

EESC energy efficiency days – 24/09/2009



**The contribution of energy efficient
glass products to sustainability
and CO₂ reduction in the EU**

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Europe's Manufacturers of Building, Automotive and Transport Glass



Overview

- About Glass for Europe
- The objectives of the EU and the current situation
- Two studies:
 - Low-E Insulating Glass for Energy Efficient Buildings
 - Solar Control Glass for Greater Energy Efficiency
- Conclusion



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About Glass for Europe

- 4 members and 1 associate = 90% of the EU production
- Flat glass:
 - Primarily building, automotive & transport
 - Also furnitures, solar panels, electronics, appliances
- Partner of CPIV
- Campaign associate of the EU Sustainable Energy Europe campaign

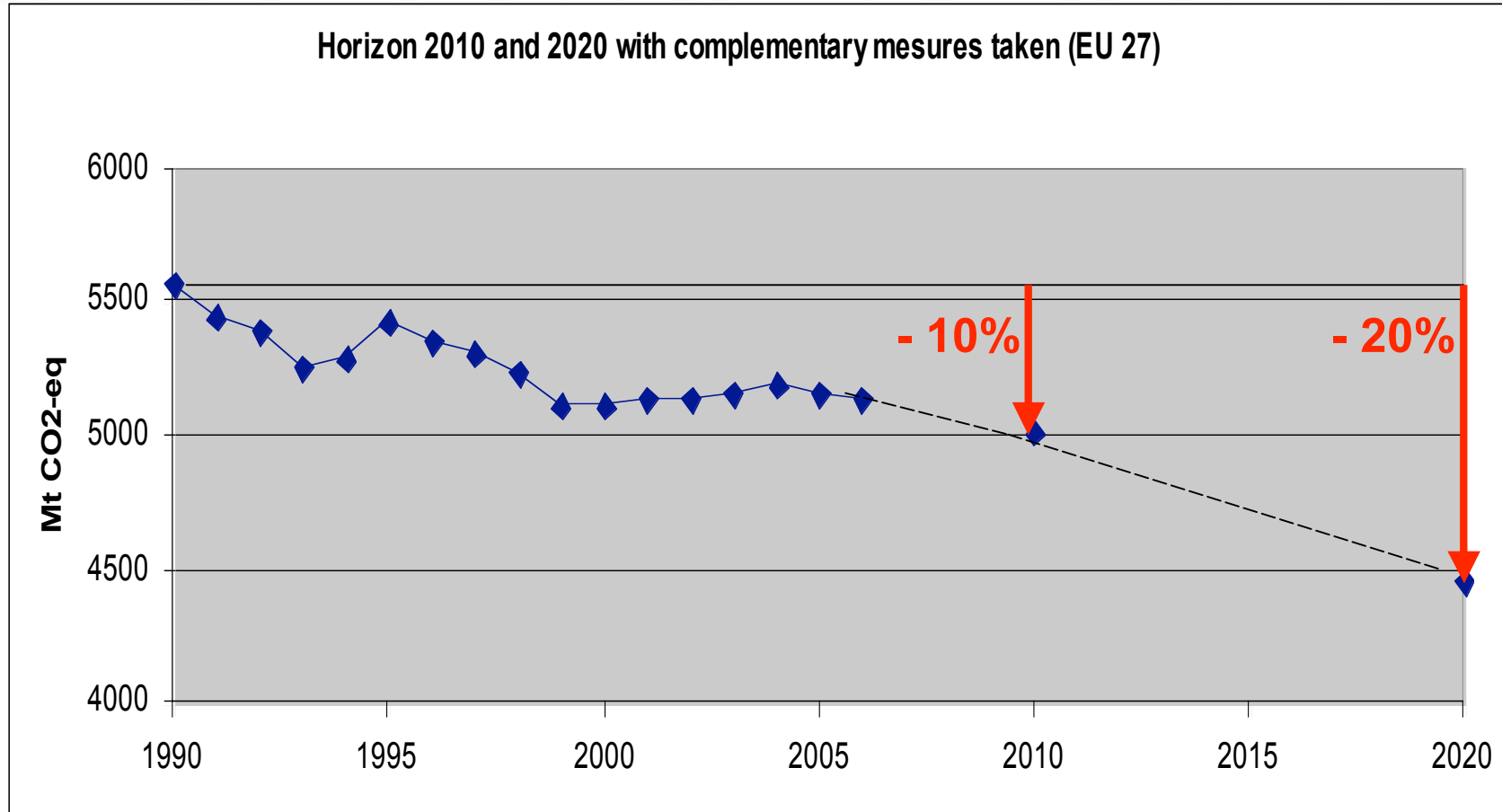


In association with:





Reduction of CO-emissions for horizon 2010 and 2020



Objectives of the EU and the current situation

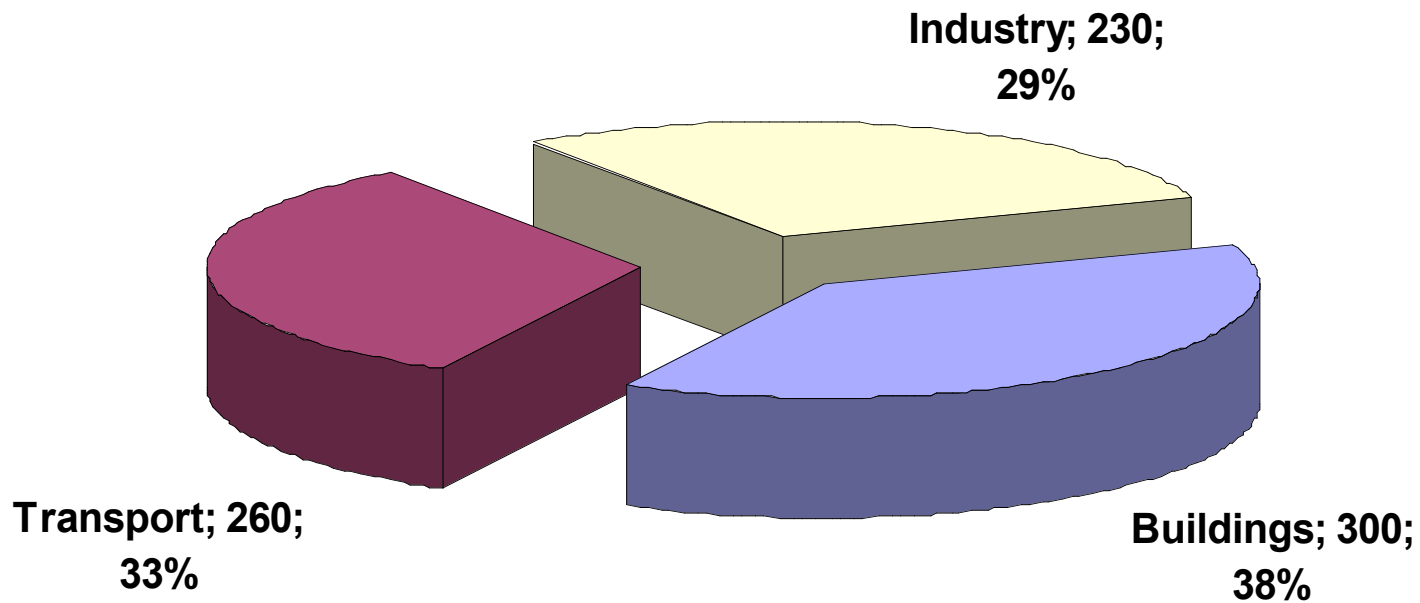
- 10 % of energy saving by the year 2010 (1990 – 2010)
- 20% of energy saving by the year 2020 (2010 – 2020)
 - **790 Mt of CO₂ emissions per year.**
 - **4x the effort of period 1990 – 2010 !**
- About 40% of all energy consumed in the EU is in buildings:
 - **300 Mt of needless CO₂ emissions** must be cut annually in residential and non-residential **buildings.**





Objectives of the EU and the current situation

Contribution to reduction of CO2 emissions.



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2 Studies by TNO

- “Low-E” Glass
 - To reduce the energy demand in buildings (especially heating).
 - 2 scenarios
 - $U = 1,1$ (DGU) – $0,7$ (TGU)
- “Solar Control” Glass
 - To reduce the need for air-conditioning.
 - 4 scenarios
 - $SF = 40$ (N. Europe) – 35 (S. Europe)



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General hypothesis

- Energy Performance EN ISO 13790: 2007
- 27 countries in the EU
- 8 climatic regions in the EU
- Nature of the building stock
- Mix of energy sources in use (Carbon factor!)



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Low-E glass

- Improved insulation by
 - gas filled spacer (convection)
 - Low-E coating (radiation)
- U-values variation
 - 1,3 – 1,0 W/m²K (DGU)
 - 0,9 – 0,5 W/m²K (TGU)
- Keeps the cold out and the heat in, but doesn't block solar heat!



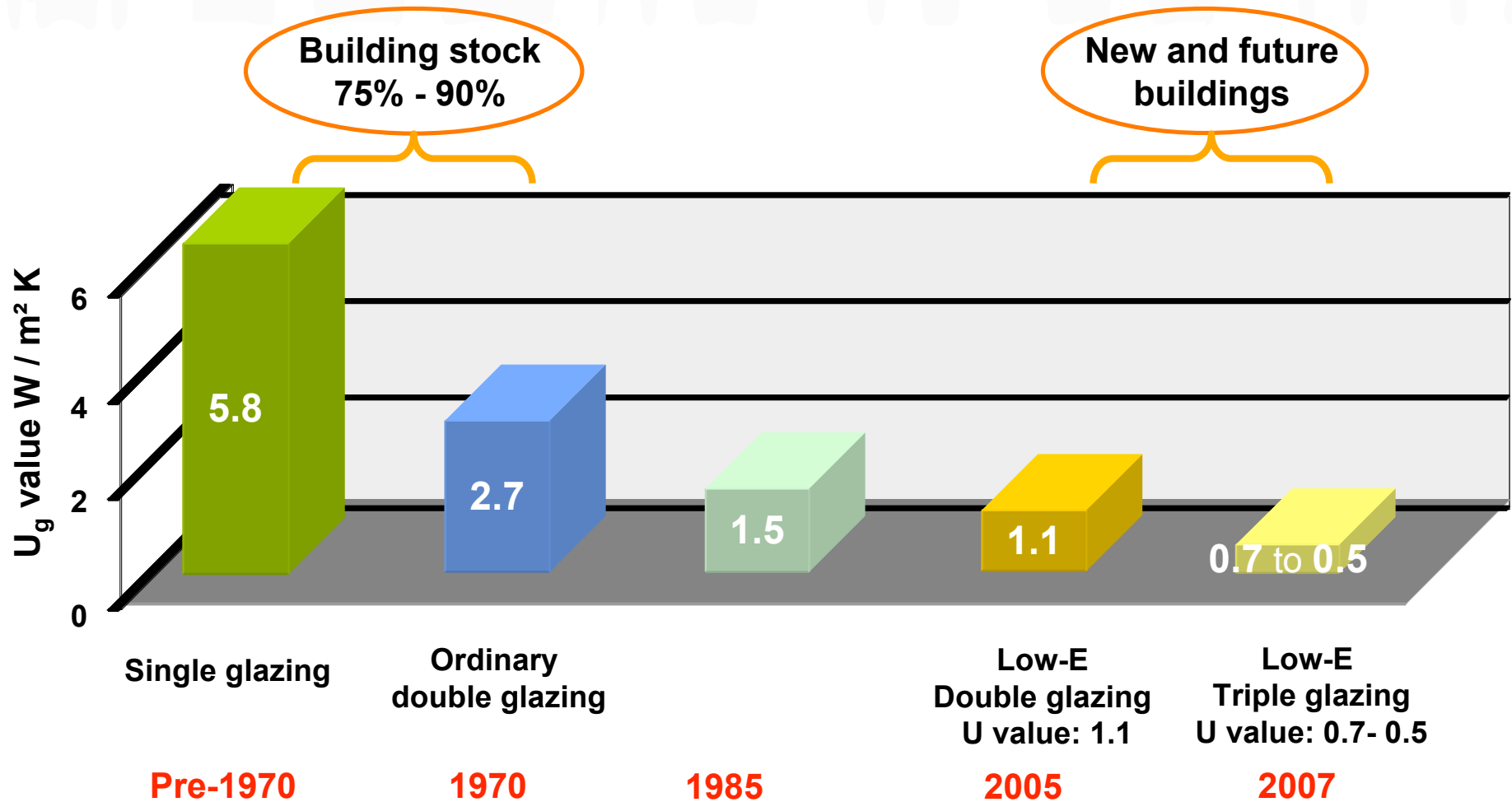
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Improvement in the thermal insulation of glazing





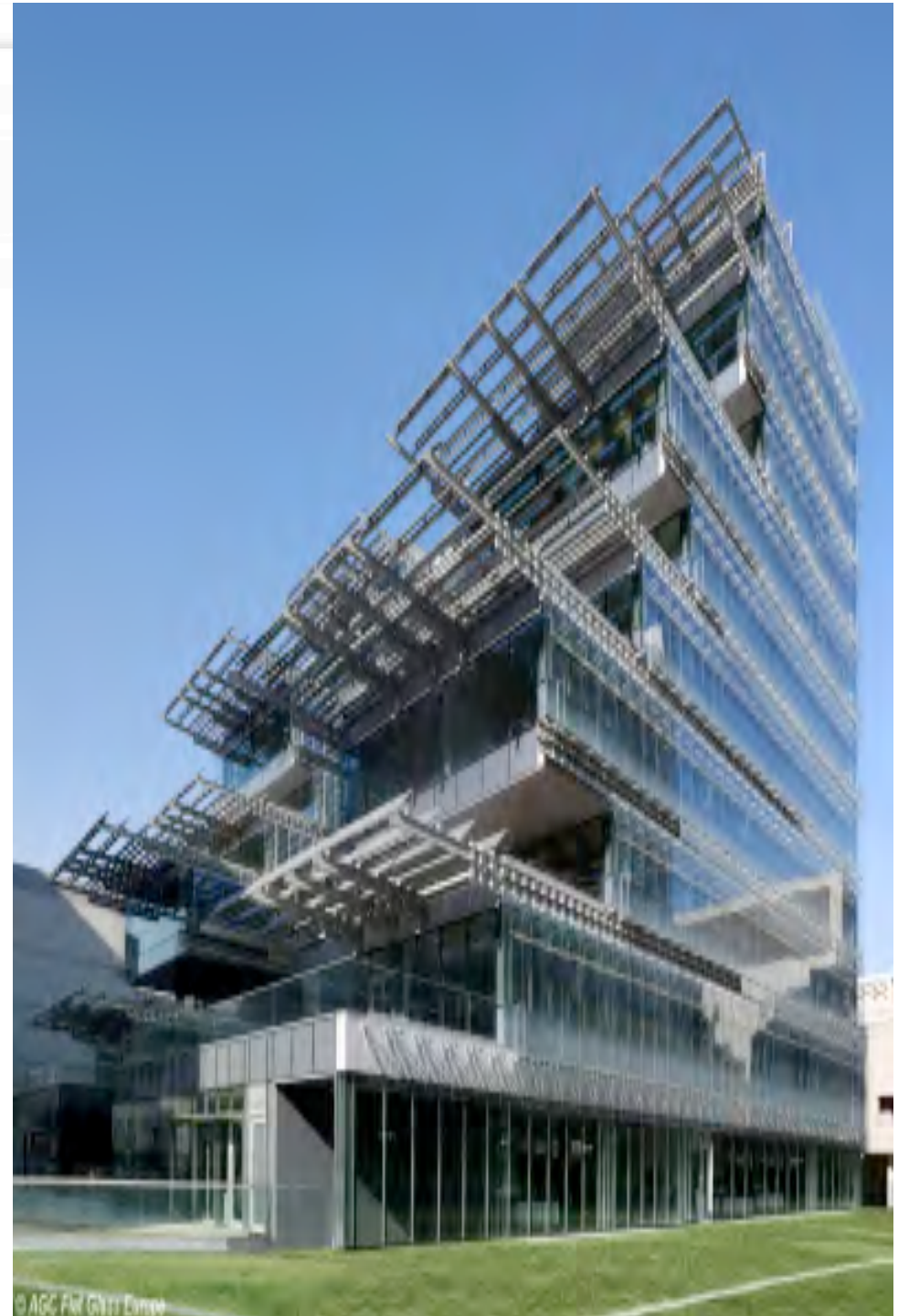
Solar control

- Same improved insulation is possible as Low-E
- LT/SF range
 - 70/40 (eg. Residential)
 - 60/35 (eg. Buildings)
 - 50/28 (eg. Large buildings)
 - 40/21 (eg. Roofs)
- Even lower SF possible, but by using coloured or enameled glass



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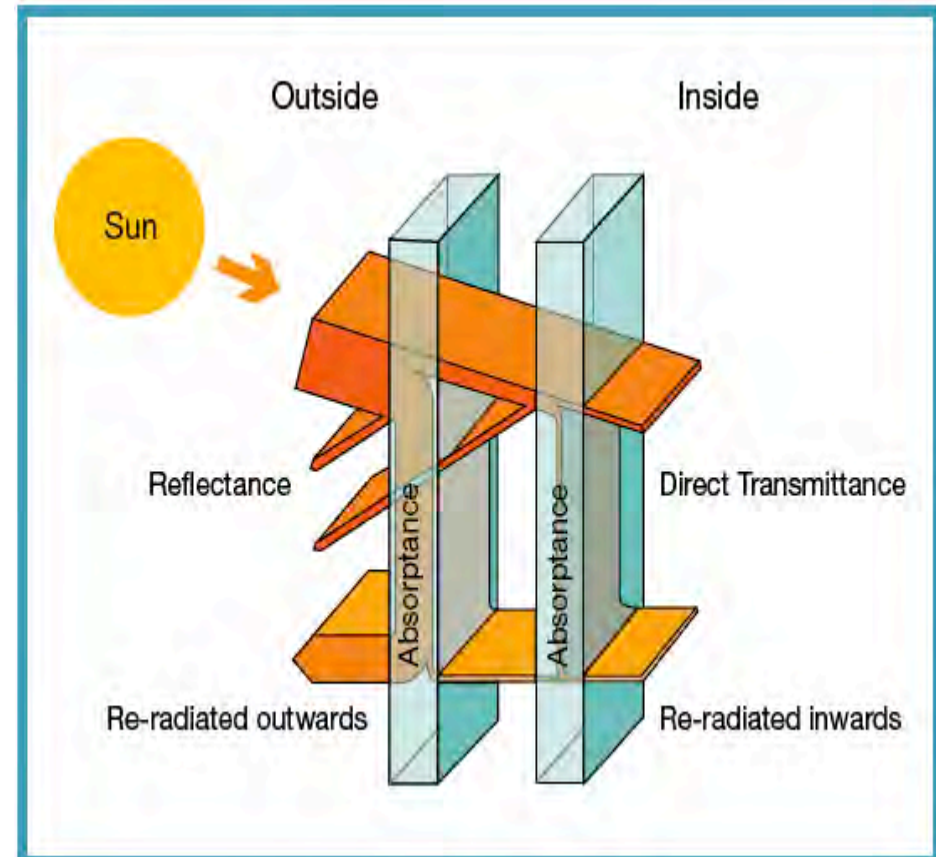


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4 Scenarios for solar control glazing

- Scenario 1
 - solar control glass in all new buildings
 - % of building with airco is doubled
- Scenario 2
 - idem 1, except no more airco in N. Europe
- Scenario 3
 - idem 1, and replace existing glass in buildings with airco
- Scenario 4
 - increase of airco use (as in USA)





Results

- Low-E
 - 1) - 90,1 Mt/y (30,4% of EU)
 - 2) - 96,6 Mt/y (32,2% of EU)
- Solar Control
 - 1) - 4,6 Mt/y (1,5% of EU)
 - 2) - 6,8 Mt/y (2,3% of EU)
 - 3) - 16,6 Mt/y (5,5% of EU)
 - 4) – 86,0 Mt/y (28,7% of EU)
- TOTAL
 - - 94,6 to – 182,6 Mt/y (**31,6%** to **60,9%** of 300 Mt/y for EU)



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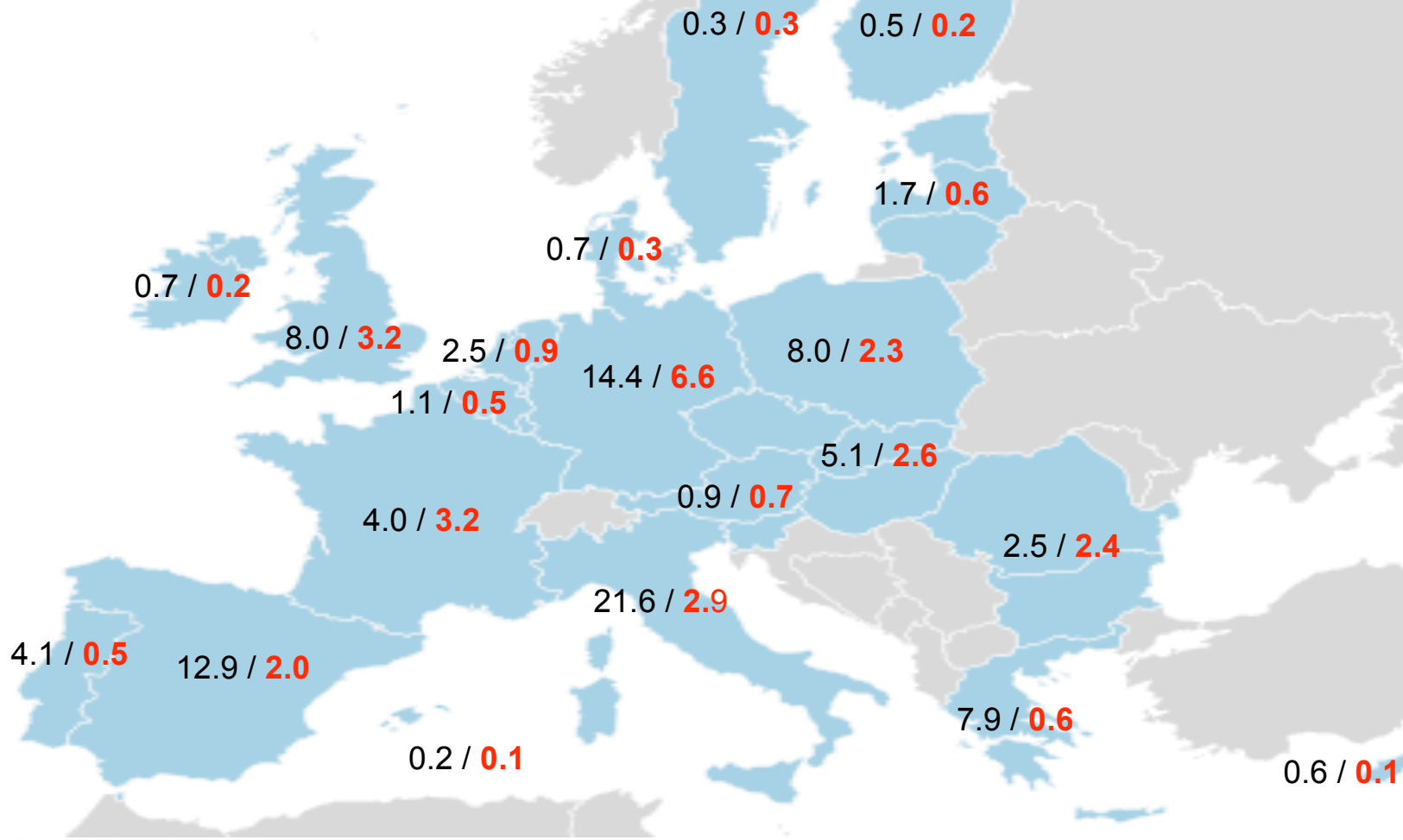
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Results per region (% per year in 2020) for Low-E (scenario 2) / Solar (scenario 4)



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Conclusion

- The use of today's high-tech glass provides a “win-win-win” scenario:
 - Using existing products and conventional building types
 - Keeping building occupants comfortable and productive
 - Reducing unnecessary CO₂ emissions
 - Reducing energy needs and cutting costs



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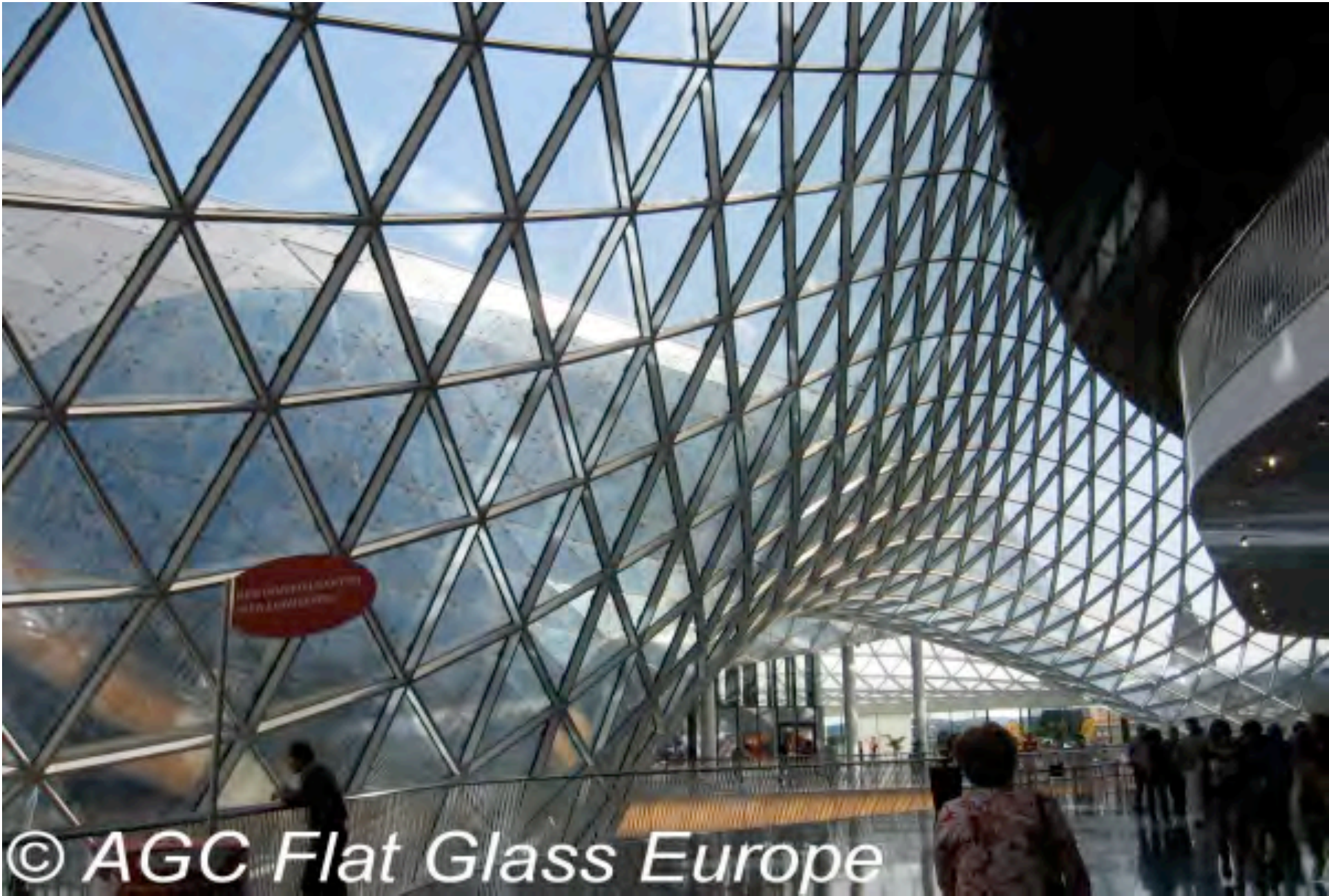
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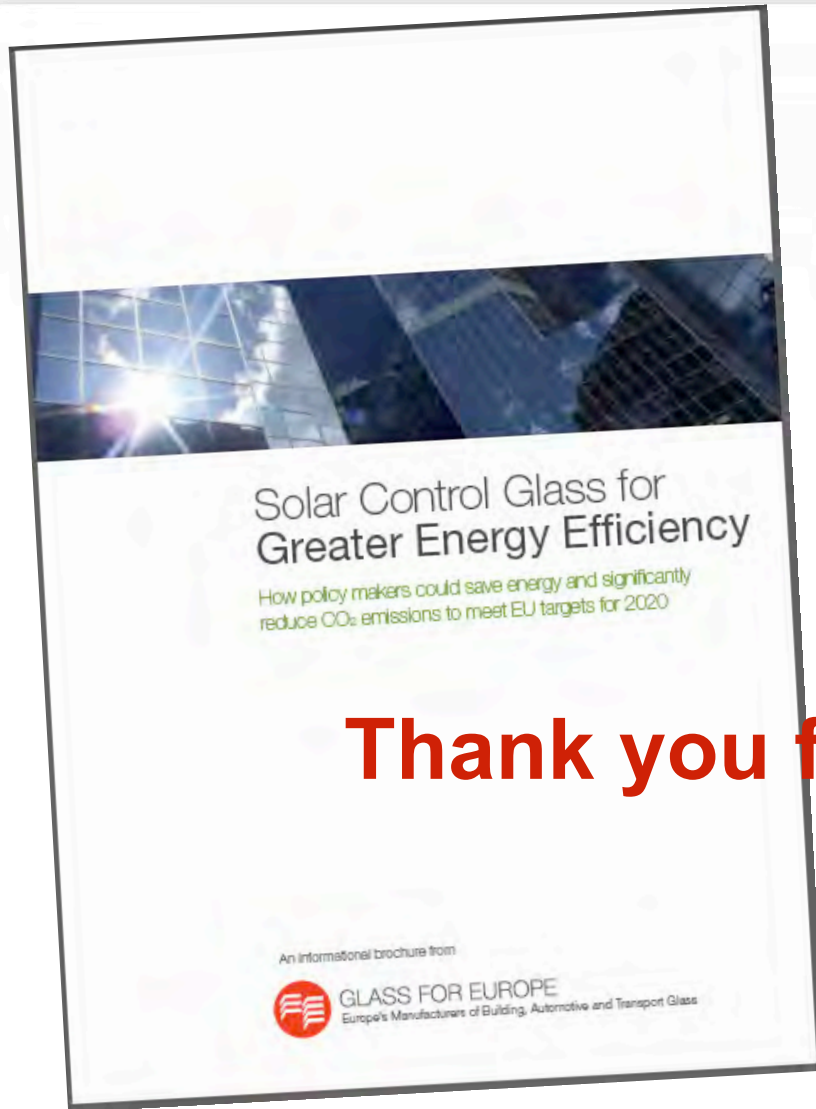


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Thank you for your attention

<http://www.glassforeurope.com>