



Heavy industry sector's electricity demand by 2050

PAC workshop, July 9, 2019



European
Climate
Foundation



MATERIAL ECONOMICS

INDUSTRIAL TRANSFORMATION 2050

Pathways to net-zero emissions from EU heavy industry

IN COLLABORATION WITH



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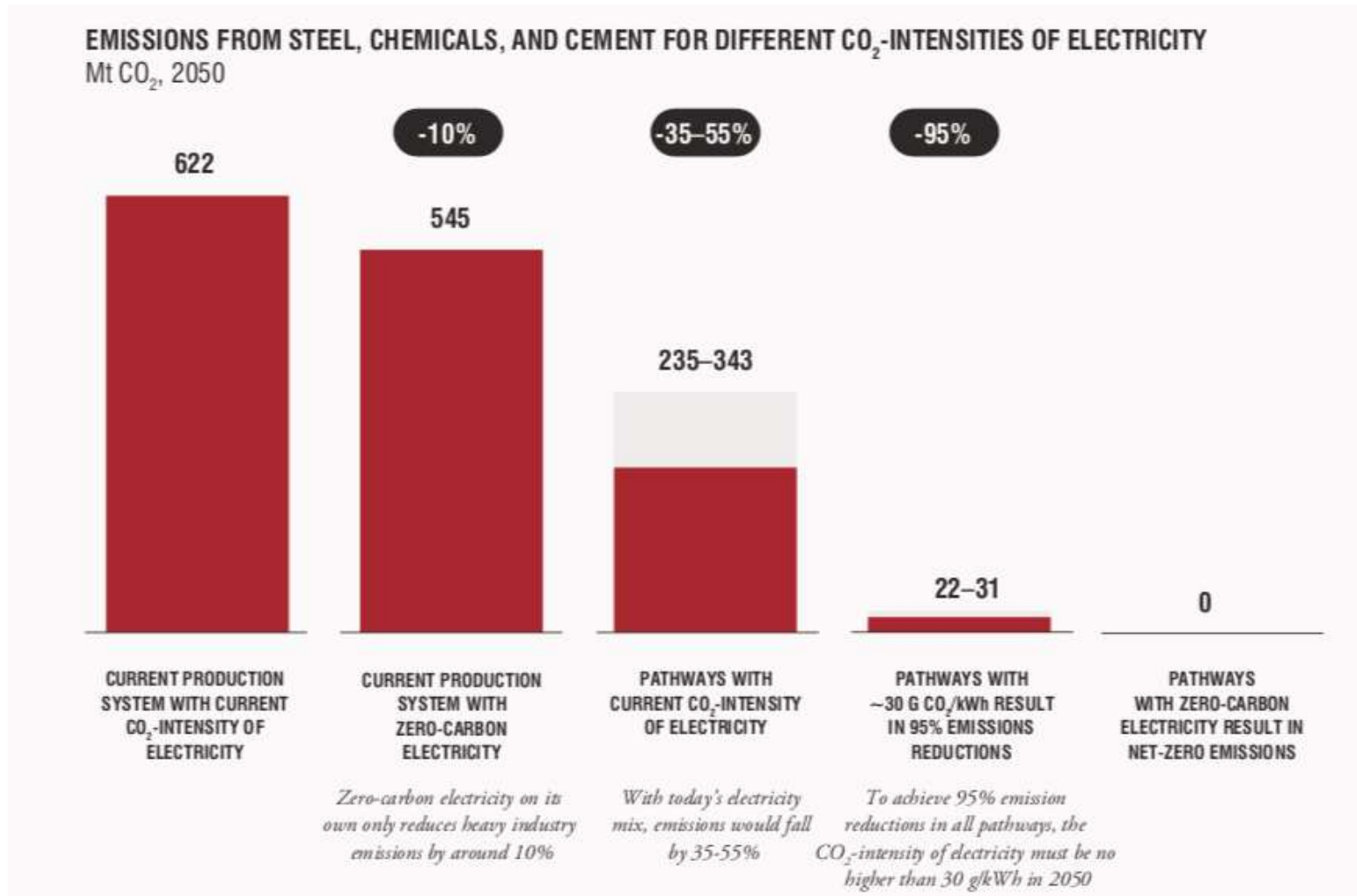




— Outline: Role of electricity for a net-zero industry

- *Main conclusions of IT50 project:*
 1. Clean electricity is key – large amounts will be needed
 2. But, clean electricity is not all – other technologies will be needed;
 3. How much will depend on technology pathway chosen
 4. Biggest driver of the transition is cost of electricity
 5. How to enable the transition: Energy and industry transition must be aligned

1. Clean electricity will be crucial



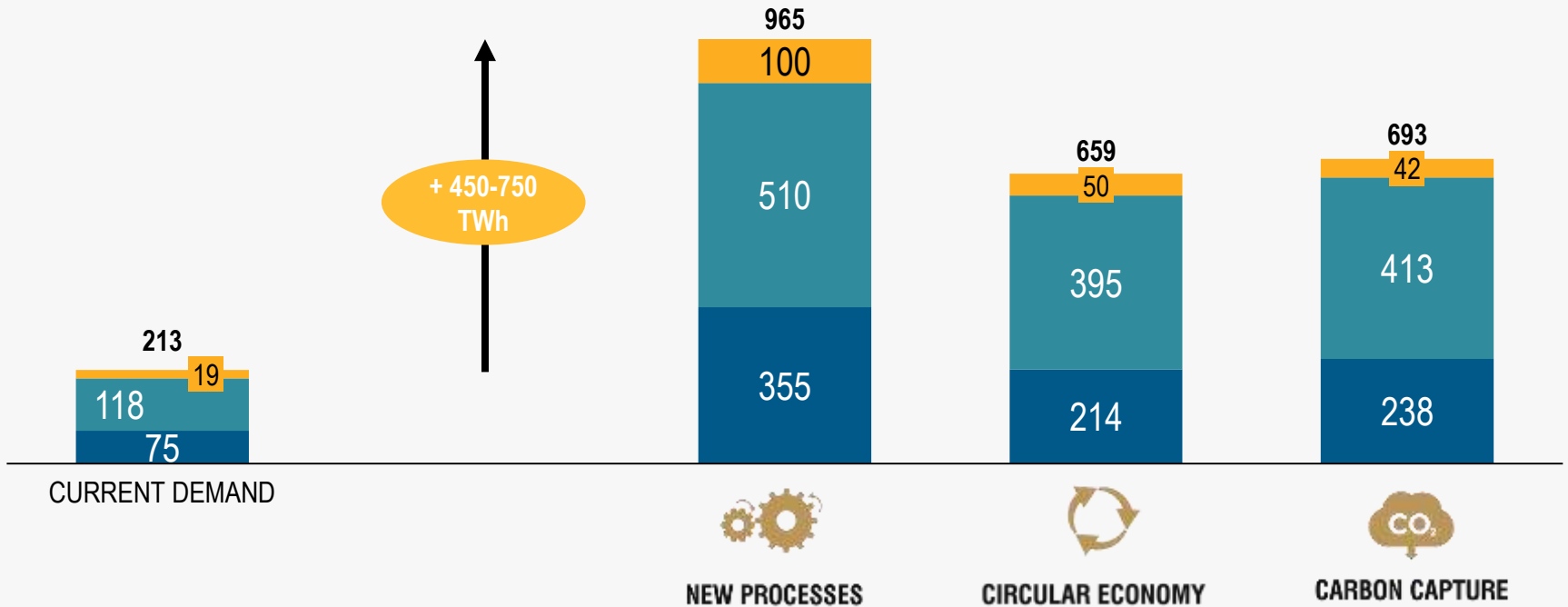
1. Electricity needs will be large to enable a net-zero industry

TWH PER YEAR

2015

2050

+ 450-750 TWh



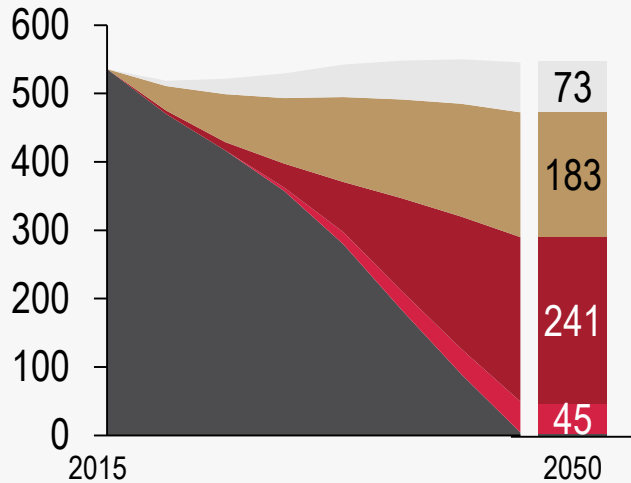
Cement Chemicals Steel

2. For industry, clean electricity is not all

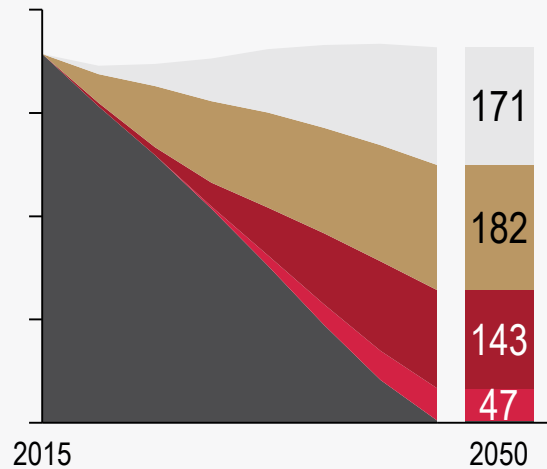
MT CO₂
PER YEAR



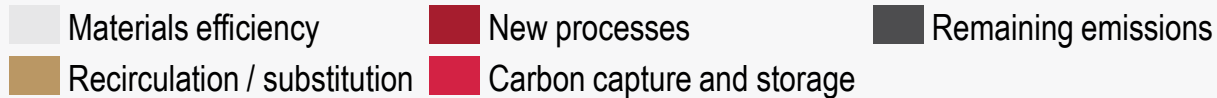
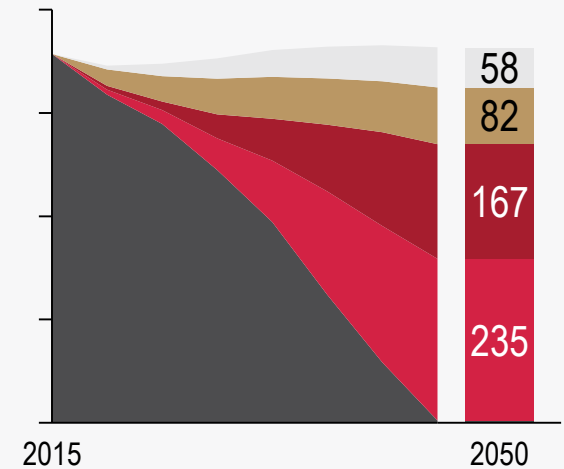
NEW PROCESSES



CIRCULAR ECONOMY



CARBON CAPTURE



3. Electricity demand will depend on pathway



NEW PROCESSES



CIRCULAR ECONOMY



CARBON CAPTURE

Requirements

ELECTRICITY
TWh PER YEAR, 2050

965

659

693

BIOMASS
EJ PER YEAR, 2050

1.3

1.1

1.3

HYDROGEN
Mt PER YEAR, 2050

13.0

8.8

6.8

CO₂ CAPTURE
Mt CO₂/YEAR, 2050

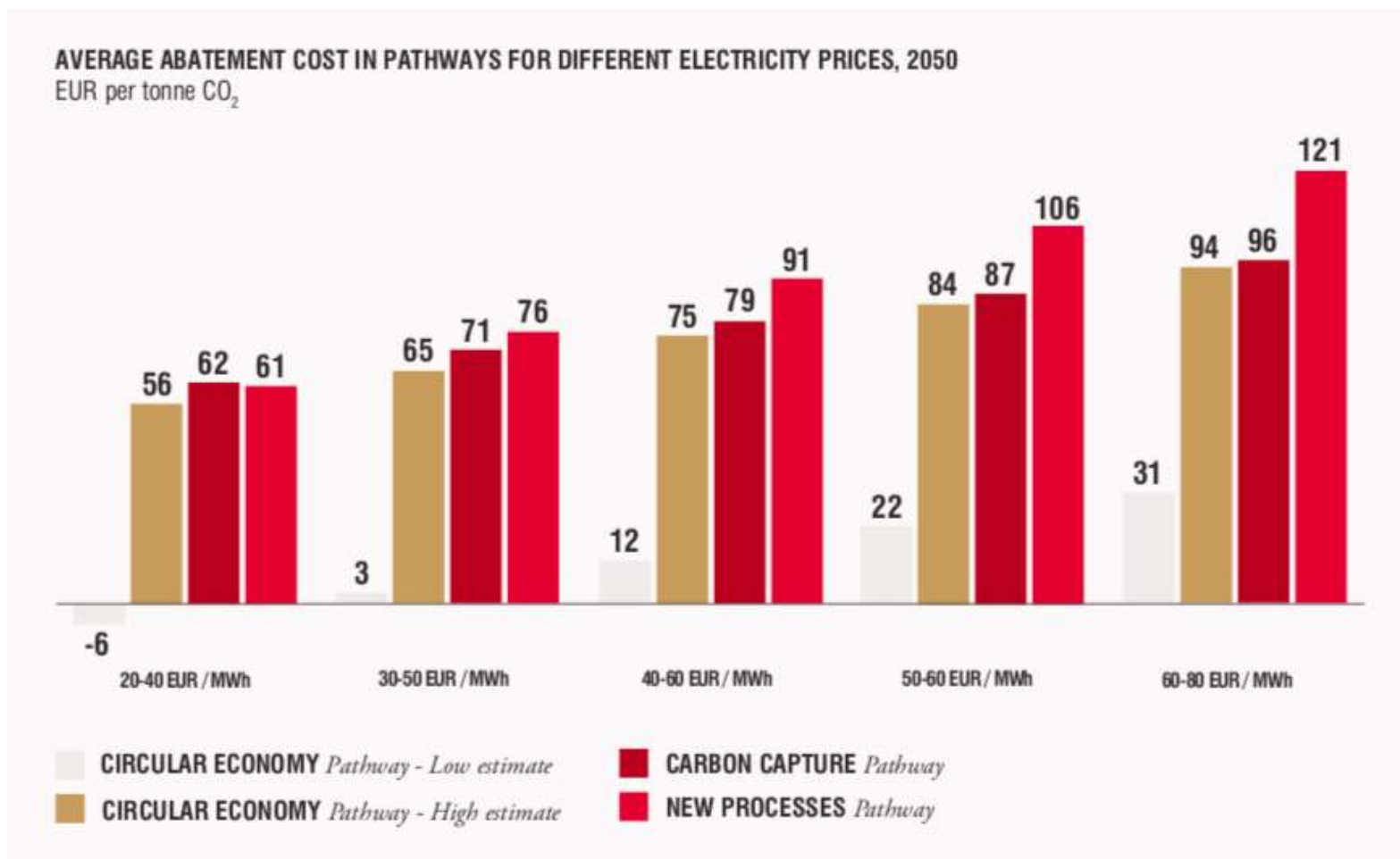
45

47

235



4. Transition will be driven by cost of electricity



5. How to enable the transition



Achieving a net-zero heavy industry in Europe will only be feasible if we succeed in delivering the whole technology set combined with fully decarbonizing the electricity mix i.e. the **industry and power net-zero transition must be aligned.**

Explore policy options for:

- Impact assessment of the adequacy of the energy system
- Green Power Purchase Agreements
- Accelerate phase out of carbon intensive power



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Thank you

The image features a solid teal background. In the center, the words "Thank you" are written in a clean, sans-serif font. The text is colored in a bright yellow-gold. The background is decorated with several overlapping, wavy, organic shapes in various shades of teal, creating a sense of depth and movement. A single, thin, bright yellow-gold line curves across the lower portion of the image, mirroring the color of the text.