

A smart EPBD for people, business and the environment

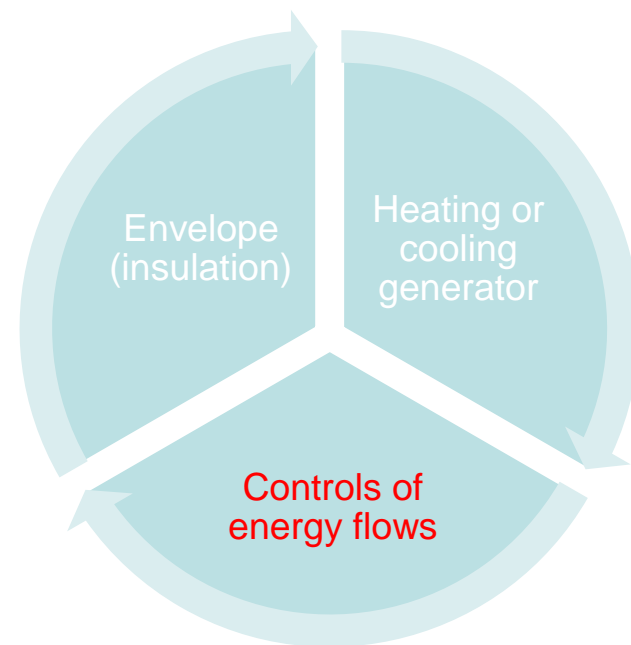


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The challenge

“Clean energy for all Europeans” needs:

- A smart energy transition in buildings
- Concrete actions towards decarbonized buildings 2050
- Optimized performance of technical building systems across the stock
- Improvements in all 3 dimensions of building energy performance





A smart EPBD: what does it mean?

- i) Leverage large accumulated CO2 and energy cost reductions by 2030**
- ii) Enable cost-effective decarbonization of the building stock by 2050**
- iii) Put people in control**

Make buildings smart

- Make energy use data transparent to user
- Optimize energy use in real time
- Maintain optimized performance at least cost
- Ensure healthy indoor air quality

Match expected and actual energy use

- Better envelopes make heating, cooling, ventilation demands more dynamic
- Systems optimized for part load conditions are decisive for optimized energy use under real-life conditions

Get control basics right

- Capital-light, fast-payback, no-regret
- Empower occupants to take control of expenses
- 2012 EED: "Measuring individual consumption of heating only makes sense with thermostatic radiator valves"

4 Key legal elements tackling market failures

- **Requirements for BACS in large non-residential buildings**
 - ✓ Annual energy savings up to 20.3% of all EU service sector building energy cons. (49.7 Mtoe)
 - ✓ Low-capital investment (30 €/m²), payback 2-3 y, returns 9 times higher than investments
- **Cost-effective upgrade to individual room temperature control function**
 - ✓ Annual energy savings up to 160 TWh, 29 Mt CO₂
 - ✓ Low-capital investments (1.5 €/m²), payback < 2 y, returns 7 times higher than investments
- **Control function alternative to inspections in large residential buildings**
 - ✓ Annual energy savings up to 23.4% EU residential building energy consumption (98.1 Mtoe)
 - ✓ Low-capital investment (12 €/m²), payback 2-3 y, returns 9 times higher than investments
- **Focus on part load for actual building use**
 - ✓ Most of the time TBS need to run only with a fraction of their full capacity
 - ✓ Real life energy use is governed by performance under part load conditions

Adequate advice alternative for inspections?

- Objective of inspection, Recital 26 of 2010 EPBD

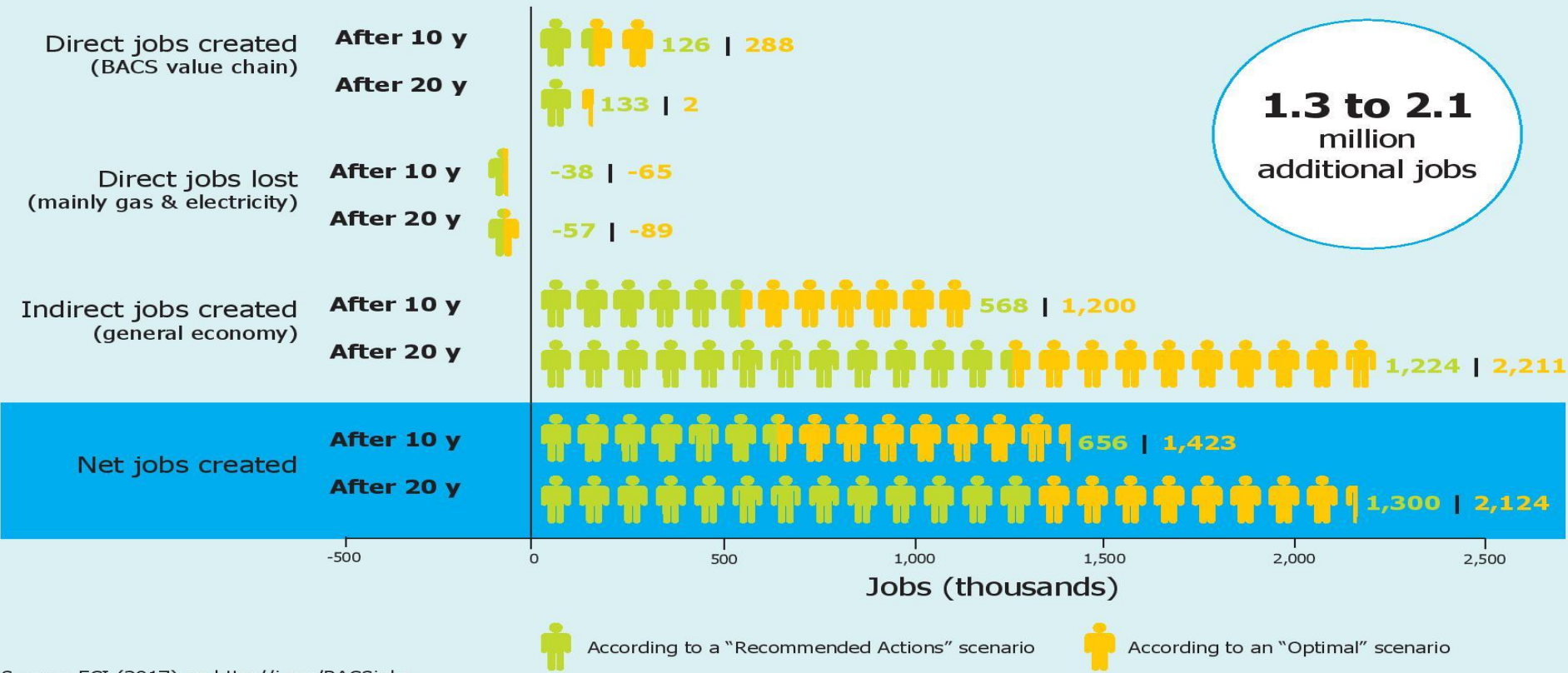
*"Regular maintenance and inspection of heating and air-conditioning systems by qualified personnel **contributes to maintaining their correct adjustment** in accordance with the product specification and in that way ensures optimal performance from an environmental, safety and energy point of view. [...]"*

- "Adequate advice alternative" in Council GA/2010 EPBD is different:
*"As an alternative to paragraph 1, Member States may opt to take measures to ensure that adequate advice is given to users **concerning the replacement of heat generators**, other modifications to the heating system and alternative solutions to assess the efficiency and appropriate size of the heating generator."*

- Without maintenance: increase of energy consumption expected
 - Fedene/Cardonnel, France, 2014: +10% in 5 years, +18% in 7 years, +35% in 10years
- Proposed new Art. 14/15 already include cost-efficient alternative
- Scope for heating systems already decreased: threshold 20 kW → 70 kW (?)

Effects on employment: ECI

Growth in jobs under incentivizing policy framework for EU-wide BACS deployment



Source: ECI (2017) on <http://j.mp/BACSjobs>



Conclusion

The new EPBD should support optimal technical building system performance 24/7/365

- Optimizing energy flows by building automation and controls is key for 2030/2050 policy:
 - Reduce energy bills of citizens and enterprises
 - Maintain building energy performance over time
 - Optimize *actual* energy use and increase comfort
- Benefits for Energy Union are large, investments are no-regret, payback is short
- 2010 EPBD was a first step
- But progress is too slow and a large improvement potential remains
- A meaningful upgrade of EPBD Articles 8 and 15 on technical building systems and inspections is needed