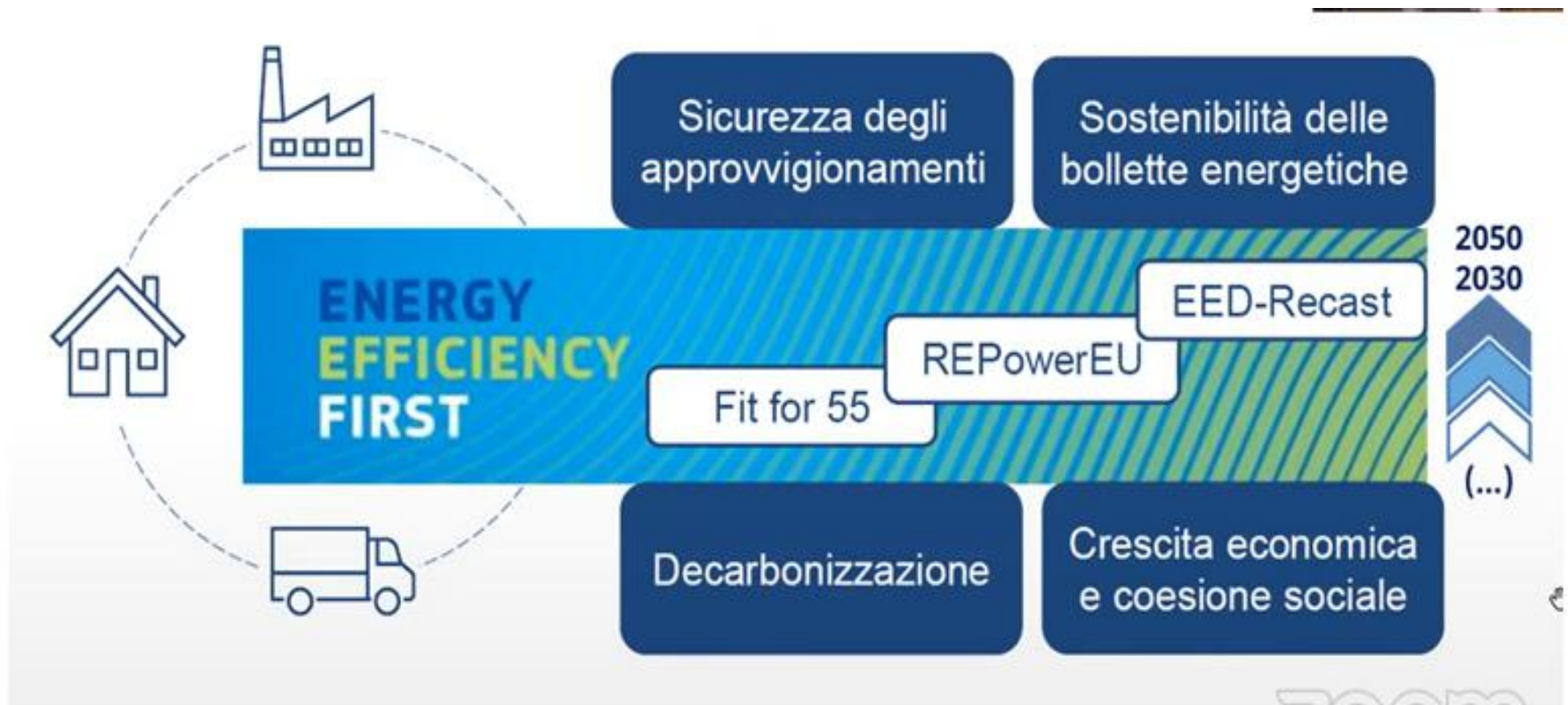

Efficienza energetica e sostenibilità ambientale

Tendenze future

A. Bollea

Università degli Studi di Macerata

Energy Efficiency First



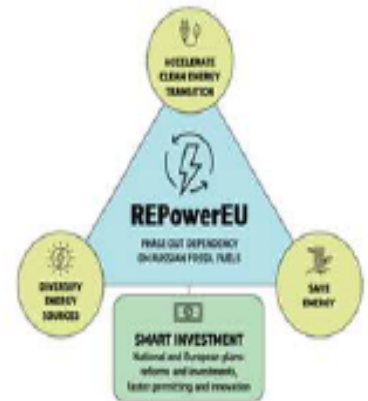
II REPowerEU

La riforma europea delle rinnovabili

Il 18 maggio 2022 la Commissione europea ha proposto il pacchetto REPowerEU con l'obiettivo di azzerare le importazioni di combustibili fossili dalla Russia il prima possibile e dare un ulteriore slancio alla decarbonizzazione.

Rispetto al Fit for 55, il REPowerEU prevede di:

- Aumentare il target rinnovabili 2030 dal 40% al 45%.
- Aumentare il target di efficienza 2030 dal 9% al 13%.
- Accelerare idrogeno e biometano.
- Semplificare le autorizzazioni per la costruzione di impianti rinnovabili.
- Raggiungere una capacità solare installata di 600 GW al 2030 in Europa con la Solar Strategy.



New EU energy efficiency directive sets 11.7% reduction target by 2030

(EurActiv, 10 Mar 2023) EU lawmakers have agreed to increase the ambition of the bloc's energy efficiency directive, making energy savings of 11.7% by 2030 mandatory in a bid to further the bloc's climate and energy independence goals.

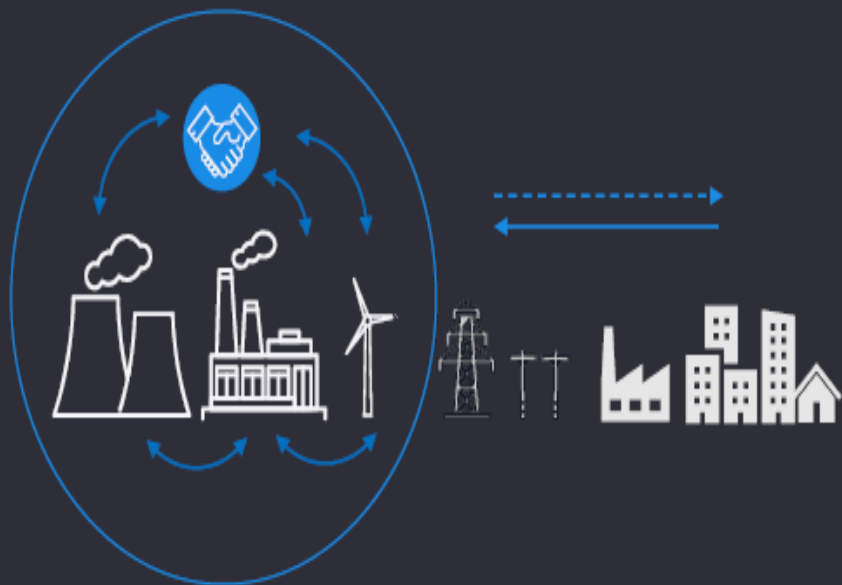
Final 2030 target

On 25 July 2023, the EU officially concluded the legislative process to strengthen the Energy Efficiency Directive. The updated legislation, including the new binding target, entered into force in all EU countries on 10 October 2023.

This target sets the goal of consuming at least 11.7% less energy by 2030 compared to the projected energy use for 2030 (based on the 2020 reference scenario). It translates into a primary energy consumption target of 992.5 million tonnes of oil equivalent (Mtoe) and a final energy consumption target of 763 Mtoe by 2030.

Compared to the previous targets (1128 Mtoe for primary energy and 846 Mtoe for final energy), the increased targets aim to reduce Europe's 2030 energy use by roughly the equivalent of Spain's current annual energy consumption.

Modello energetico del futuro



L'Energia di oggi

Centralizzata - Programmabile - Verticalmente integrata - Unidirezionale



L'Energia di domani

Distribuita - Intermittente - Orizzontalmente Integrata - Bi-direzionale

Smart city



Smart city - Soluzioni



Autoconsumo – Comunità energetiche

autoconsumo e compravendita di
energia elettrica da FER tra utenze civili

Direttiva UE/2018/2001

con obbligo di recepimento entro il 30 giugno 2021



L'ECONOMIA CIRCOLARE ENERGETICA

Principio alla base di alcuni degli obiettivi
comunitari al **2030**

Direttiva UE/2018/2001

Direttiva UE/2018/2002

1. uso di fonti rinnovabili

provenienti dal territorio, aventi lo scopo di
ridurre la dipendenza dai combustibili
fossili;

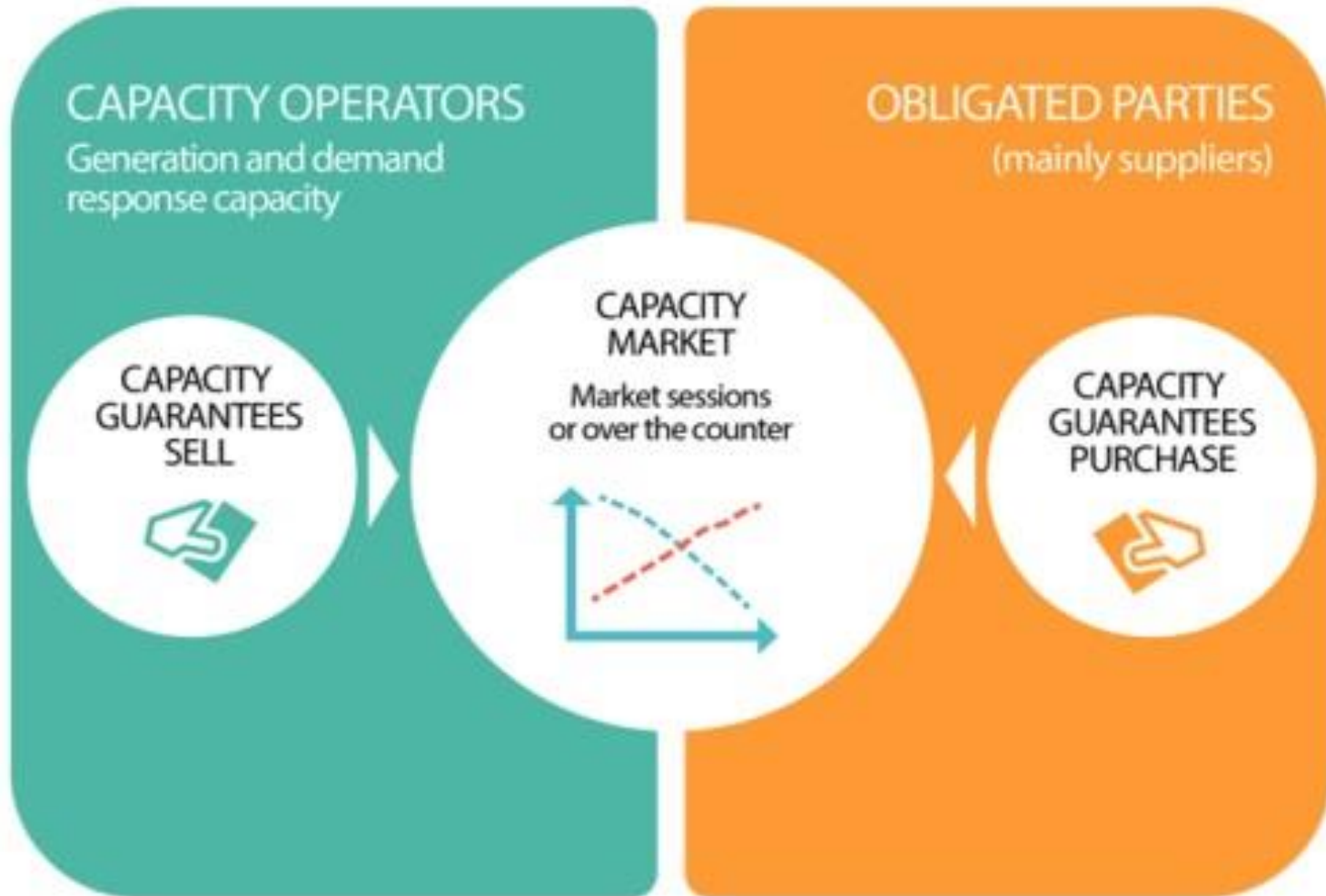
2. recupero di energia,

non diversamente utilizzabile, dislocata sul
territorio urbano, proveniente dal comparto
commerciale, artigianale, industriale;

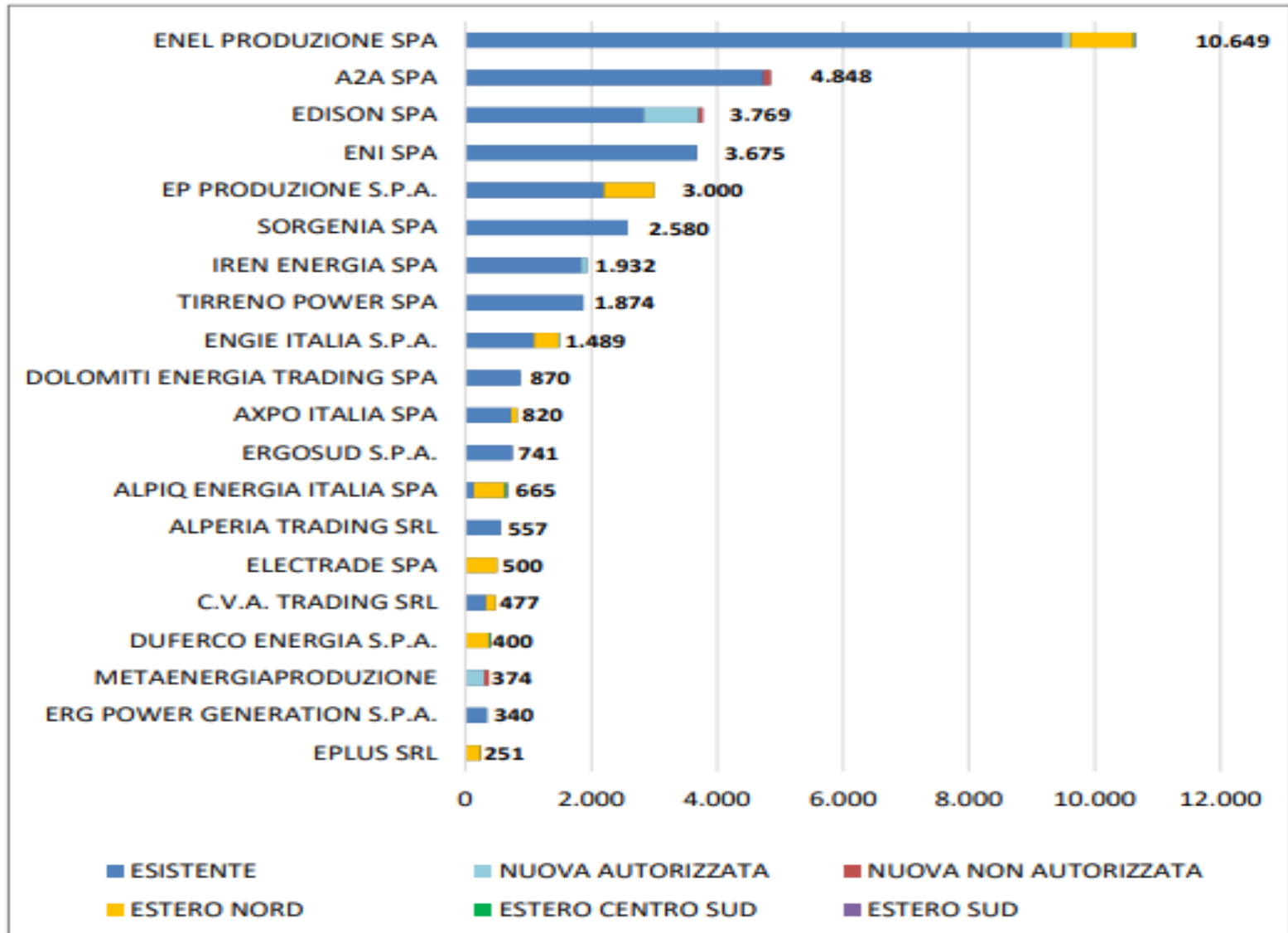
3. partecipazione del territorio

alle necessità energetiche del comparto
commerciale, artigianale, industriale e
residenziale per favorire lo scambio
biunivoco;

Capacity Market



Capacity Market – Asta madre 2022



Elettrolizzazione versus idrogeno

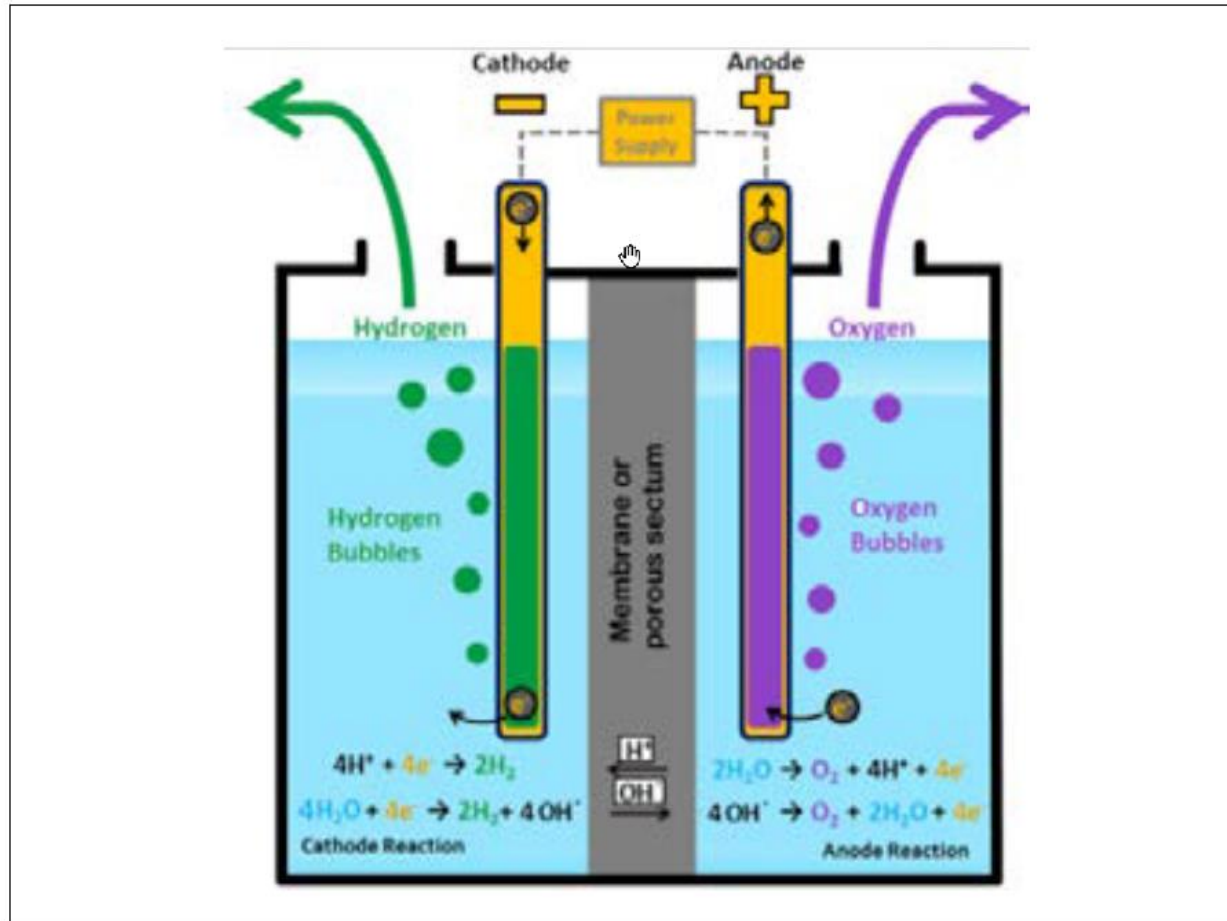
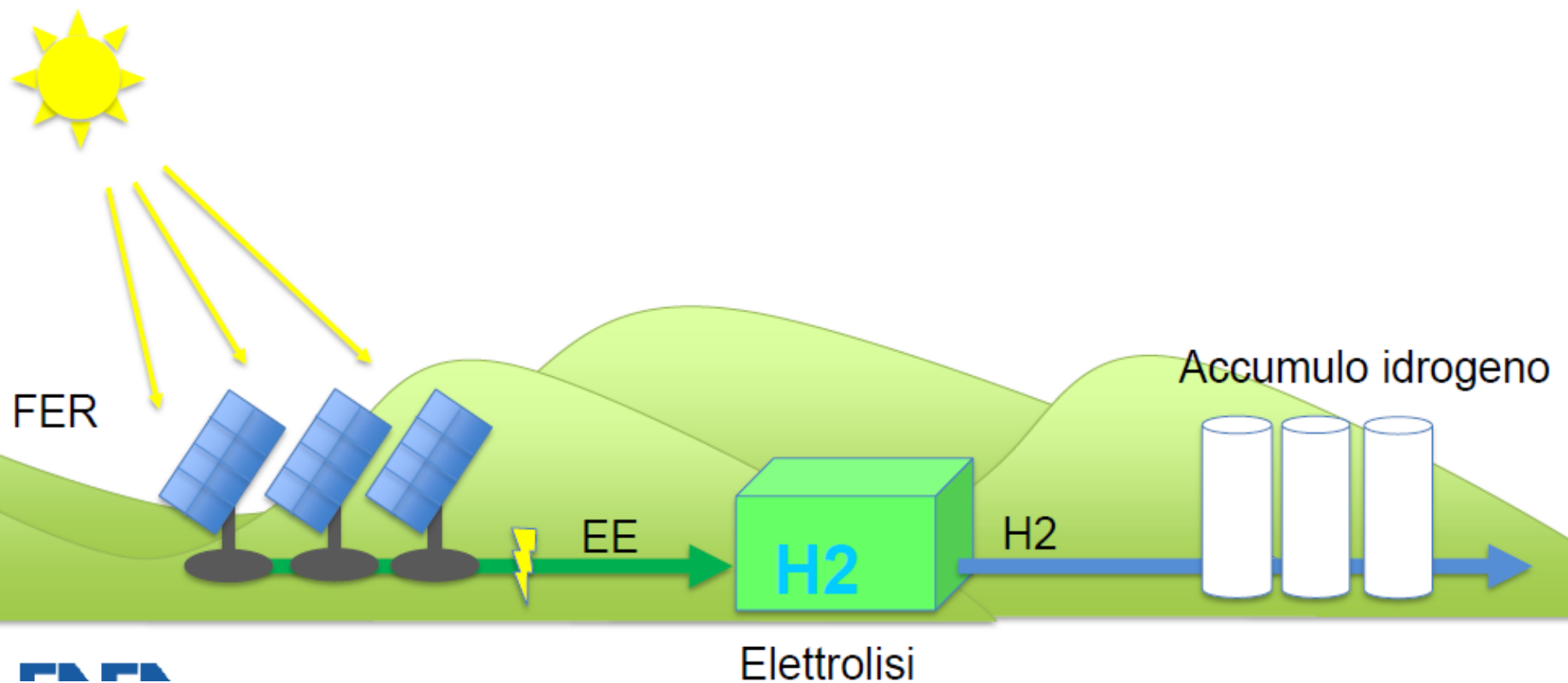
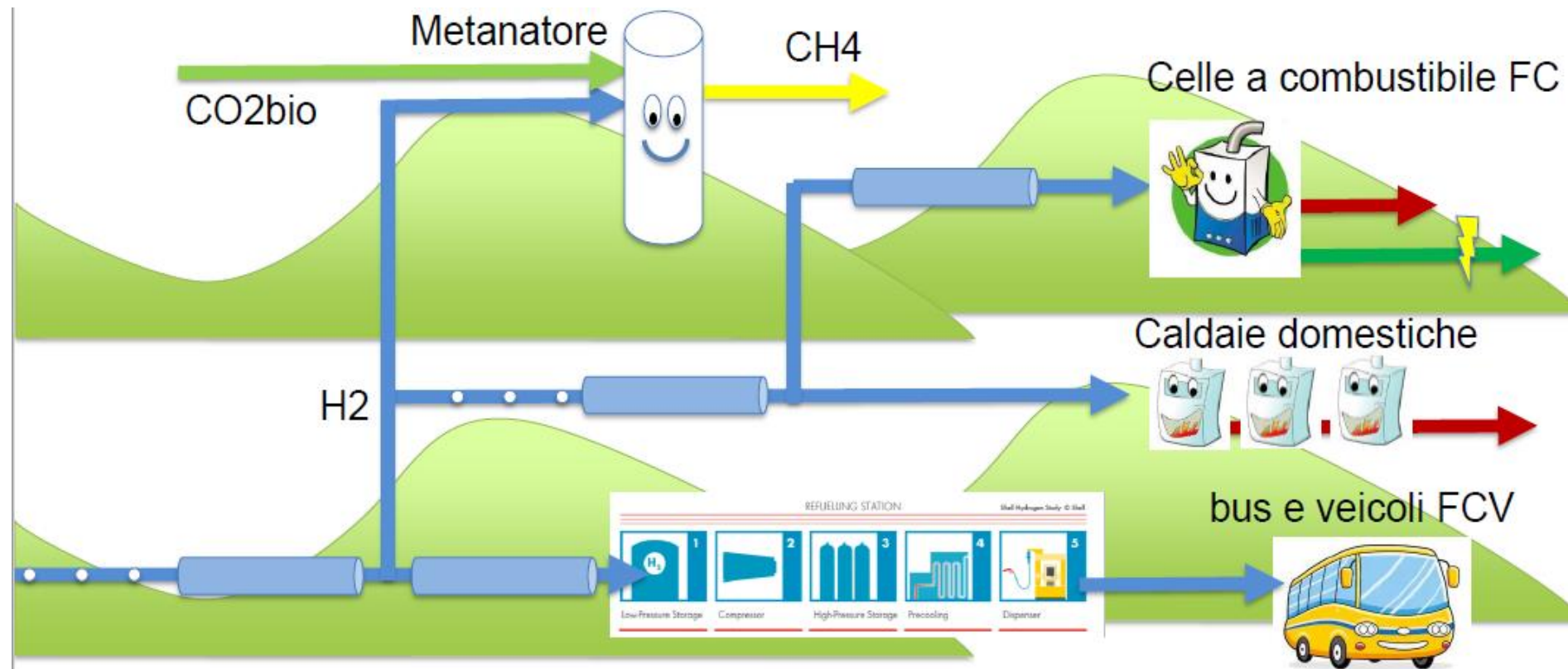


Fig.1 Simplified diagram of an electrolysis cell with alkaline or acid charge carrier.

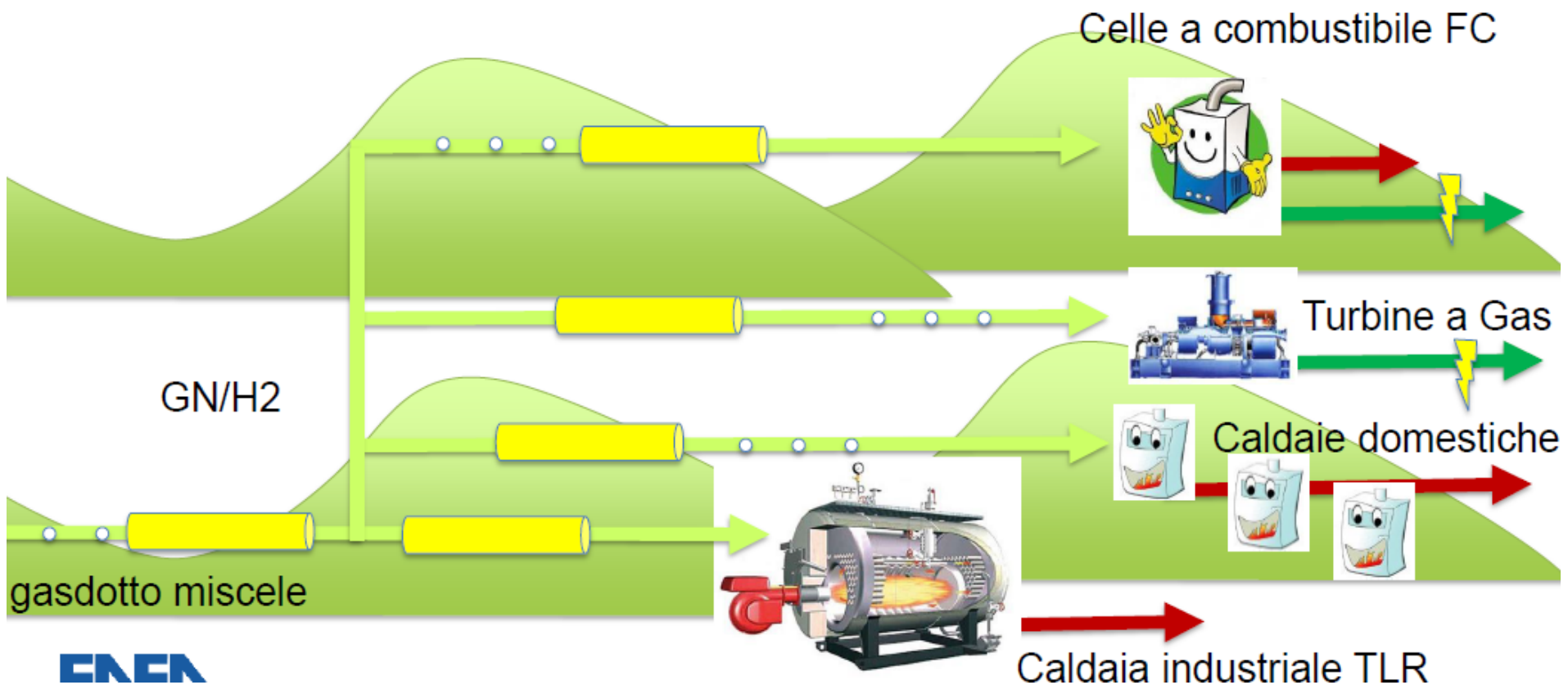
Utilizzo idrogeno



Utilizzo idrogeno



Utilizzo idrogeno



Idrogeno versus riduzione emissioni

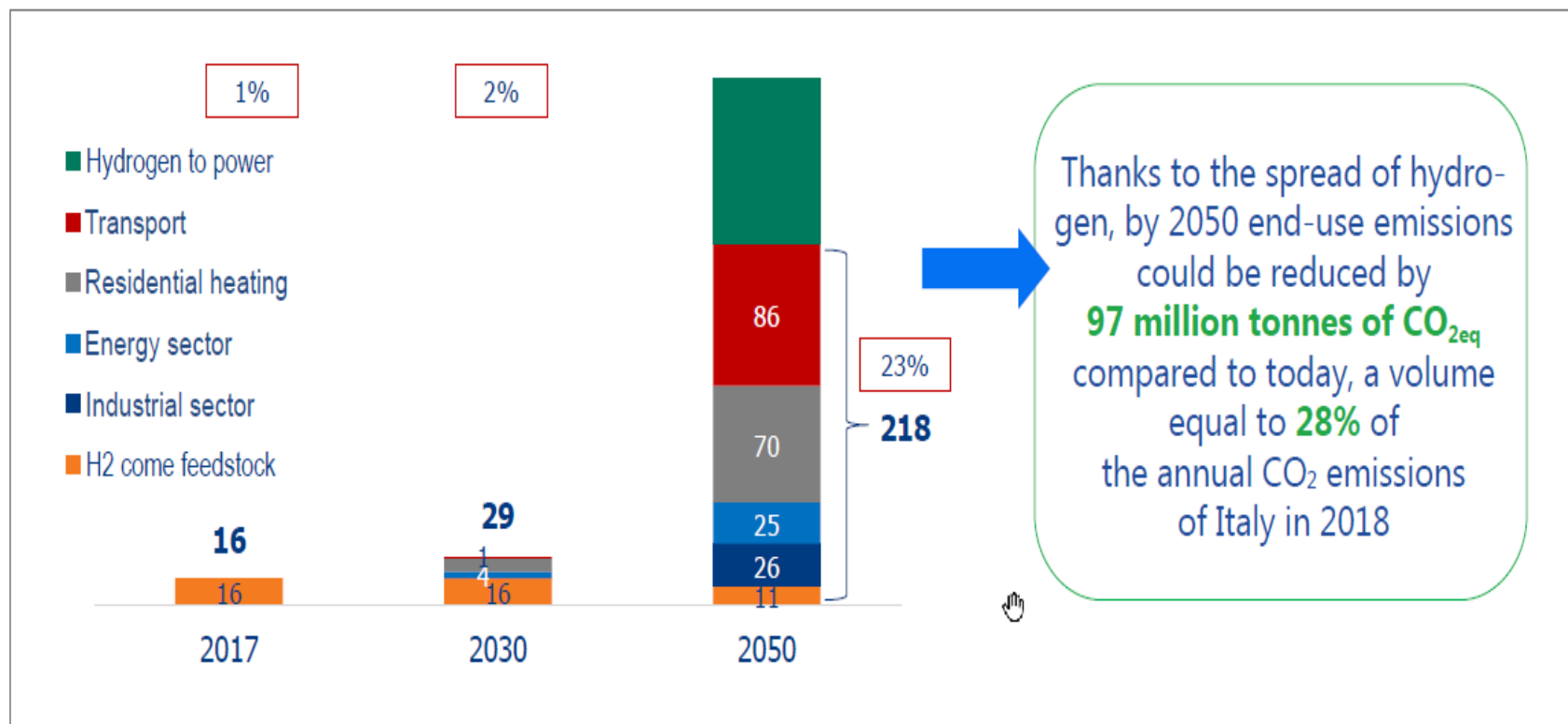


Fig.2 Potential evolution of hydrogen in final energy demand in Italy in the development scenario (TWh and % of total consumption), 2017, 2030 and 2050. Source: analysis of data from "The Hydrogen Challenge" and various sources by The European House - Ambrosetti, 2020.

Idrogeno green

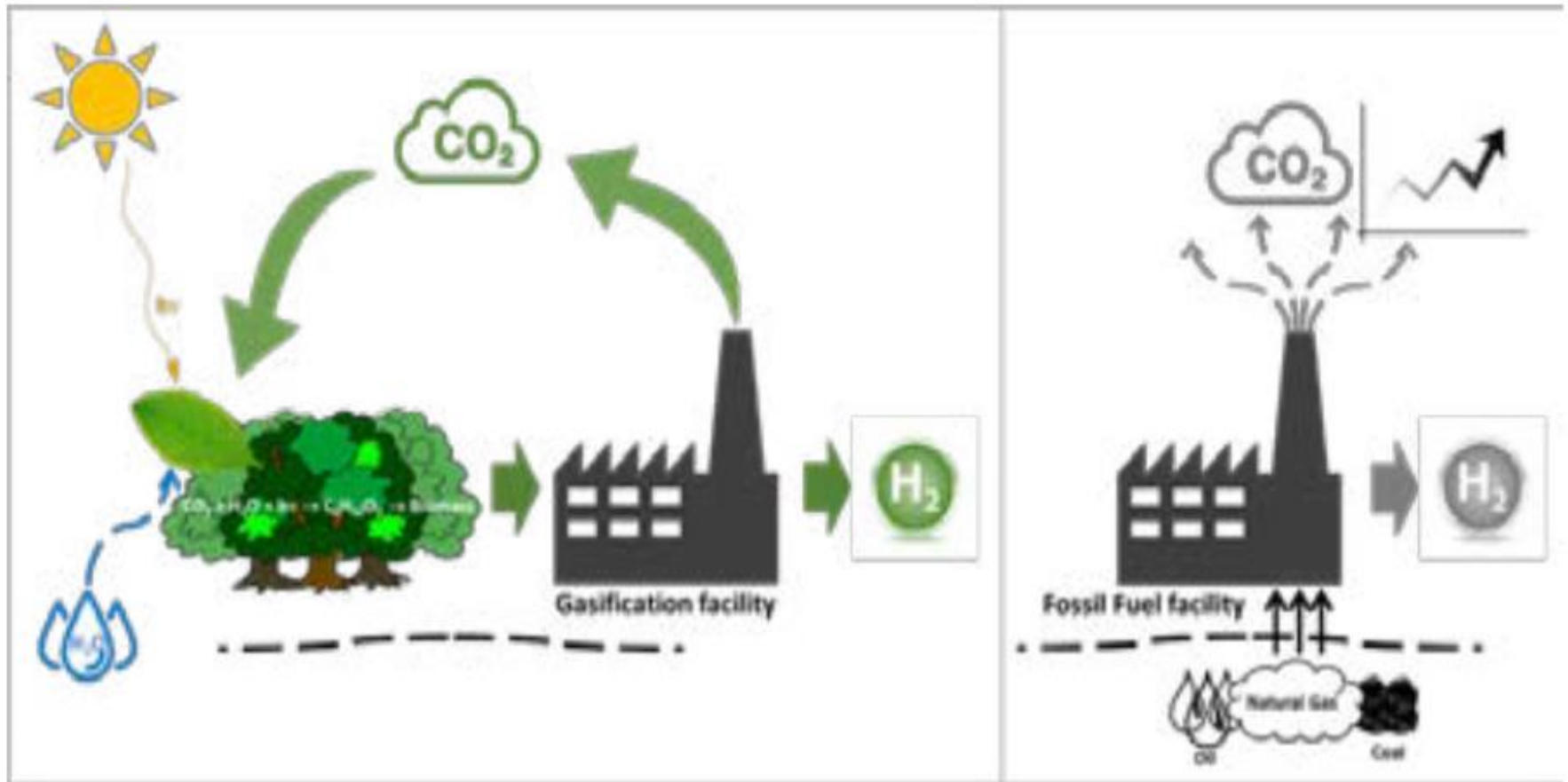


Fig.2 General production concepts: a) Green hydrogen from biomass versus b) hydrogen from fossil fuels

Idrogeno - Applicazioni

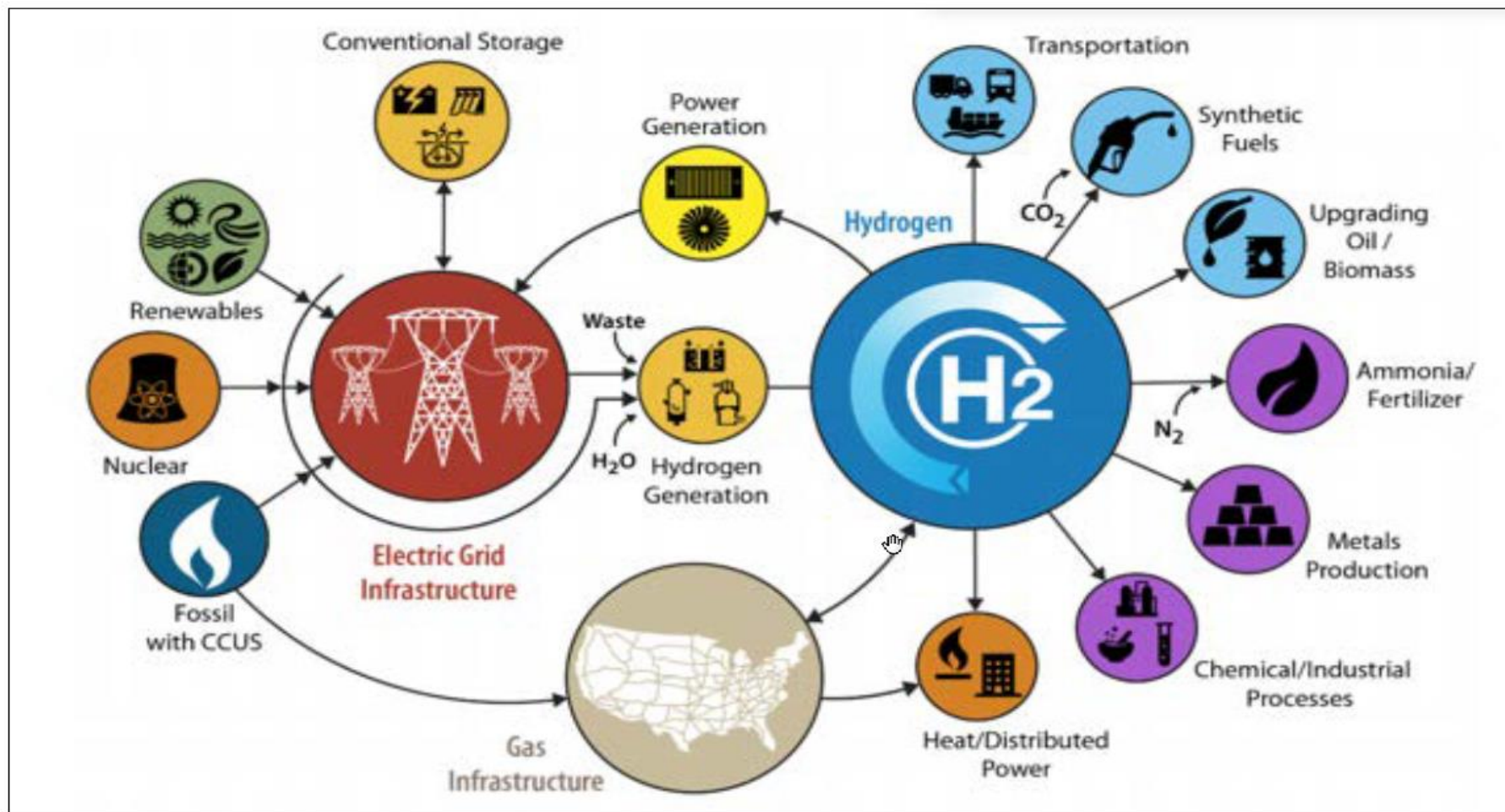


Fig.1 H2@Scale Concept: How Producing and Storing Hydrogen can Enable End Use Applications across Sectors

Idrogeno ed altre fonti di energia

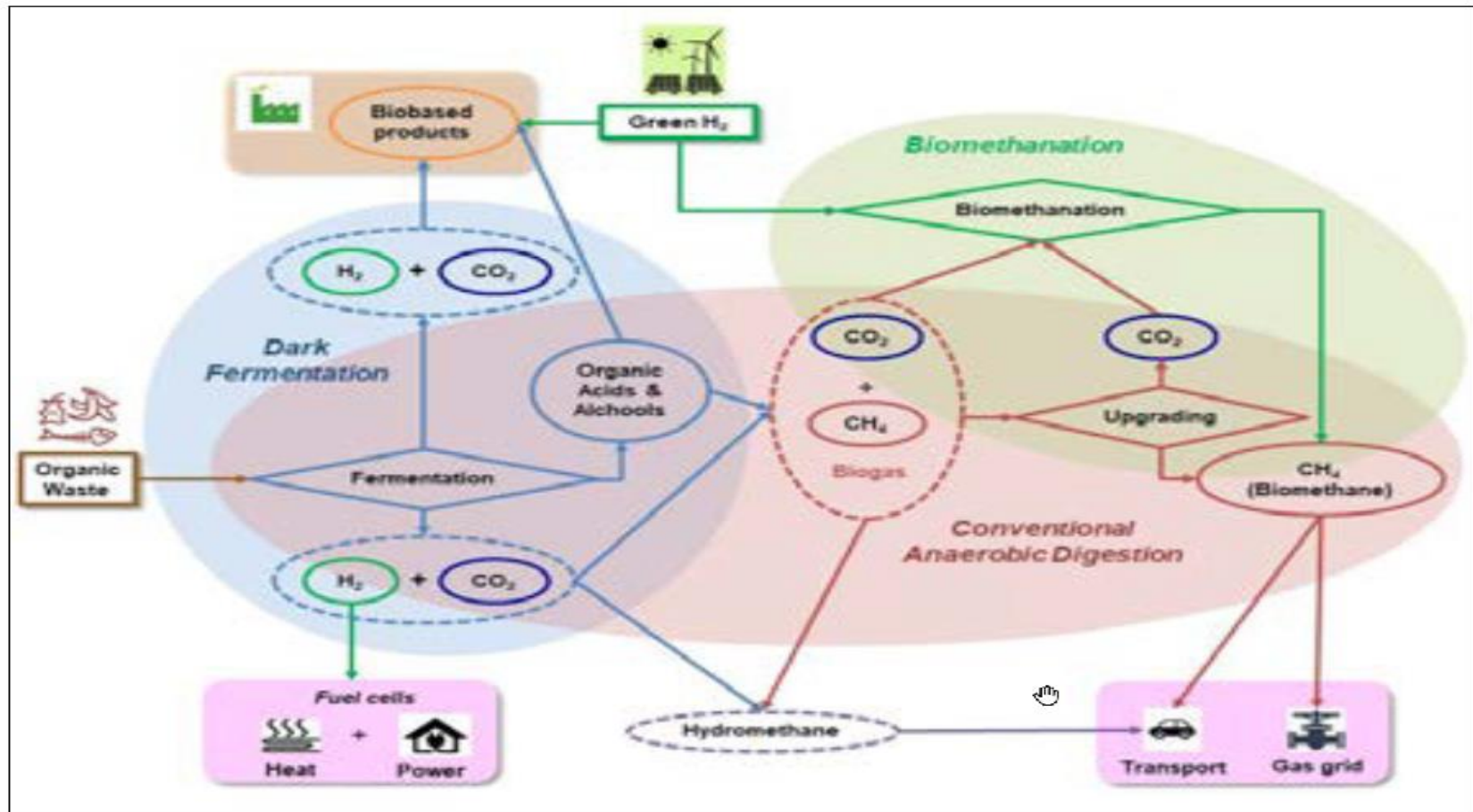
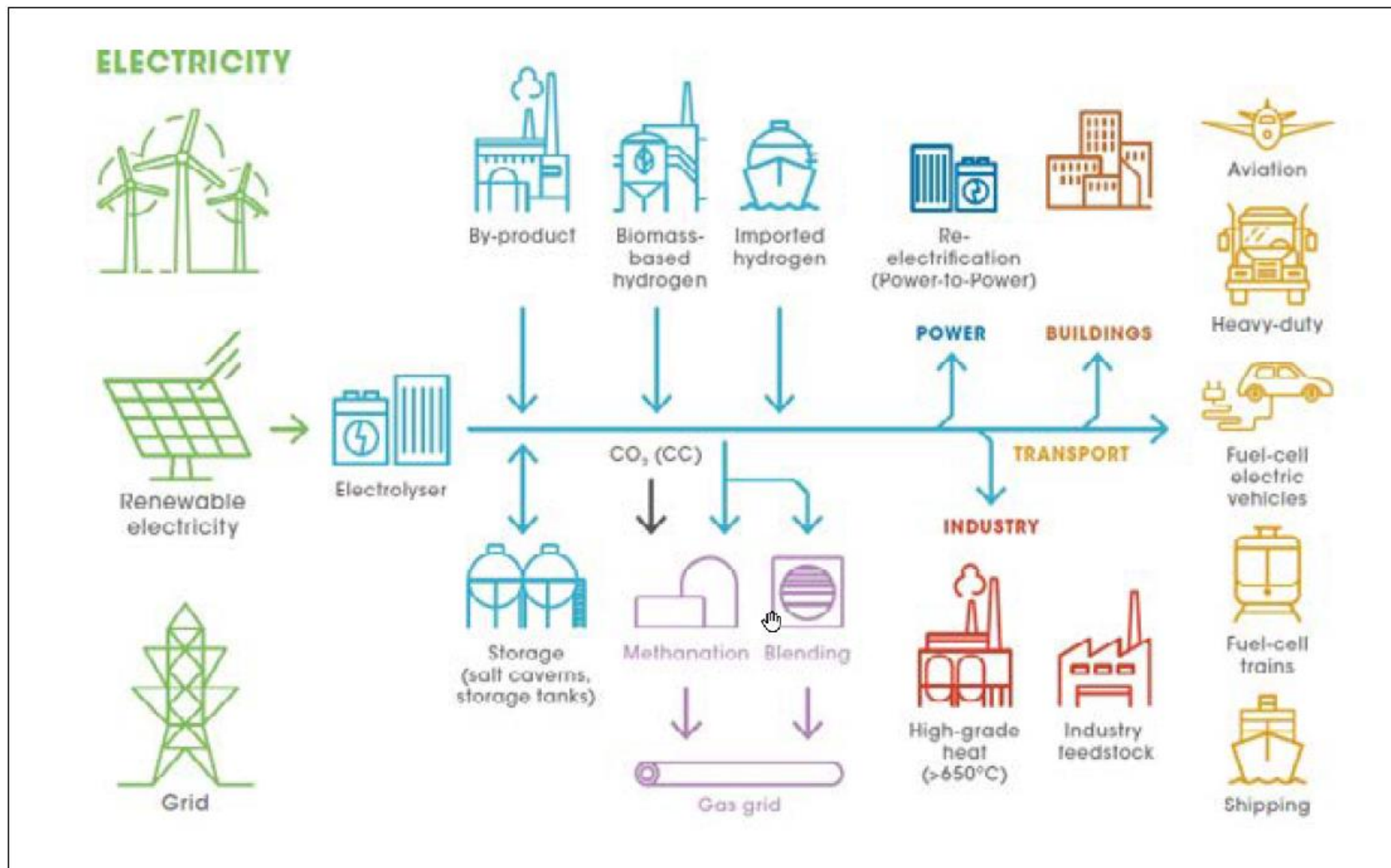


Fig.1 Biological processes integrated in the green H₂ value chain: Background coloured areas enclose the main step of each process; Rectangles represent processes; feeding Diamond shapes represent technological stages; Round shapes represent products; Dotted lines enclose gas mixtures; Background coloured rectangles represent the end uses.

Idrogeno ed altre fonti di energia



Il futuro della produzione elettrica in Italia

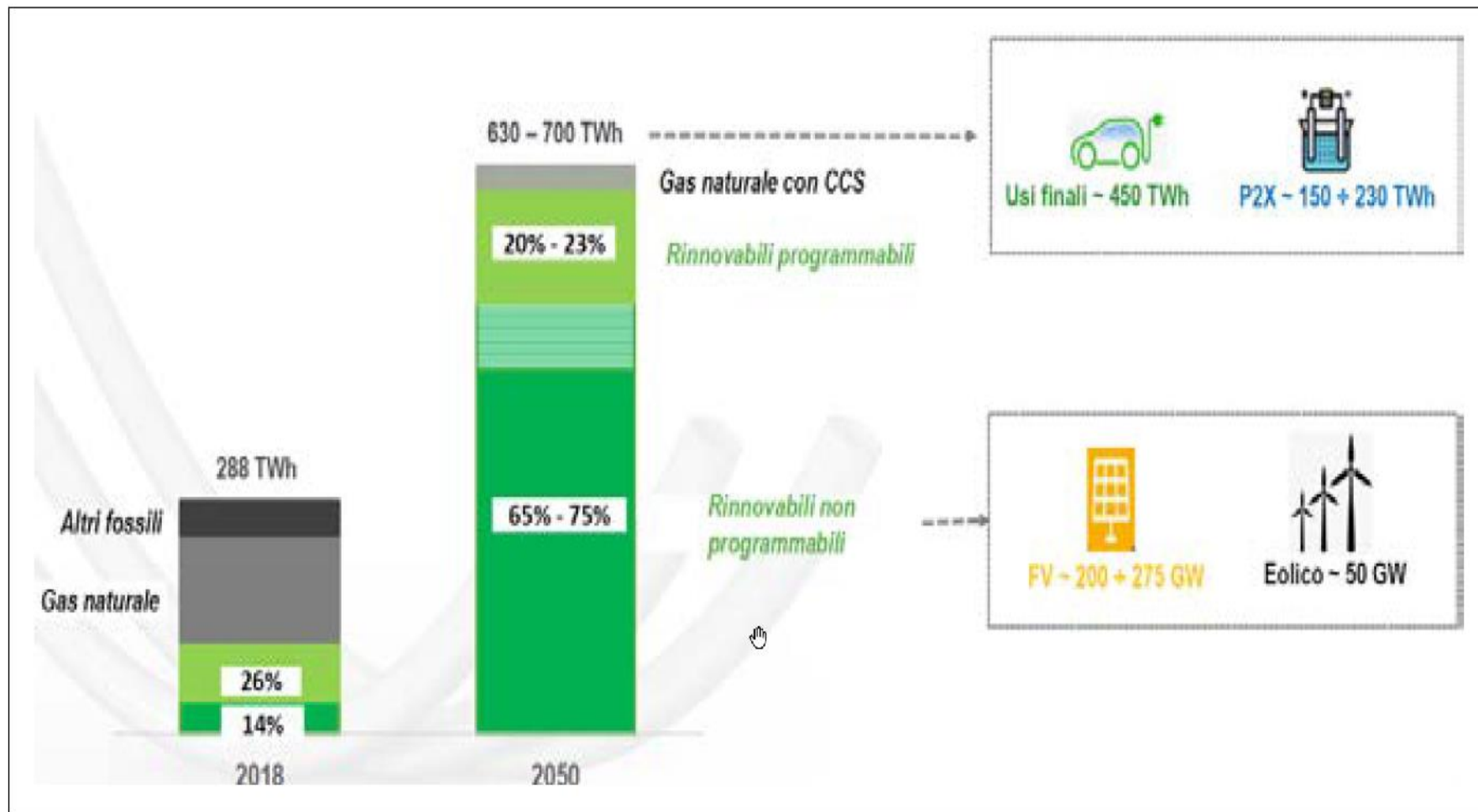


Fig.1 The Italian electricity system in 2050.

In conclusione



ESSERE EFFICIENTI

ESSERE GREEN E SOSTENIBILI

**INVESTIRE IN TECNOLOGIE INNOVATIVE E STRATEGICHE
NEL MEDIO LUNGO PERIODO**