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Long-term strategies for GHG neutrality by 2050:
What vision for the EU?
(& comparison with French LTS)

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Climate Recon Event

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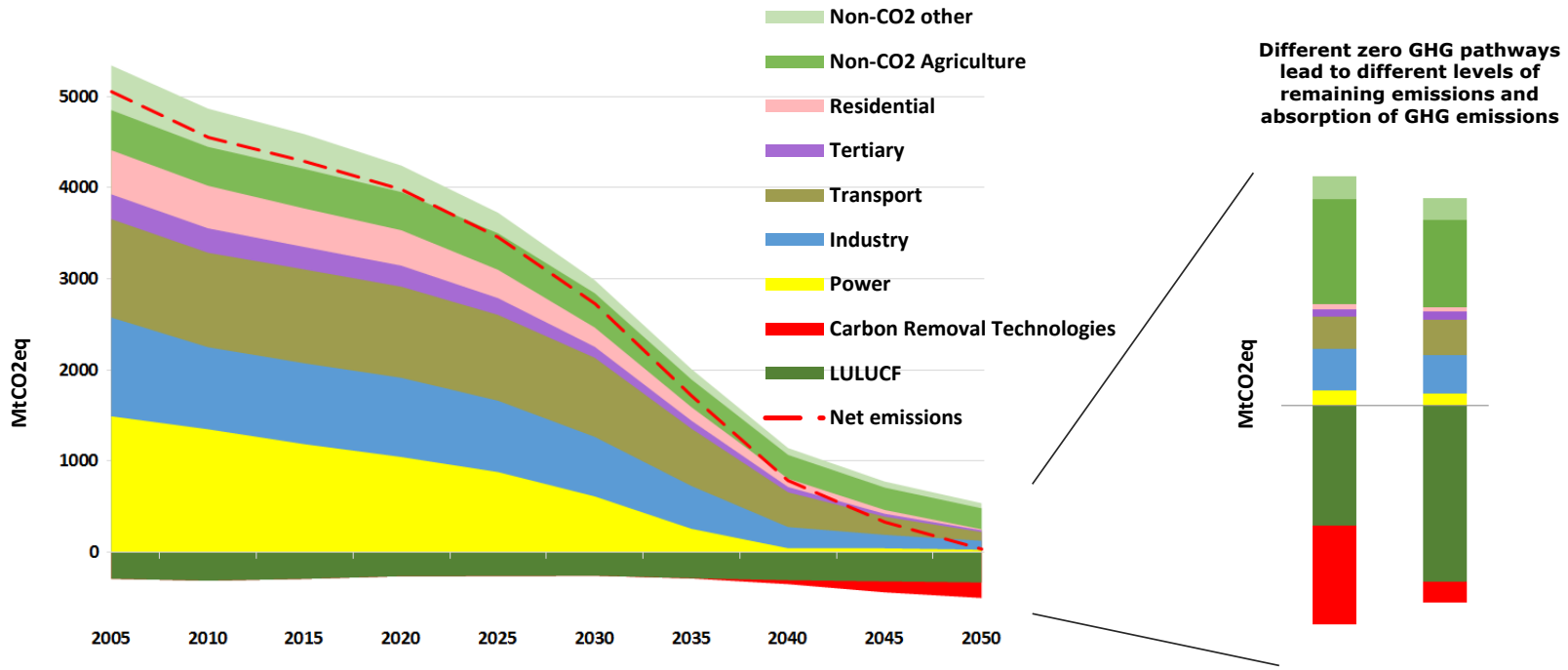
The EC's Long-term vision for GHG neutrality for EU

Note - Graphics from:

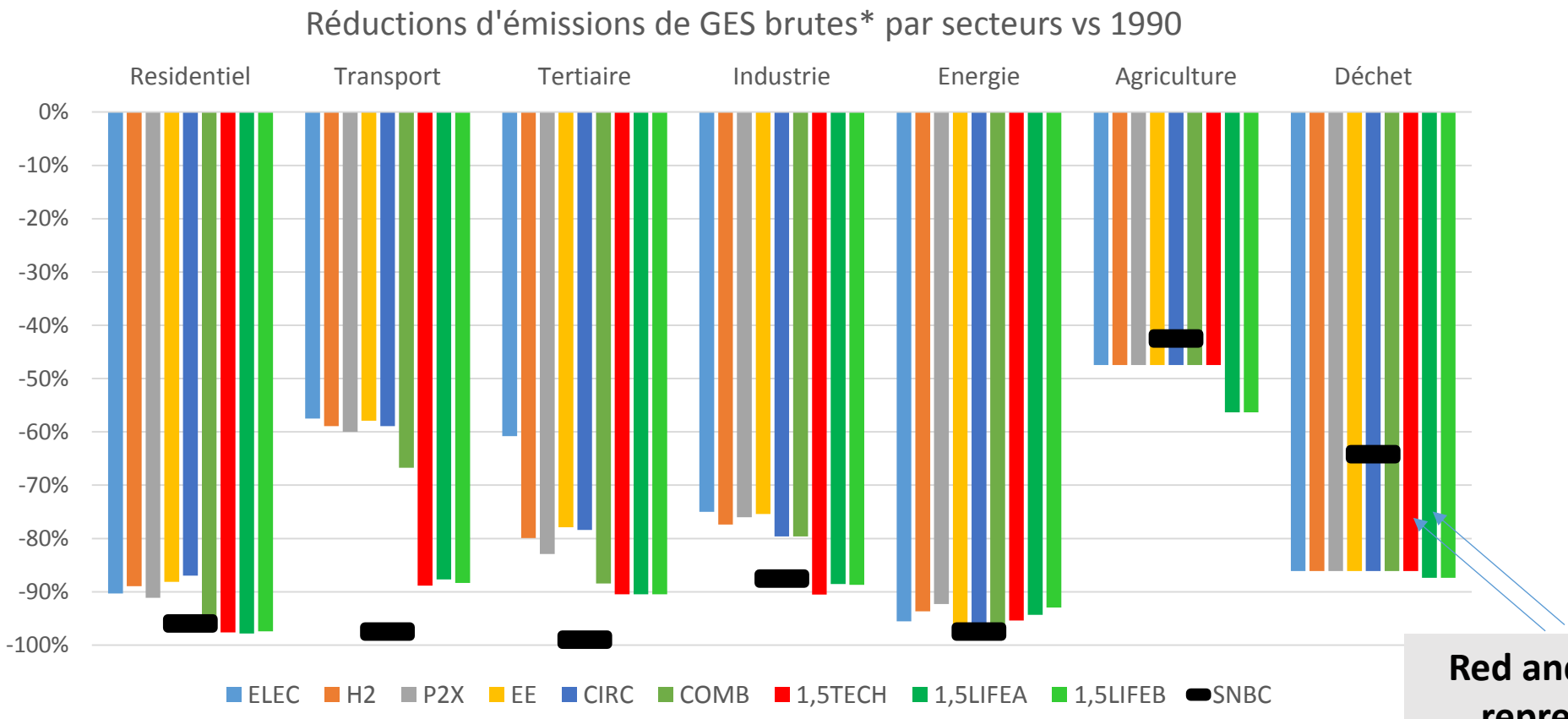
- EU: European Commission Long-term strategic vision (analytical support document)
- FR: Strategie Nationale Bas-carbone (Draft) (DGEC, MTES, France)

Long-term vision for climate neutrality by 2050 for EU28



Several pathways to get there, but all require very deep reductions across sectors & role for sinks

A need for deep decarbonisation across all key sectors

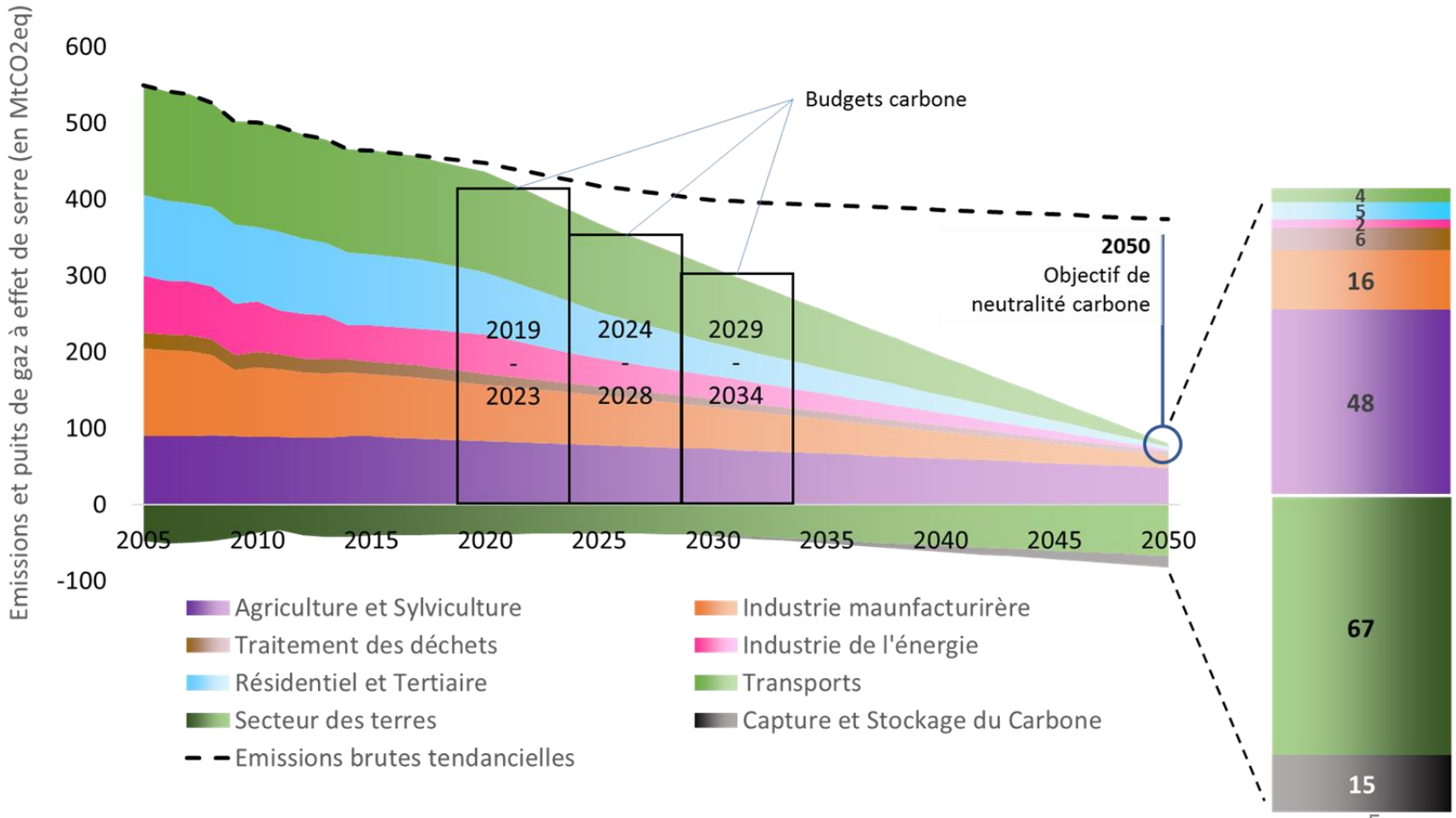


*Emissions brutes incluant les émissions de GES capturés par CCS

Red and green bars represent GHG neutrality scenarios

French LTS (Stratégie Nationale Bas Carbone)

- EC LTS and FR SNBC very similar many ways
- Main differences concern agriculture, biomass, role of CC(U)S & % nuclear.



From LTS to NECP…(E.g. of France)

	Evolution des émissions de GES (par rapport à 2015)		Résumé des orientation sectorielles
	2030	2050	
Transports	-31 %	**Zéro émission**	Décarboner la mobilité
Bâtiments	-53 %	**Zéro émission**	100 % du parc BBC en moyenne
Agriculture	-20 %	-46 %	Favoriser les pratiques sobres
Forêts et bois		**+50 % absorption**	Maximiser la pompe à carbone et développer la bioéconomie
Industrie	-35 %	-81 %	Développer les filières industrielles sobres en carbone
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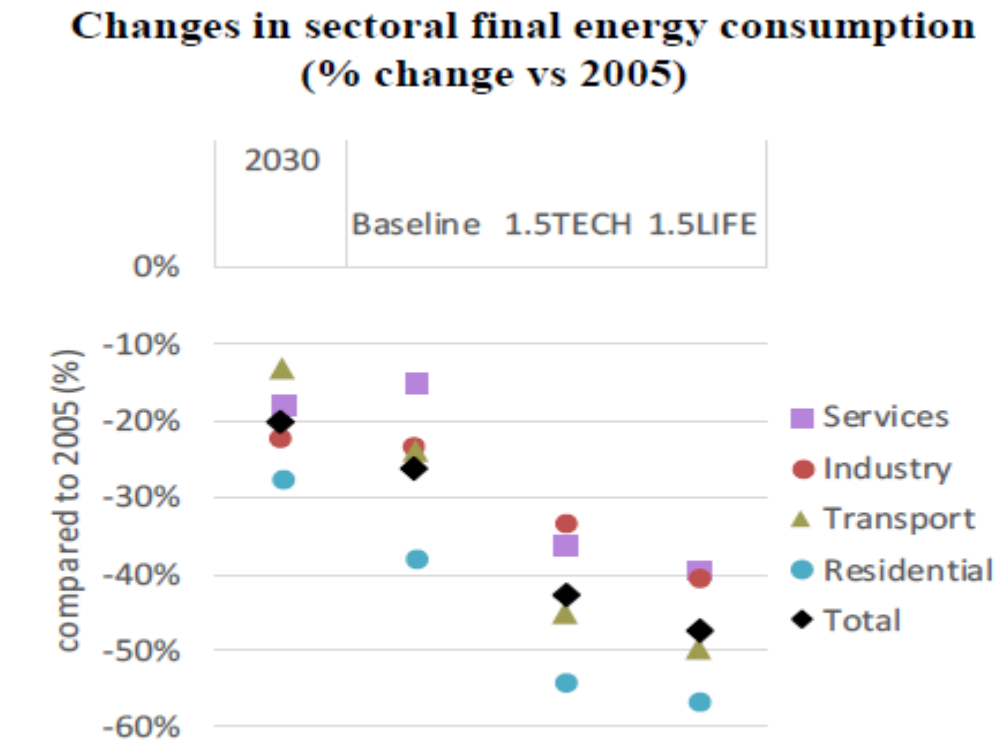
Significant reduction in final energy consumption

- Final energy consumption to be reduced by as much as half in 2050 compared to 2005
- Buildings key, most of the housing stock of 2050 exists already today
- Requires adequate financial instruments, skilled workforce, for significantly higher renovation rates



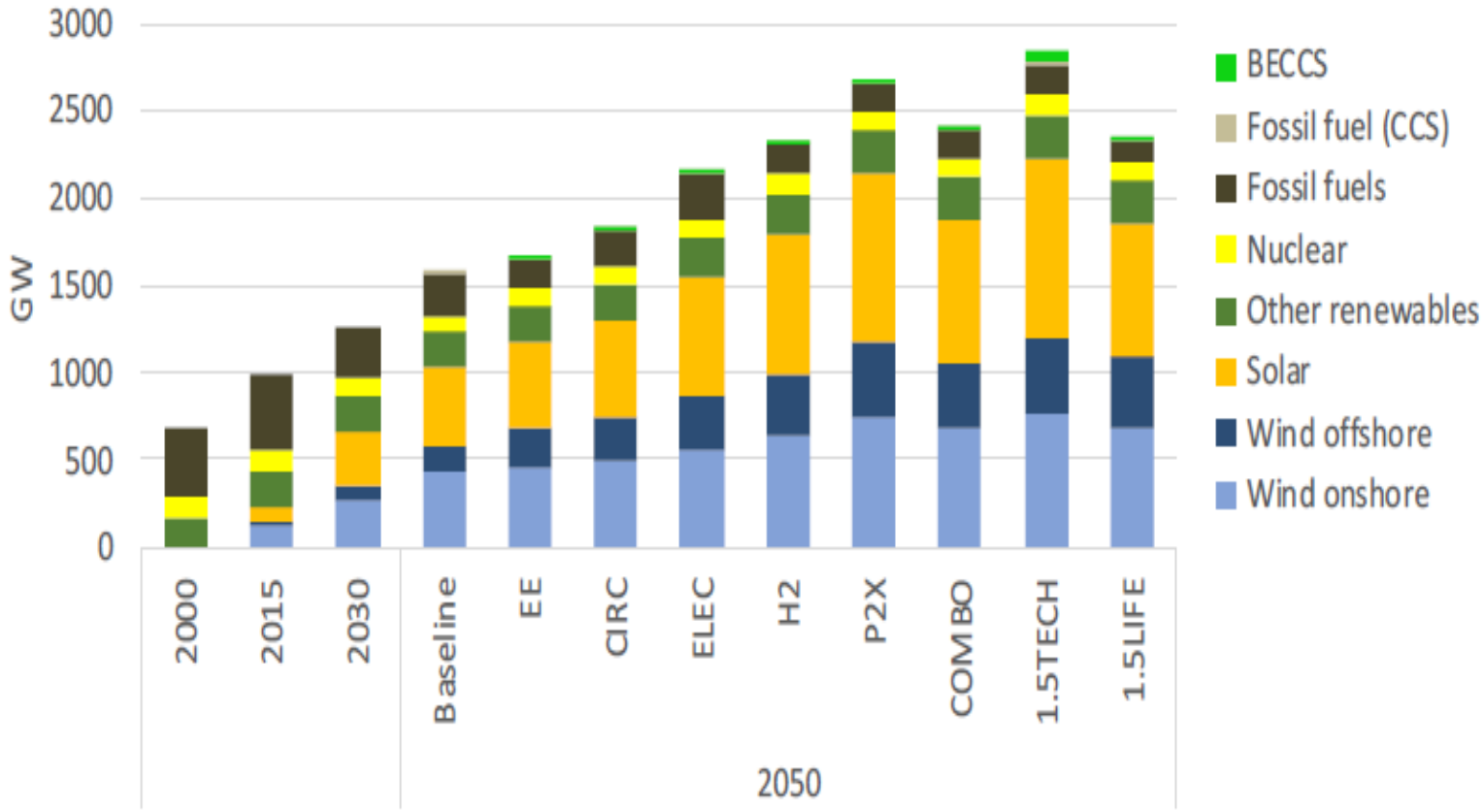
Note: "Services" includes here the agriculture sector.

Source: Eurostat (2005), PRIMES.

Strong expanstion of renewable electricity capacity

- Strong growth in RES generation capacity needed
- Coal, fuel and most gas disappear from power mix by 2050
- Existing nuclear capacity remains
- Mix to depend by country of course..

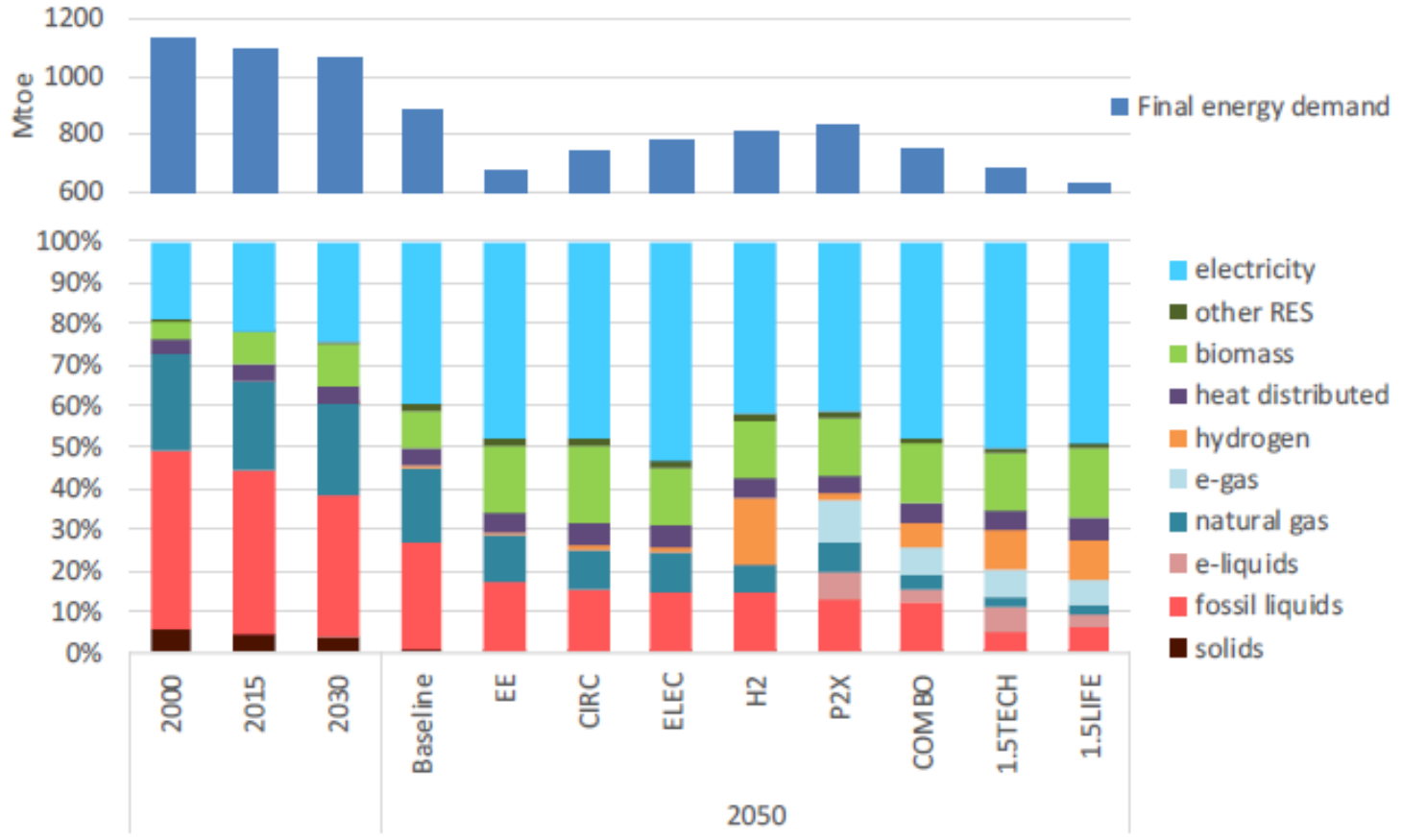
Figure 24: Power generation capacity



Strong role for electrification in all scenarios

- Way to increase energy efficiency
- Decarbonised power sources
- Remplacement of other fuels by RES (E-Gas, Biogas, e-fuels, hydrogen)

Figure 20: Share of energy carriers in final energy consumption

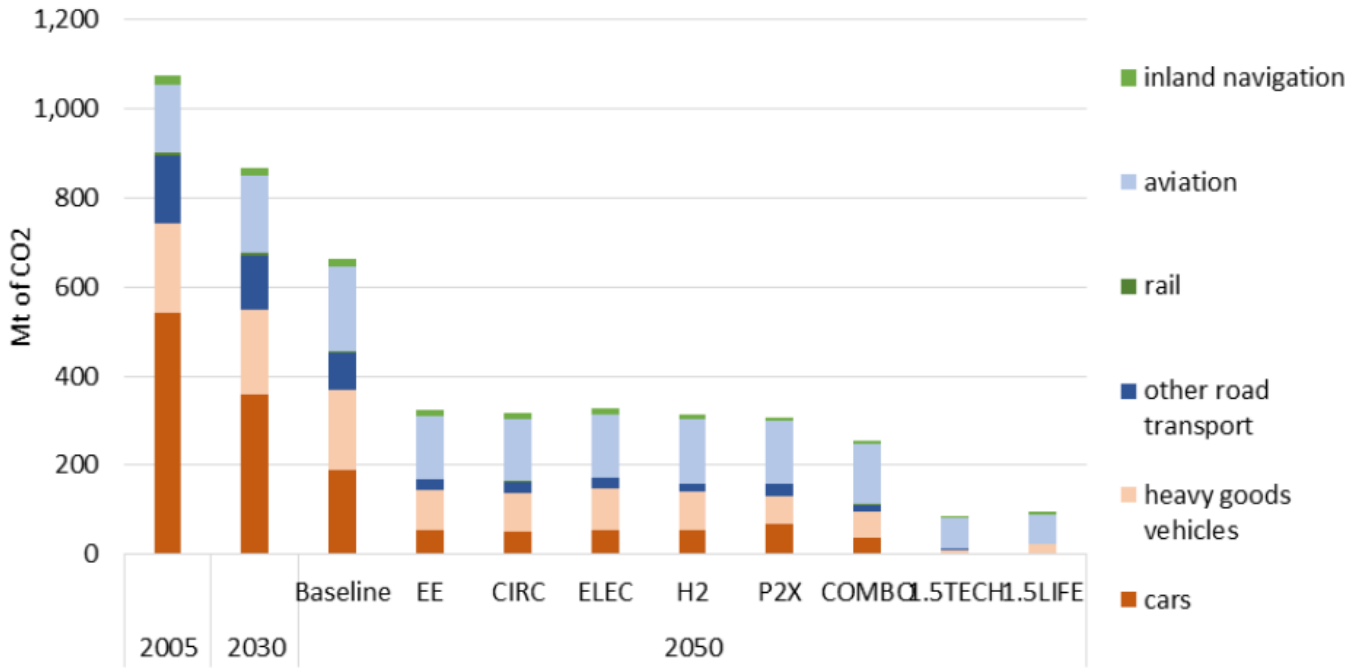


Source: Eurostat (2000, 2015), PRIMES.

Very deep decarbonation of energy use in transport

- Electrification of passenger vehicules (end of sales of ICE in ~2040)
- Almost 100% decarbonisation of freight energy
- Some modal shift for freight
- Significant reductions in aviation and maritime emissions
- Actions on demand side for energy efficiency and to manage activity levels

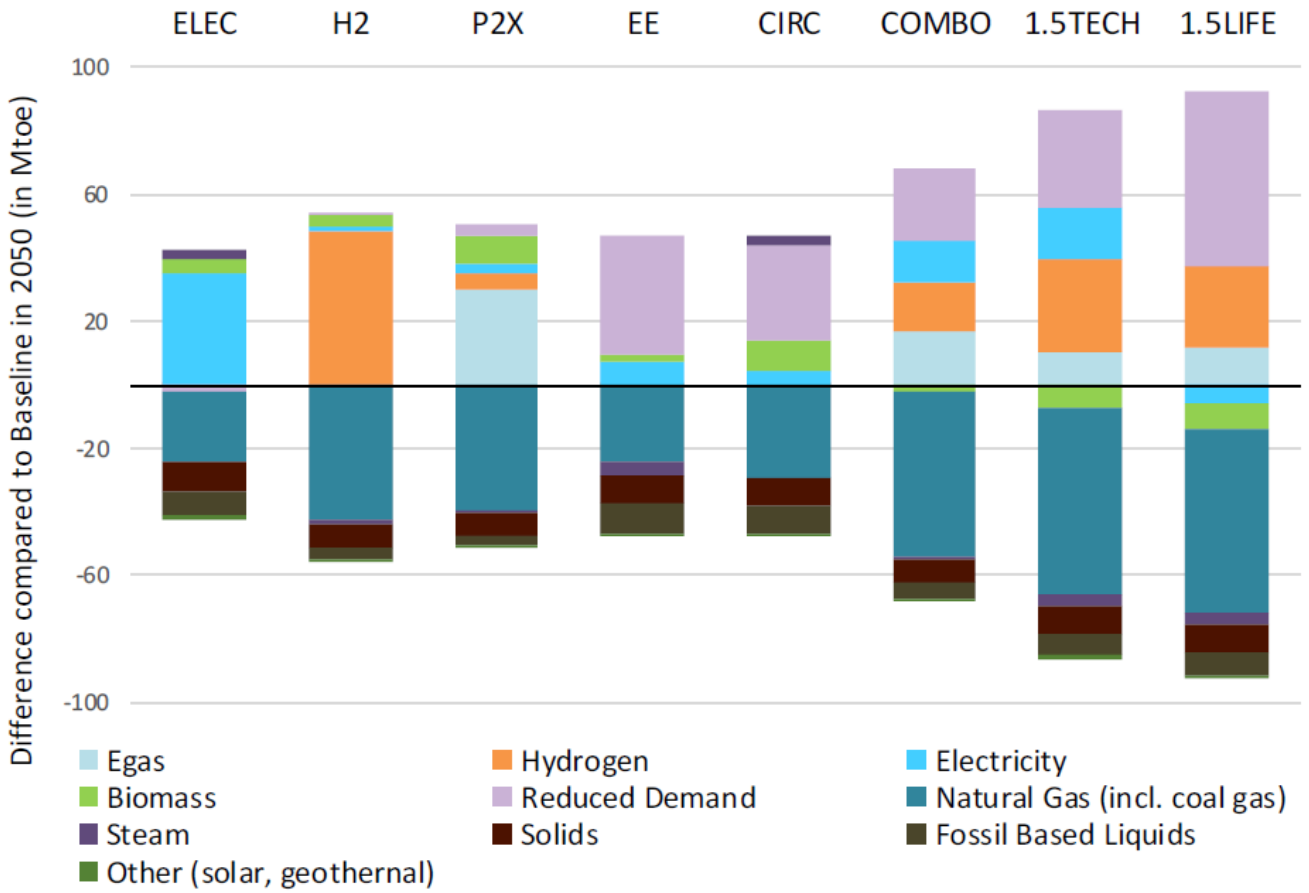
Figure 58: CO_2 emissions from transport in 2050 (in $MtCO_2$)[342]



Industrial decarbonisation

- Reductions in energy use:
  - energy efficiency and
  - circular economy and eco-design
- Fuel switching: decarbonise energy (green gas, electricity, biomass)
- Zero or low-emissions process technologies
- CCS deployed to capture remaining emissions
- Industrial transformation to support the transition (e.g. development of markets and local production for strategic items: batteries, EVs, etc…)

Figure 69: Differences in final energy consumption in industry compared to Baseline in 2050



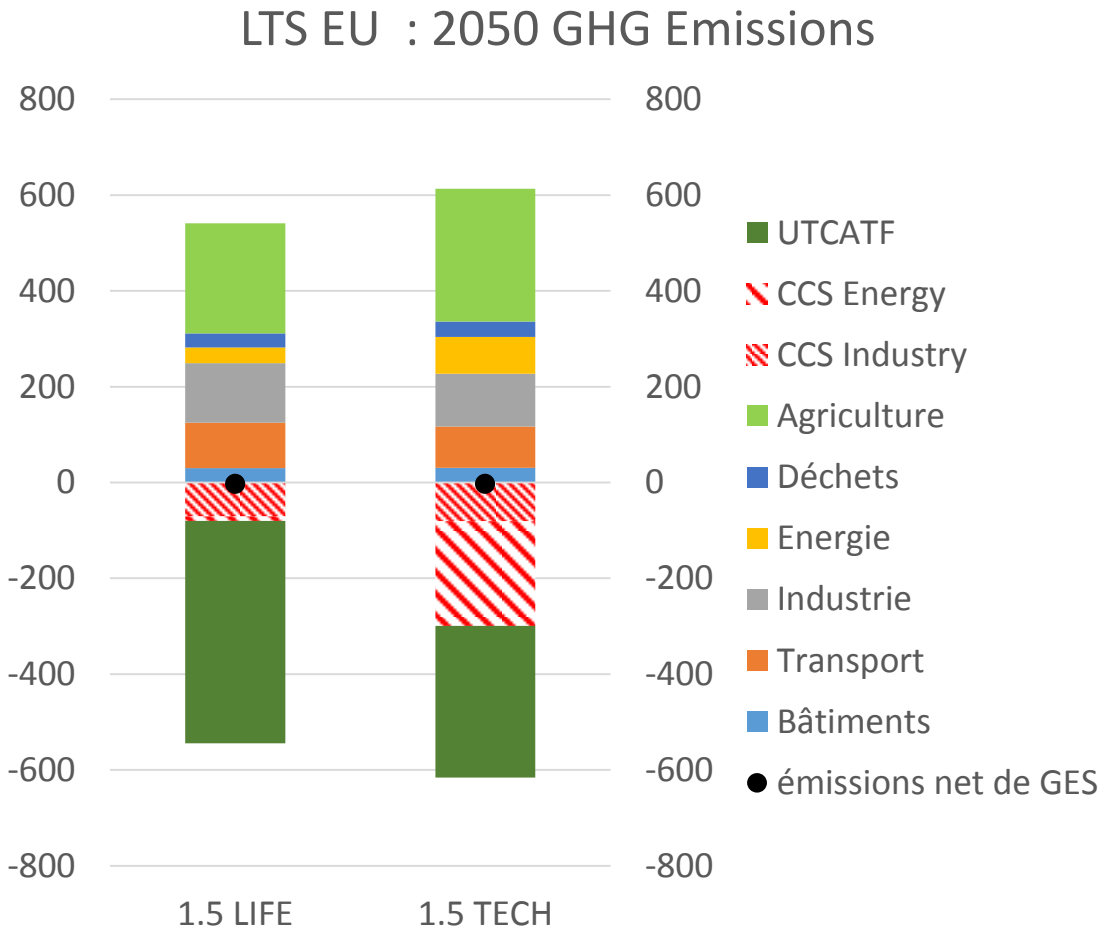
Agriculture: Mobilisation of technical improvements and evolution of diets

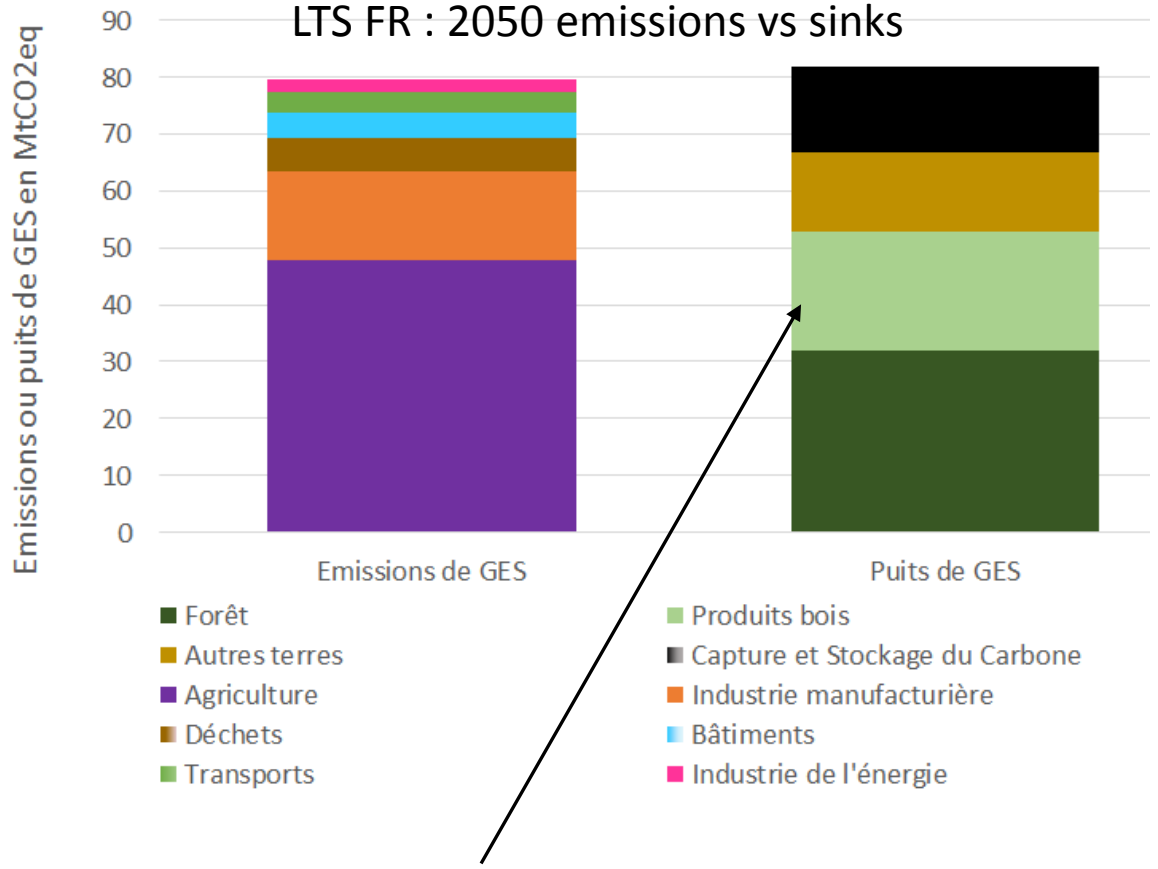
- LTS EU:
  - Improve CO2 efficiency (optimisation, fertiliser practices) & reduction of meat in diets
  - Significant expansion of bio-economy (mainly for energy not materials): 2nd Gen. biofuels
  - Afforestation to expand carbon sinks

- LTS FR :
  - Emphasis on « transition agro-écologique »
  - Greater role for soil storage of CO2
  - Link change in diet habits and evolution of quality of products
  - Additional biomass directed mainly to material substitution not afforestation or energy

NB. What vision of agriculture sector in 2050 beyond decarbonisation?

Importance of CO2 sinks





Bigger role for wood products as a source of sinks and less CCS

Economic benefits, employment, competitiveness

- Need for additional investment of around +200 Mds€/yr at EU level
- Positive impact on employment in 2050: +0,5 à +2 M (e.g. building renovation)
- Some strongly affected and geographically isolated regions requiring « just transition » (fossil fuel extraction)
- Limited but uncertain impacts on GDP in 2050: -1,3% or +2,19% depending on modelling assumptions.
- Significant improvement in trade balance (up to 70% reduction in fossil fuel imports)
- Competitiveness of heavy industries needs to managed during transition, but also source of opportunities for high value, modern products.
- Numerous health and quality of life benefits possible (e.g. diesel)

Some unresolved issues..

- True potential of CC(U)S, BECCS, DACCS?
- True potential (and physical and social limitations) of alternative energy carrrers?
- What coordination needs across MS borders (esp. infrastructure)?
- Coherence of decarbonised AFOLU vs. agri-ecology?
- International dimension: what tech or economic drivers from abroad? What potential for cooperation?
- What does EC LTS mean for 2030 policies? (national and EU)

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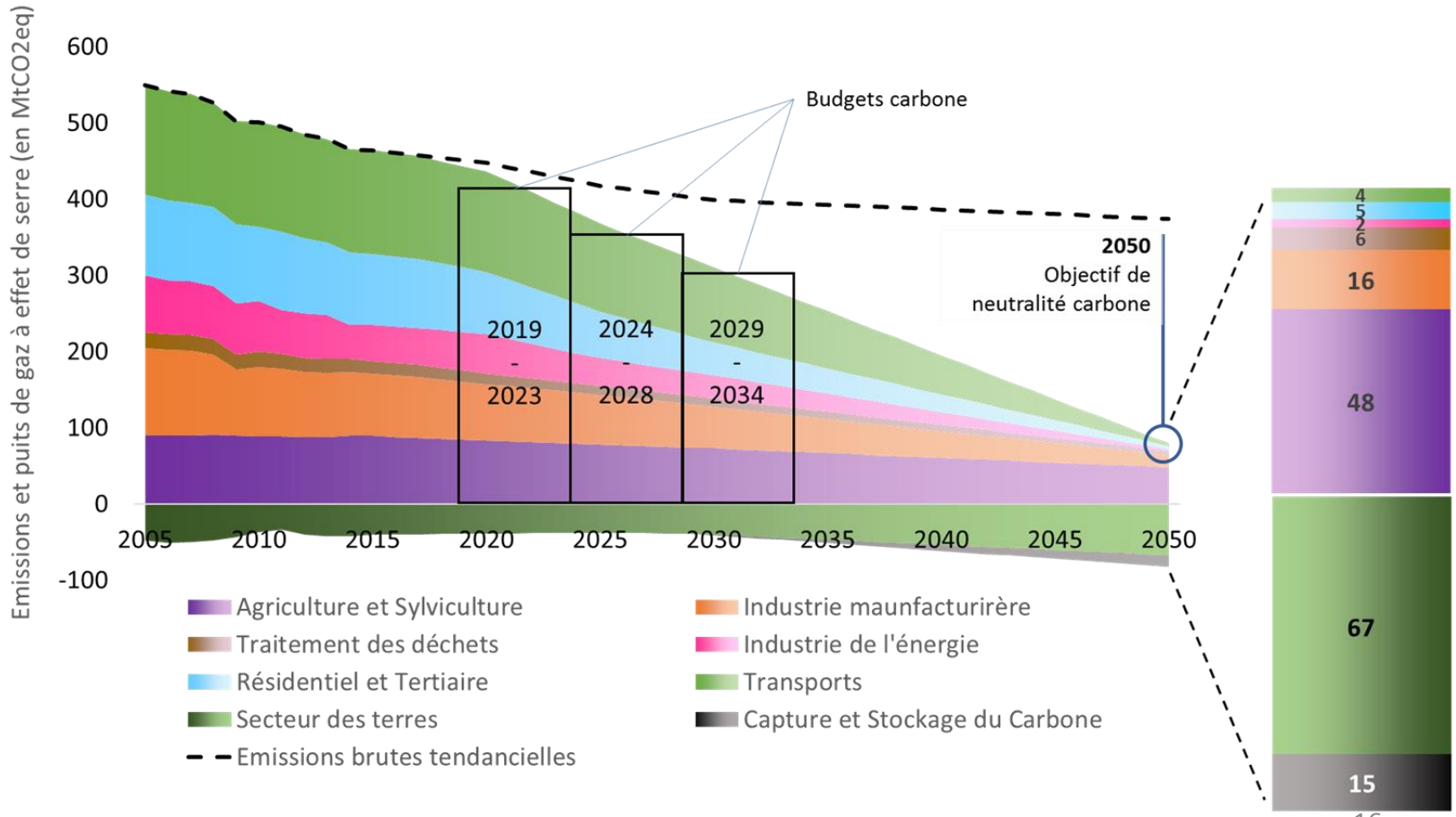

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