optimality Methodology work even globally?



- ☐ Yes, with adaptation & use of experience, case studies, experts & stakeholders.
- ☐ The Regulation allows flexibility for improvement. It will be an iterative process.
- ☐ Very good guidance document provided.
- ☐ Similar methodologies used elsewhere on smaller scale.

State of Play of Legislative Procedure



- ☐ Delegated Act; Commission adopts & sends to European Parliament & Council to accept / reject.
- ☐ In EPBD, Regulation was to be adopted 30.06.11.
- ☐ Delayed. Objections to lack of clear requirements for societal calculations, lack of quantified gaps (15%) between national codes & cost-optimal, etc.
- ☐ Still discussion in Commission on inclusion of NOx & VOC. Expected to be resolved soon, with adoption end November.

Thank you!

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