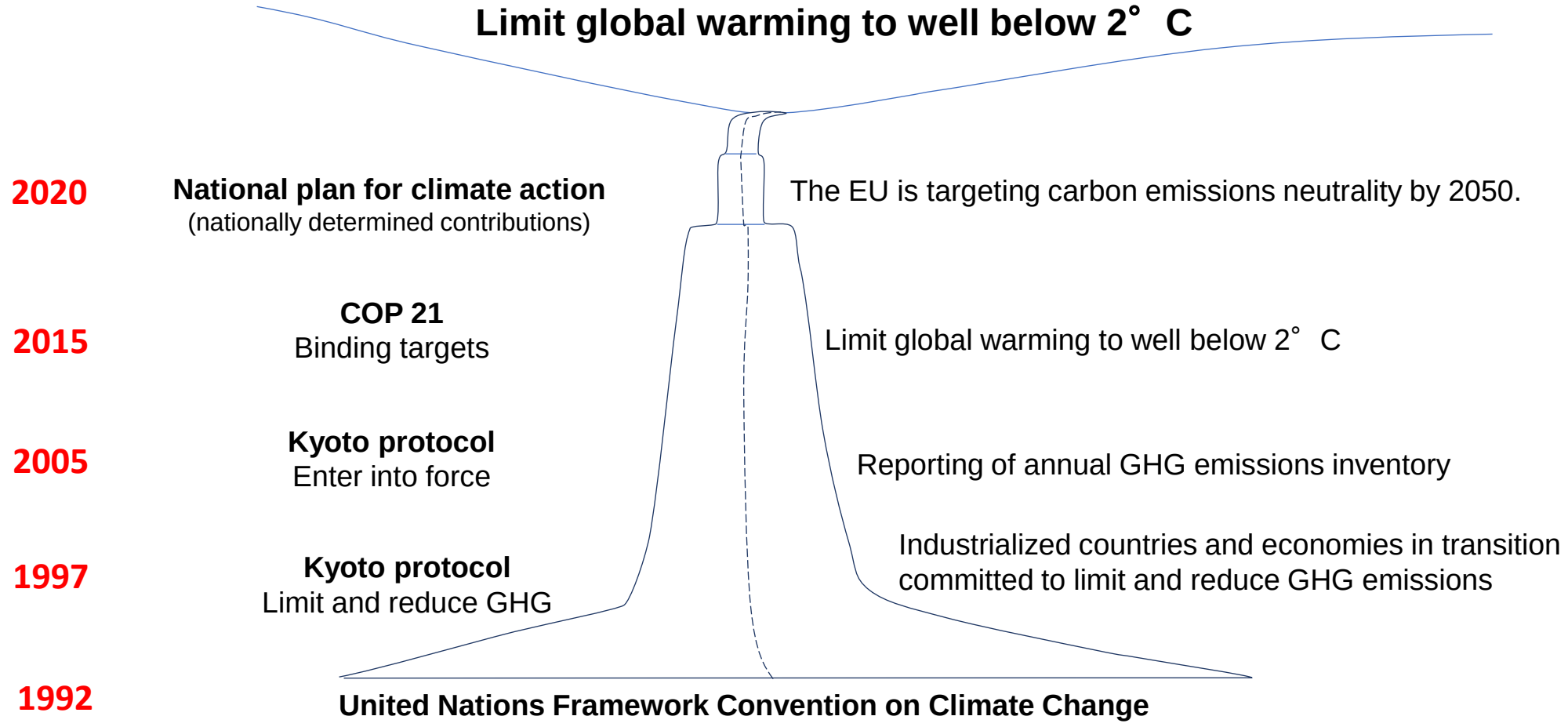
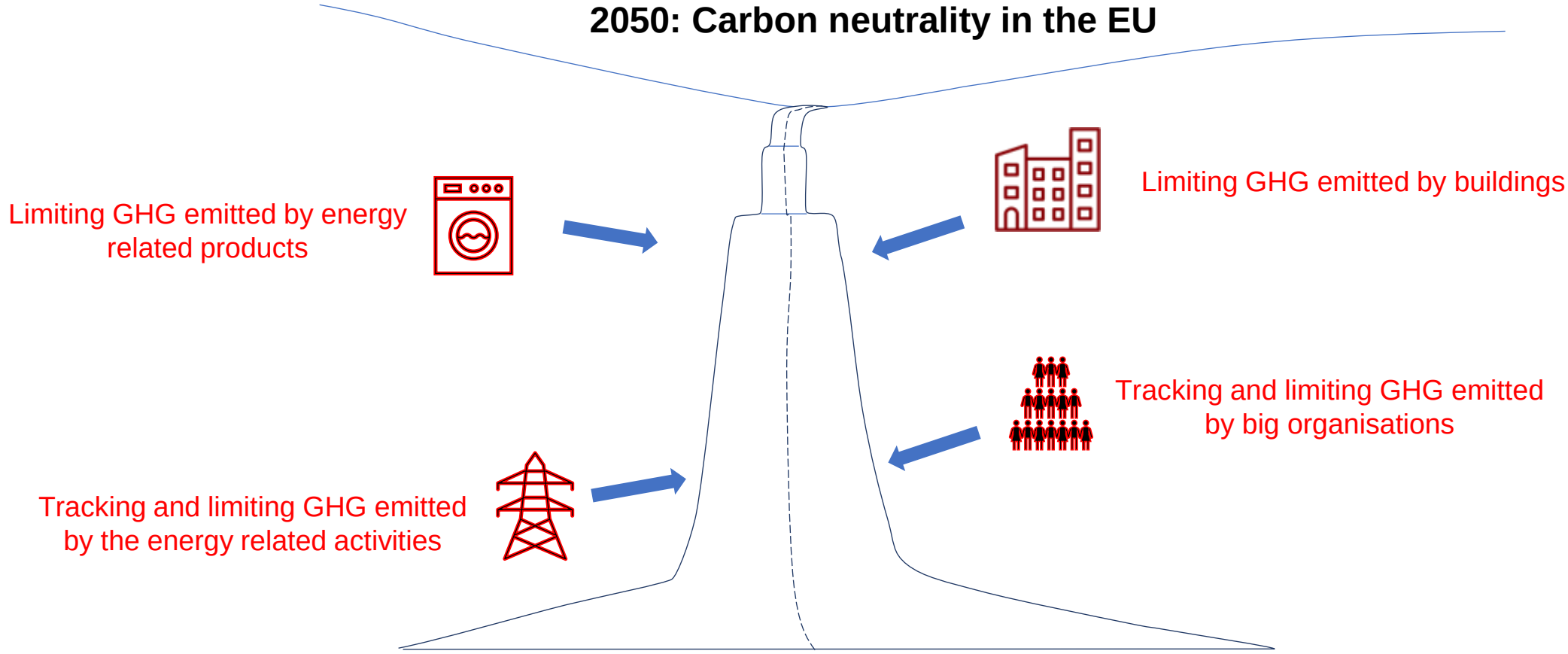
Tracking the carbon impact of space heating appliances from cradle to grave

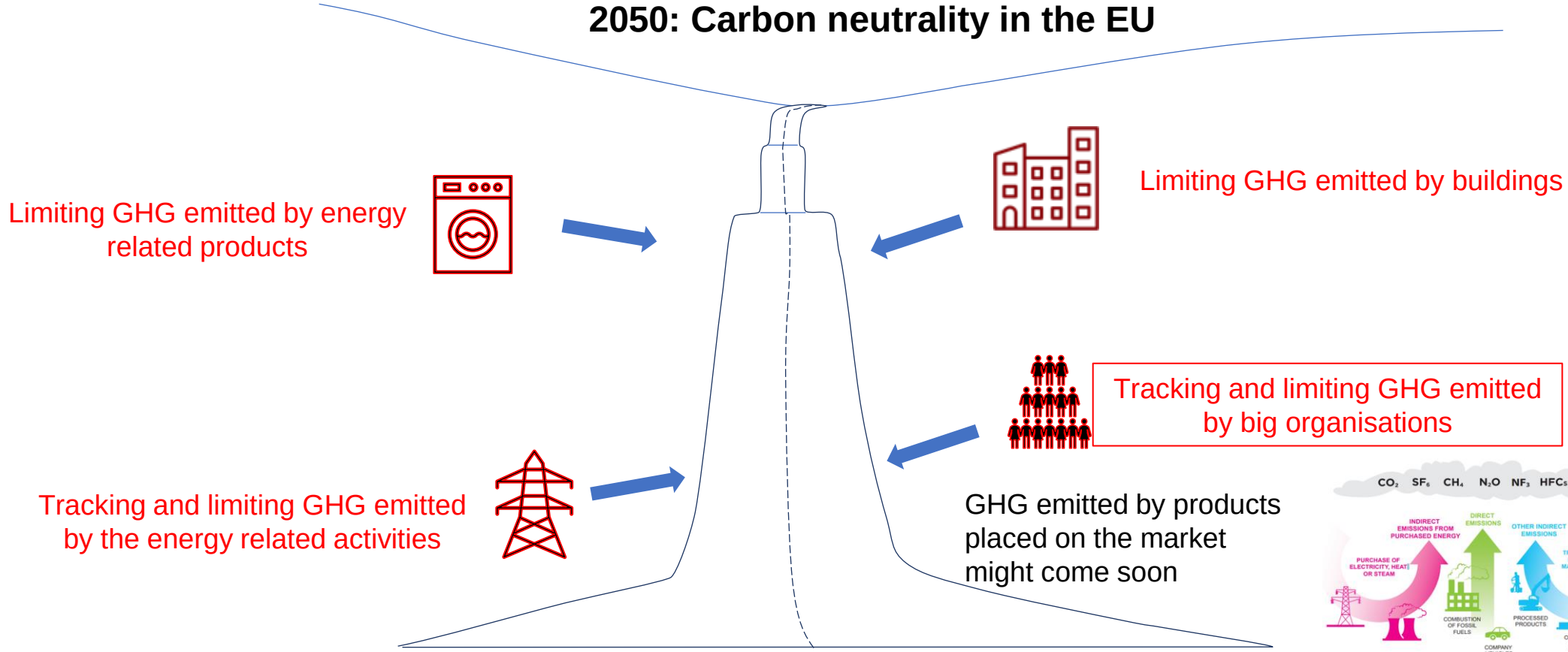
Green house gas emissions tracking



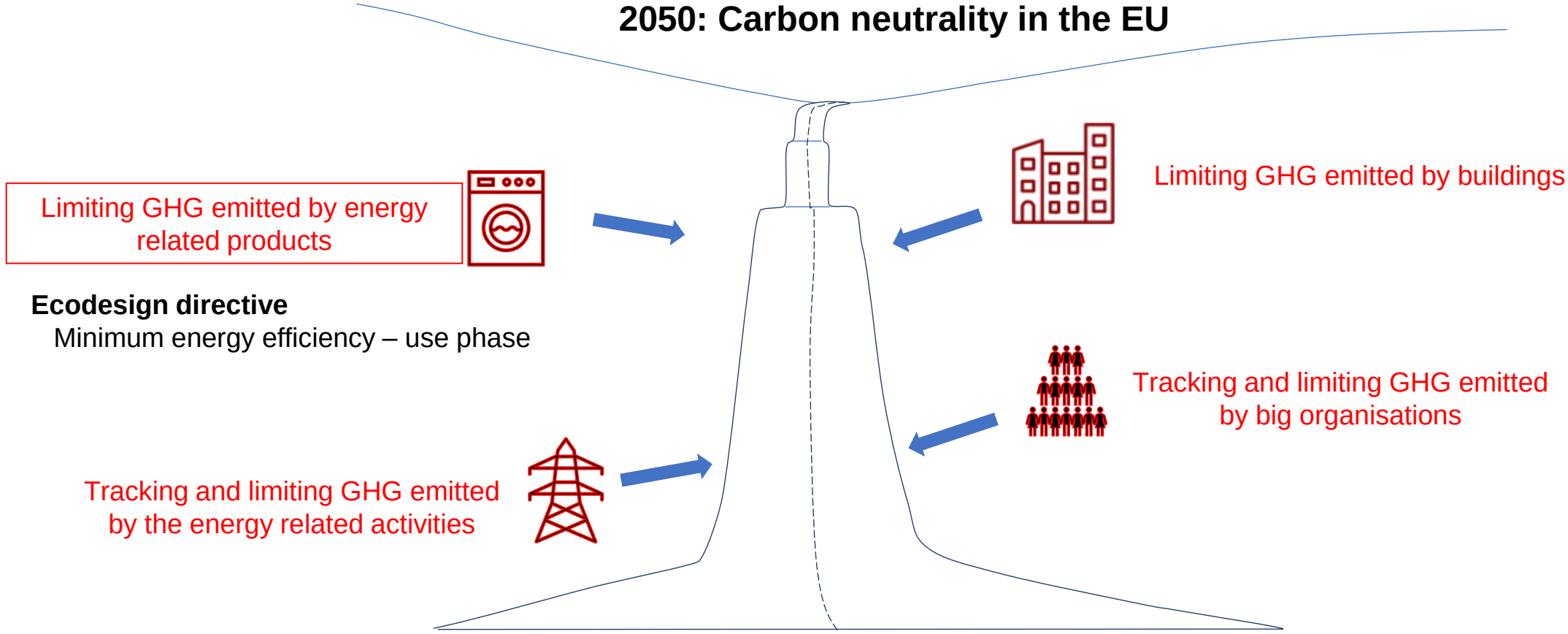
Green house gas emissions tracking: EU



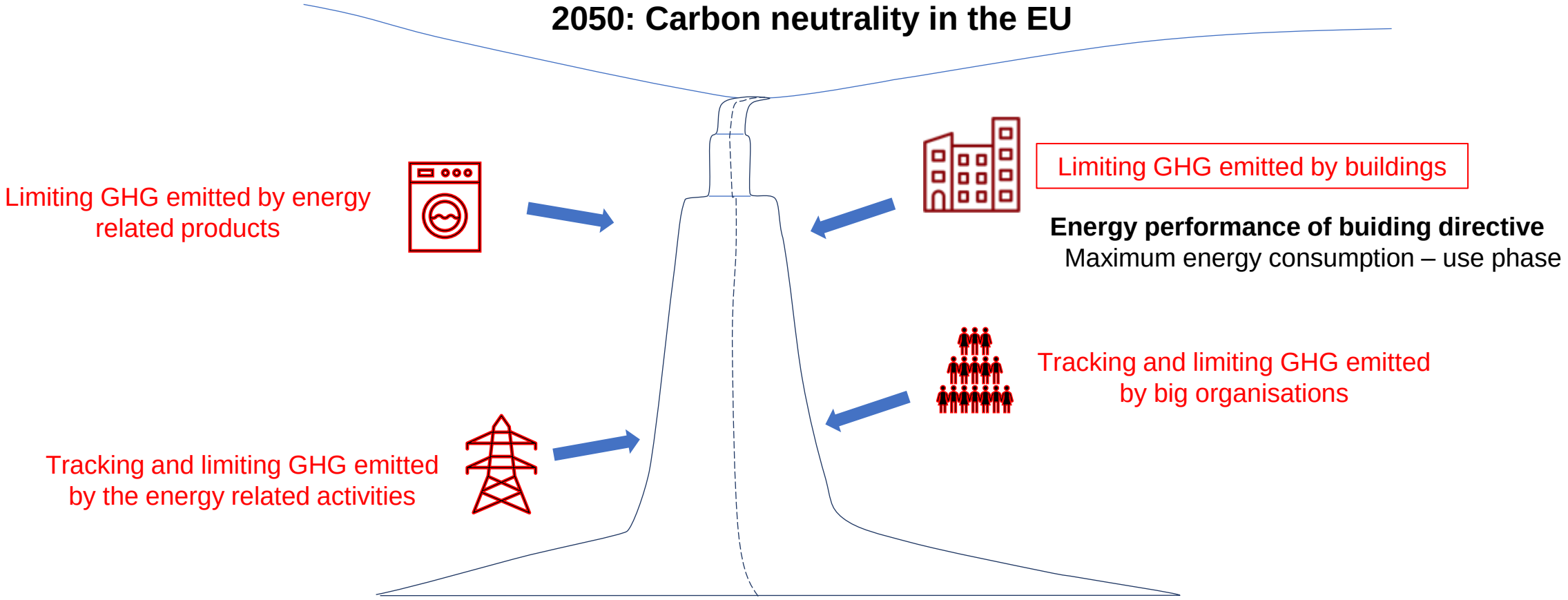
Green house gas emissions tracking: EU



Green house gas emissions tracking: EU



Green house gas emissions tracking: EU



Green house gas emissions tracking: EU

Tracking GHG emitted during usage phase is not enough

What next?

Ecodesign for Sustainable Products regulation

Ressource efficiency criteria

Environmental footprint

Circularity

Recast of EPBD

Mandatory calculation of the life-cycle Global Warming Potential (GWP) of new buildings

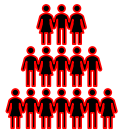
Maximum GWP

Green house gas emissions tracking: EU

Ecodesign for sustainable products regulation

Product
Environmental impact
Carbon footprint
….
Becomes unavoidable

EPBD

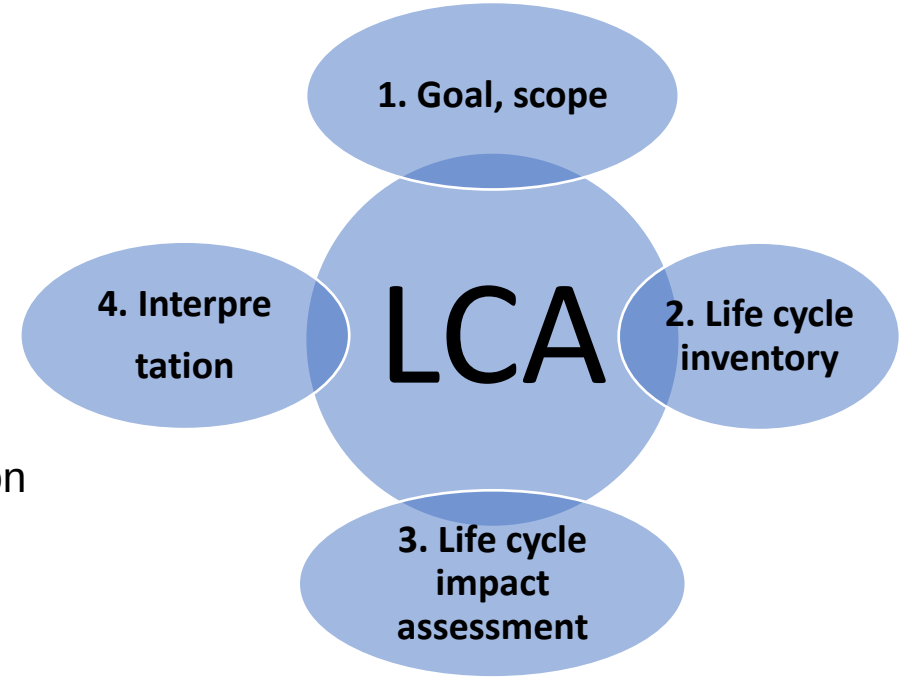


SCOPE III

Life Cycle Assessment

Life Cycle Assessment (LCA) is a methodology that evaluates the environmental impacts associated with all stages (**from cradle to grave**) of the life cycle of a product or service

- **ISO 14040**: describes the 4 steps of an LCA
- **ISO 14041, ISO 14042, ISO 14043, ISO 14044**: details on each step

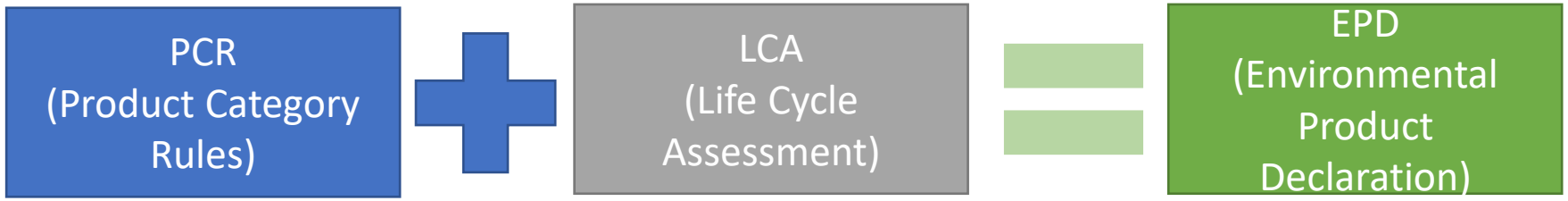


Environmental Product Declaration (EPD) = Type III environmental declaration according to ISO14025

Third party verified
Administrated by a program operator

Life Cycle Assessment

Connection between Life Cycle Analysis and Environmental Product Declaration



Life Cycle Assessment

Standards used for PCR, LCA and EPD

PCR (Product Category Rules) + LCA (Life Cycle Assessment) = EPD (Environmental Product Declaration)

Not so clear:
General PCR EN 15804:2012+ A2:2019
Specific PCR: EN 50693
National standards or specific rules

ISO 14040 series

Since EPD is Type III declaration:
ISO 14025

No common rules all over the EU !!

Life Cycle Assessment

No common rules all over the EU !!

- **Only EPD done according to the same rules (PCR) can be compared**

  Big risk that EPD made under non identical rules would lead to opposite conclusions (eg: when comparing a boiler and a heat pump, or two heat pumps)

  Same product can have several EPD showing non identical values !!

- **Big burden for the circulation of good in the EU and in the world if member states and countries ask for EPD done according to different rules**

The French example

RE 2020 RÉGLEMENTATION ENVIRONNEMENTALE **Building code**

14th IEA HEAT PUMP CONFERENCE

Overall environmental impacts of building including HVAC equipment are calculated

Impact of HVAC equipment included in the calculations

Manufacturers provide EPD for their products

PEP ecoPASSPORT®

inies

Construction and demolition phase

12 environmental impacts assessed in the EPD for equipments and construction material

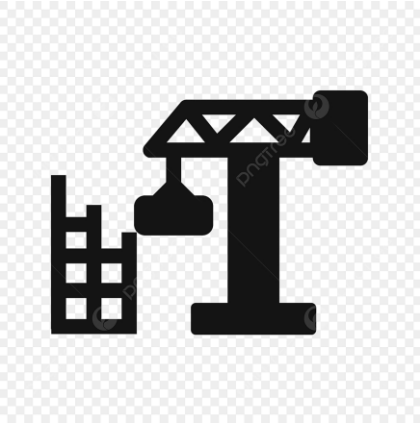
Usage phase

The French example

RE 2020
RÉGLEMENTATION ENVIRONNEMENTALE

Building code

Overall environmental impacts of building including HVAC equipment are calculated



Construction and demolition phase

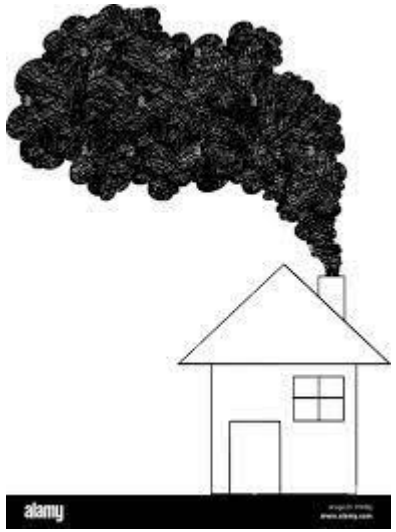
Maximum GHG emissions for each phase

Usage phase

The French example

EPD = another parameter to make decisions in relation with sustainability

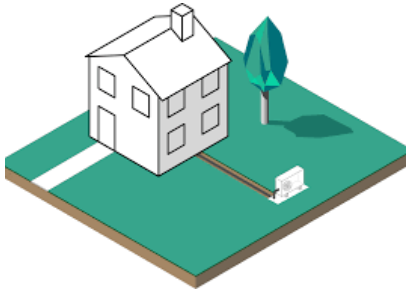
What is the best option, in France, to reduce the environmental impact of an old house heated with an old gas boiler?



Replace the gas boiler by an air to water heat pump

Replace the gas boiler by condensing gas boiler

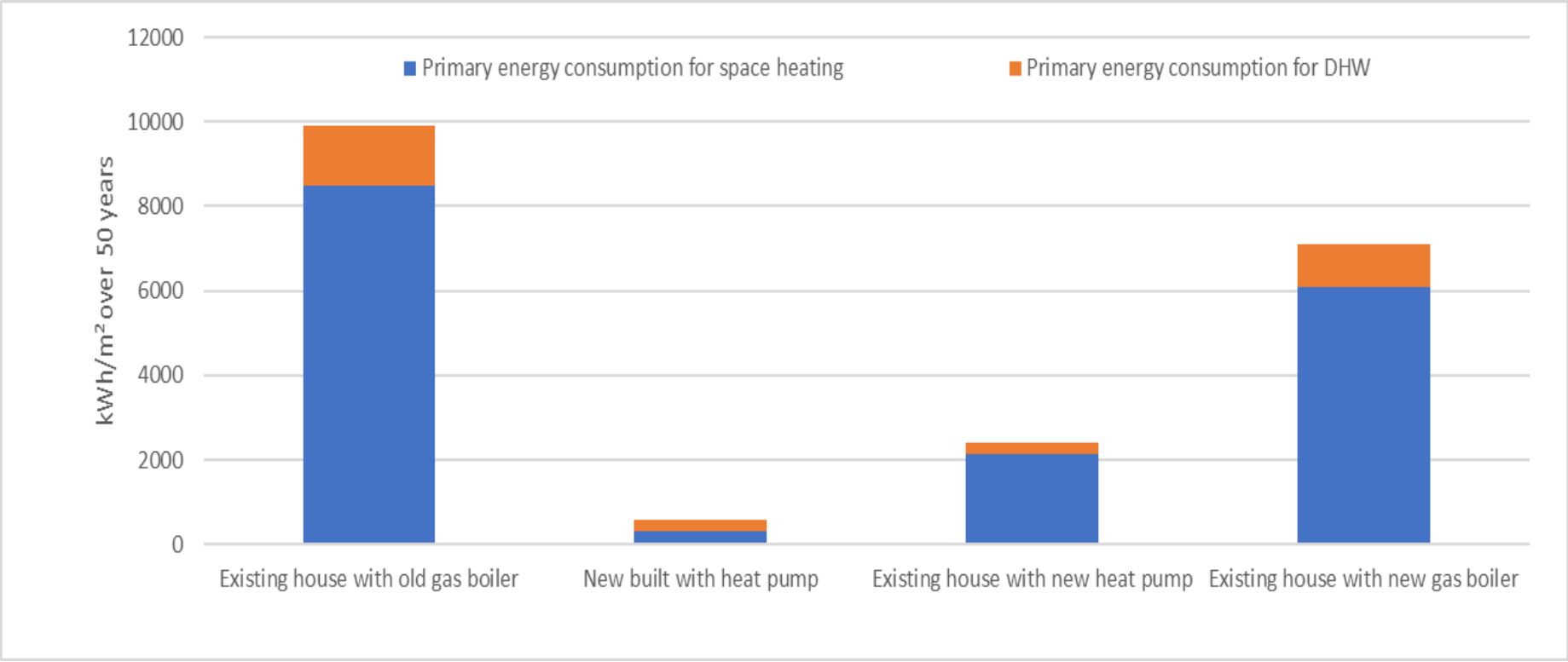
Tear down the house and rebuild a new one



The French example

Evaluation of the three proposed options

Evaluation based on the energy consumption during the use phase



The French example

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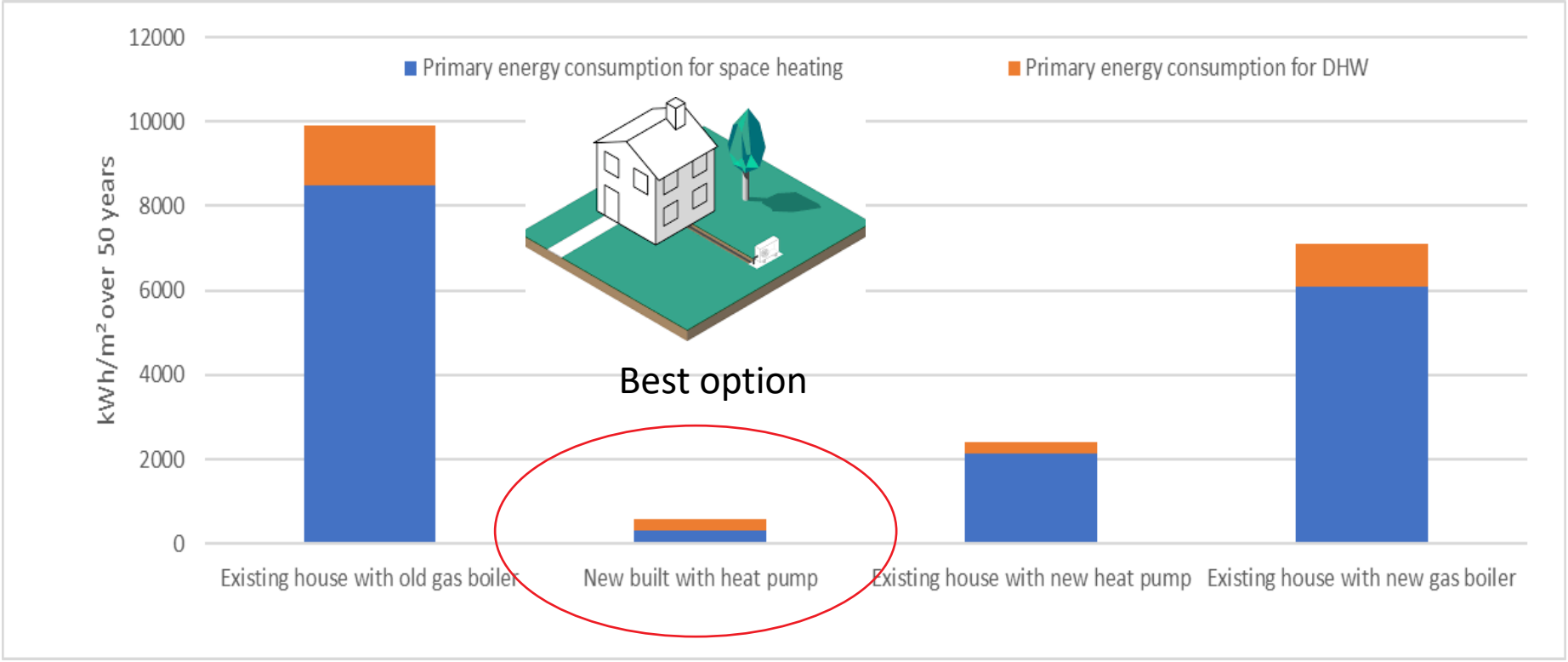
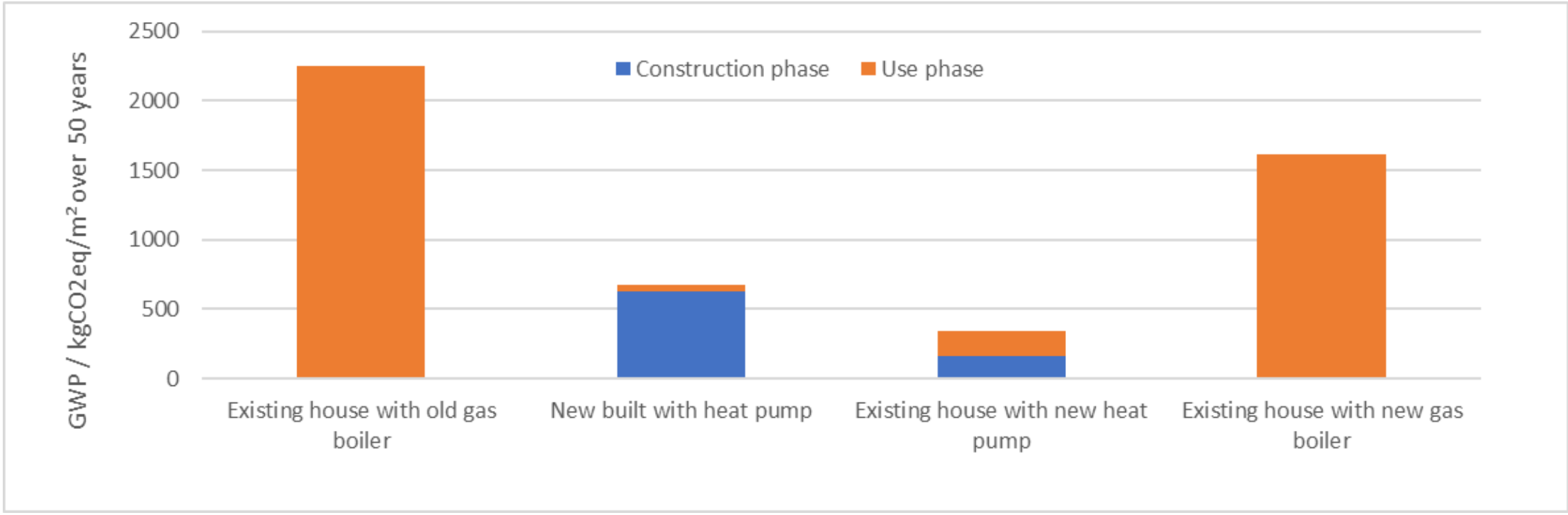


The French example

Evaluation of the three proposed options

Evaluation based on the GHG emitted over the construction, use and demolition phases



The French example

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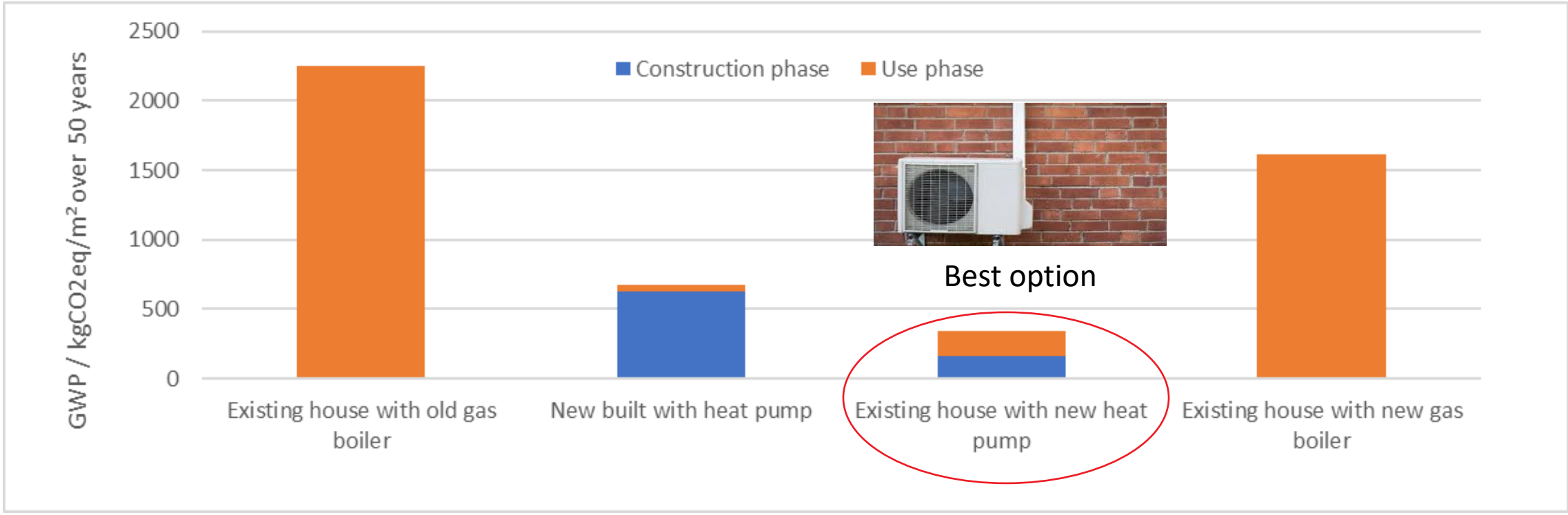
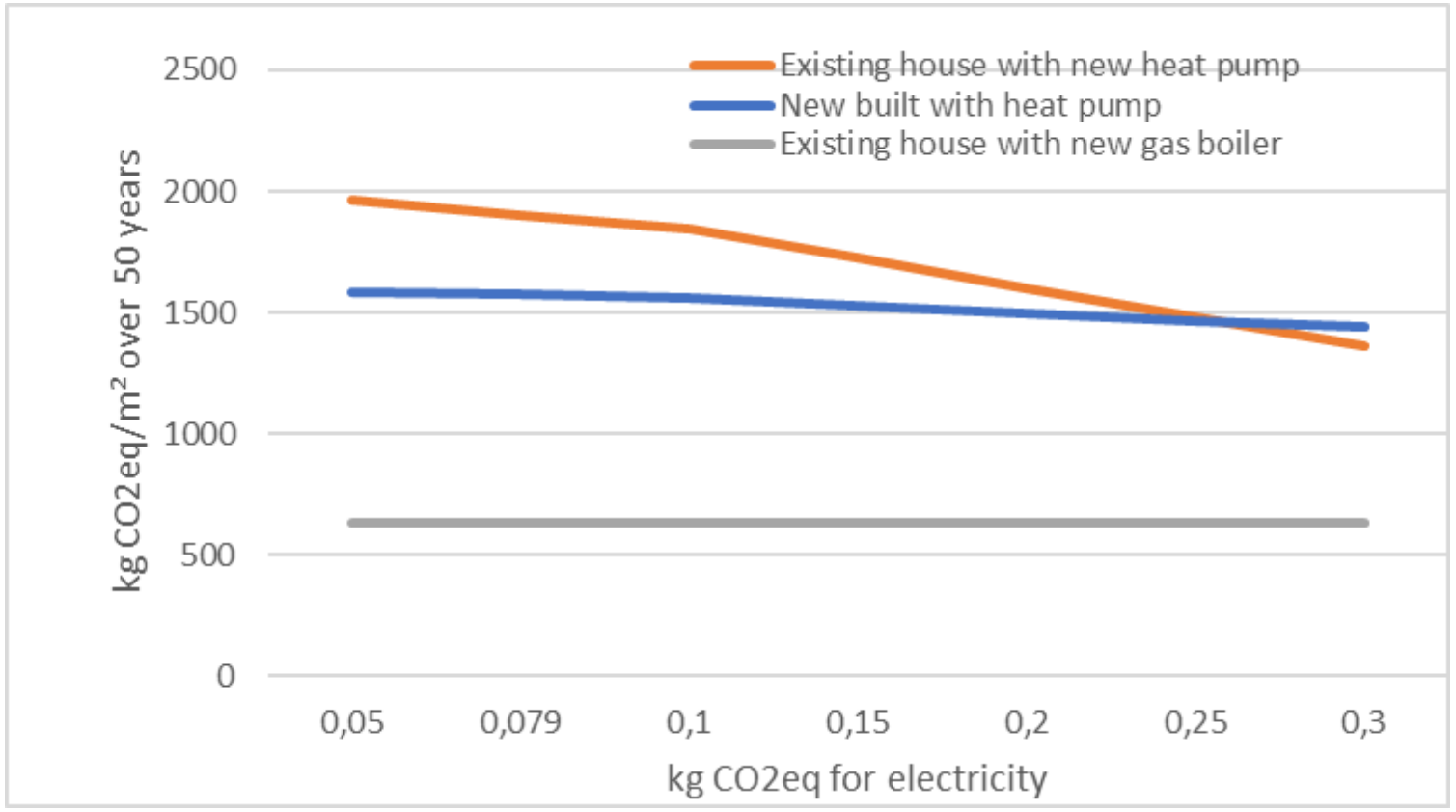


The French example

Emissions savings achieved depending on scenario and GHG content of electricity



The best option depends on the CO_2 content of electricity

Conclusion

- LCA and EPD are gaining importance and will become unavoidable in a very near future
- Several ISO and EN standards exist to perform LCA: no common rule to establish EPD. This could become a big burden to circulation of goods in a near future
- LCA of products, buildings, services… helps making the right choice for minimising the environmental impact