



Politiche di mobilità e qualità dell'aria nelle 14 città e aree metropolitane 2017-2018

Roma, Ferrovie dello Stato, Piazza della Croce Rossa, 1

Mercoledì 17 aprile 2019, ore 9:30-13:30



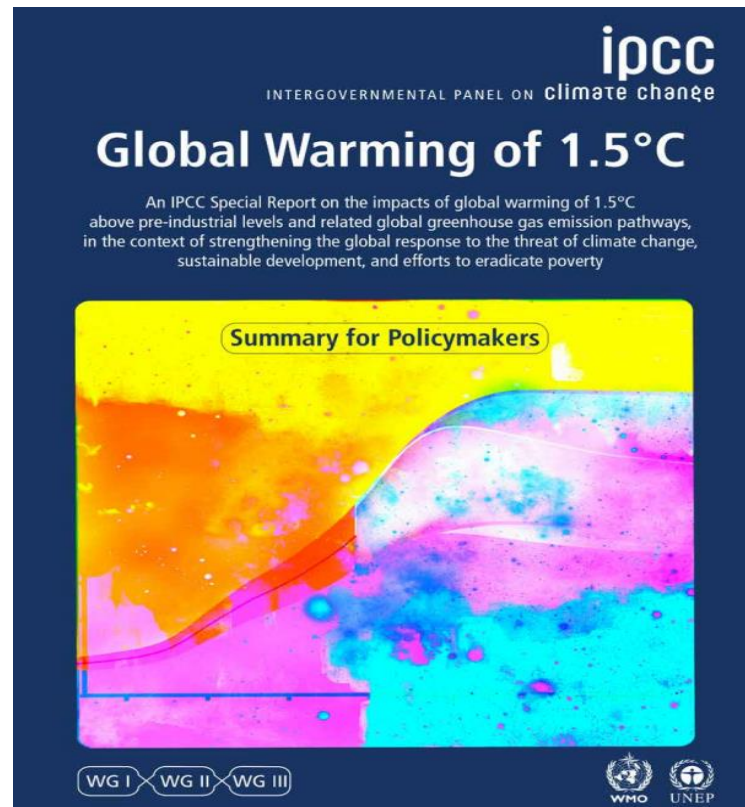
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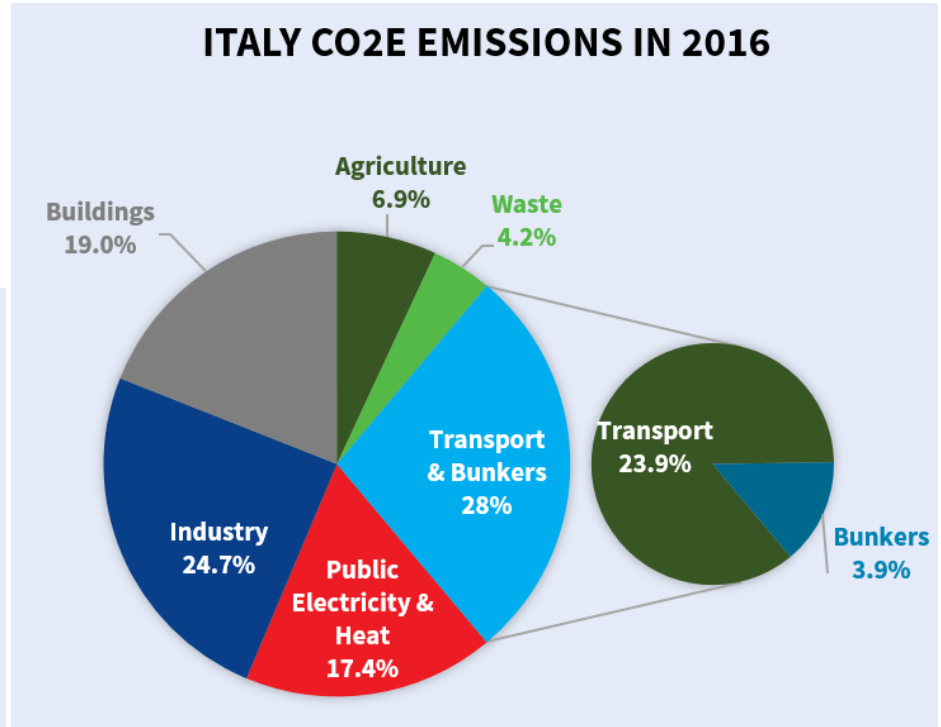
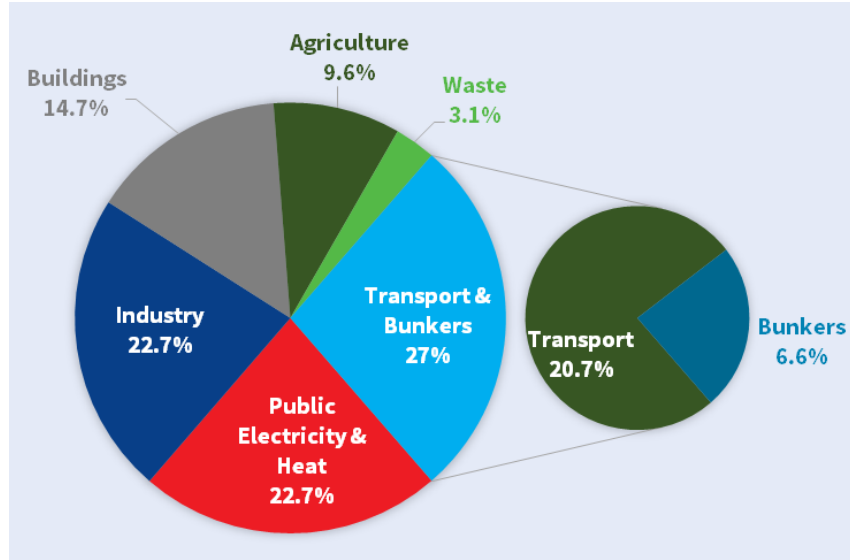
La decarbonizzazione del settore trasporti in Europa e
in Italia entro il 2050

Veronica Aneris, Responsabile T&E Italia

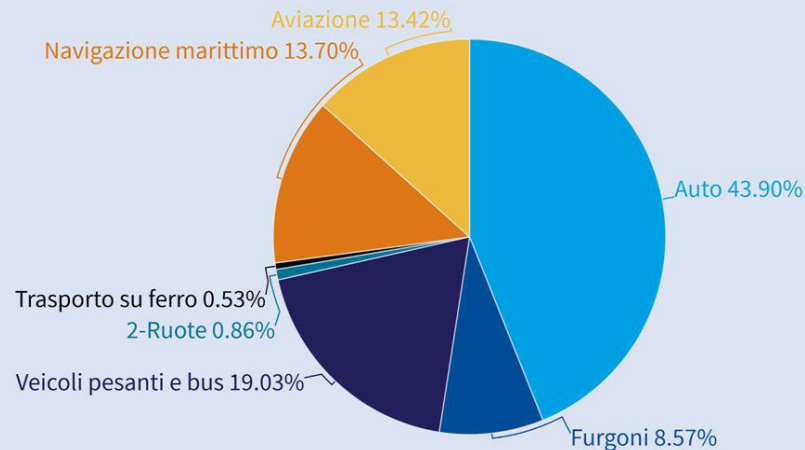
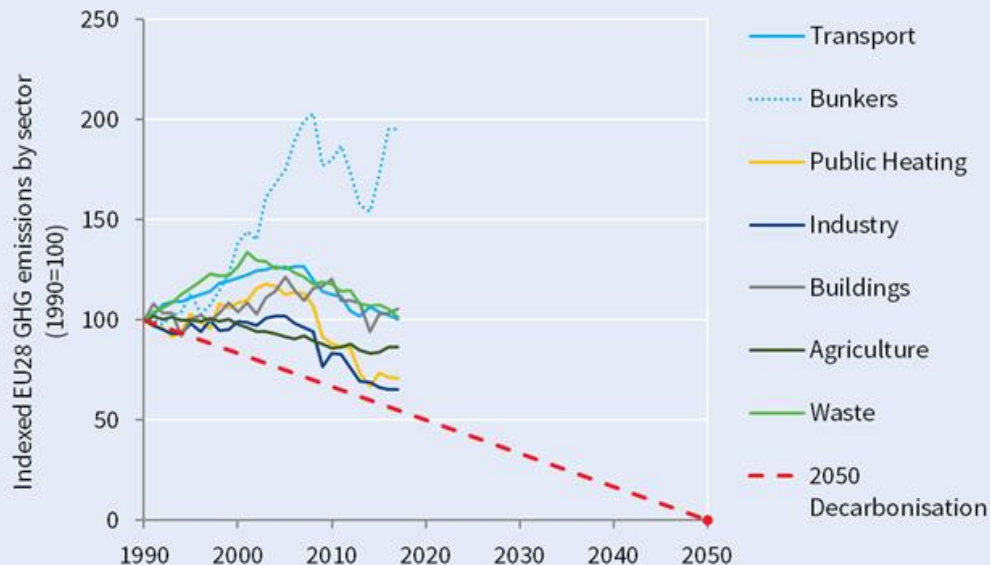
NEED OF LONG-TERM STRATEGY



Emissioni del trasporto: il più grande problema climatico

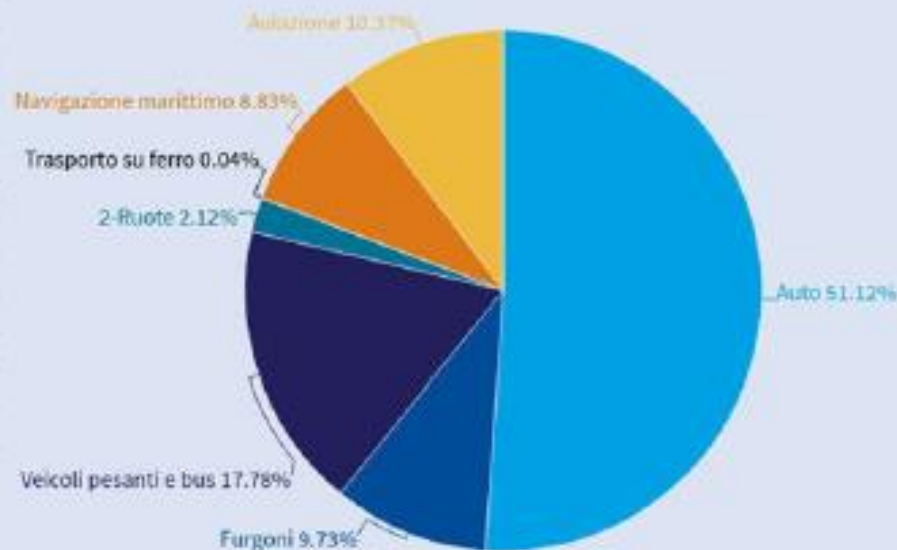


Con emissioni che si ostinano ad aumentare



Fonte: UNFCCC, Inventari nazionali di emissioni di gas serra

Evoluzione delle emissioni del settore trasporti in Italia e emissioni nel 2016

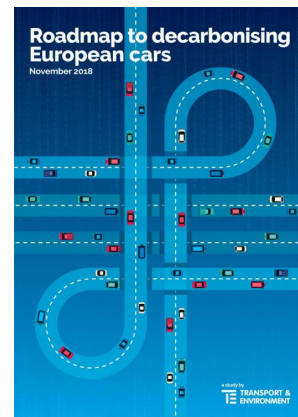
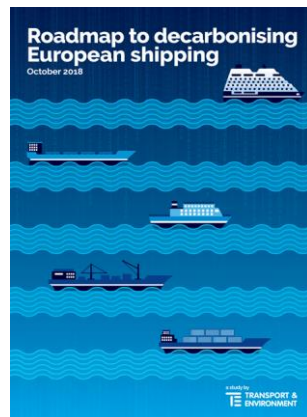
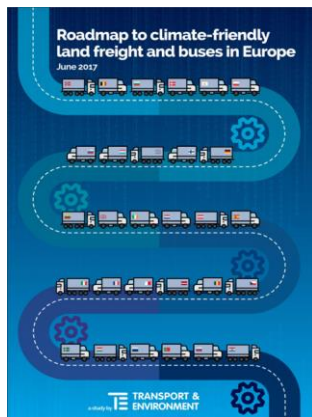


Source: UNFCCC, Inventari nazionali GHG

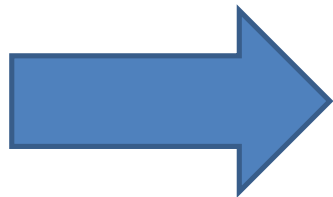
TRANSPORT & ENVIRONMENT

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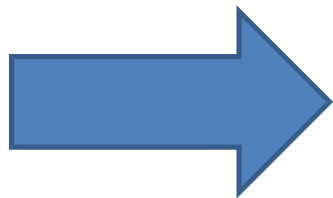
DECARBONIZZARE TUTTE LE MODALITA' DI TRASPORTO



CONSIDERAZIONI GENERALI



- Natural gas is a fossil fuel
- Biomethane in sectors using fossil gas today



- Sustainable advanced biofuels, limited availability
- To be used in sectors without alternative (aviation)

TRASPORTO TERRESTRE

**DEMAND
MANAGEMENT**



**MODAL
SHIFT**

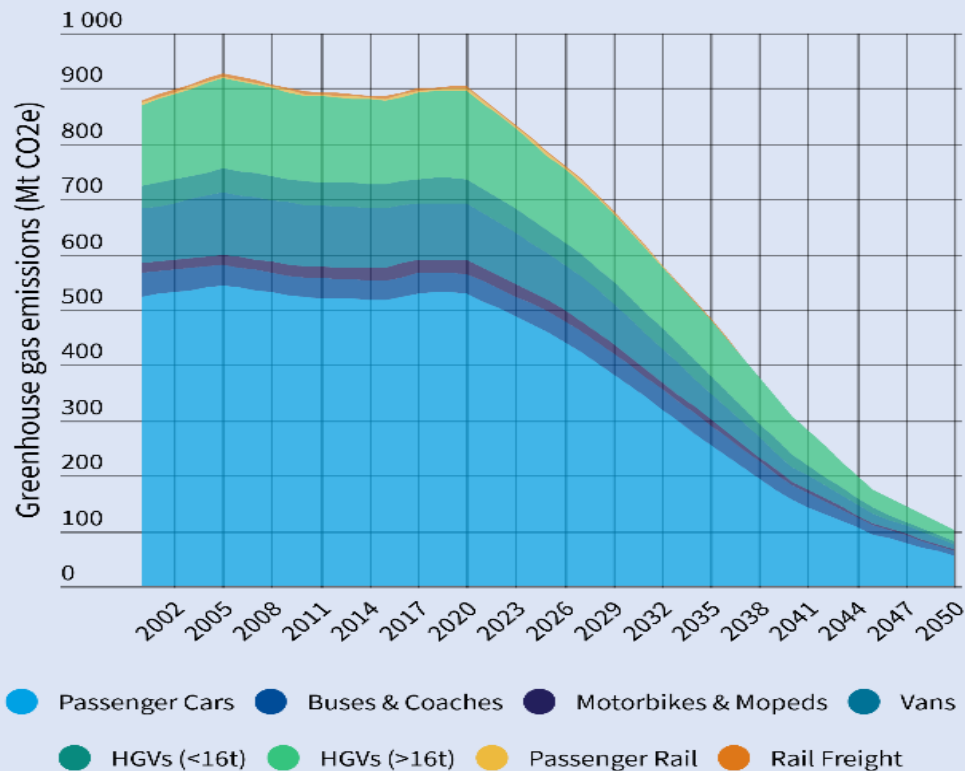


IMPROVE



Sales of Zero Emission Vehicles	2025	2030	2035	2050
Motorcycles & mopeds	50%	100%	100%	100%
Passenger cars	15%	40%	100%	100%
Vans	20%	50%	100%	100%
Urban buses	50%	100%	100%	100%
Coaches	10%	25%	50%	100%
HGVs (<16t) ³	10%	30%	80%	100%
HGVs (>16t) ⁴	5%	30%	80%	100%
Rail (passenger and freight) [§]	70%	80%	90%	100%

EREDITA' DELLA FLOTTA TERRESTRE



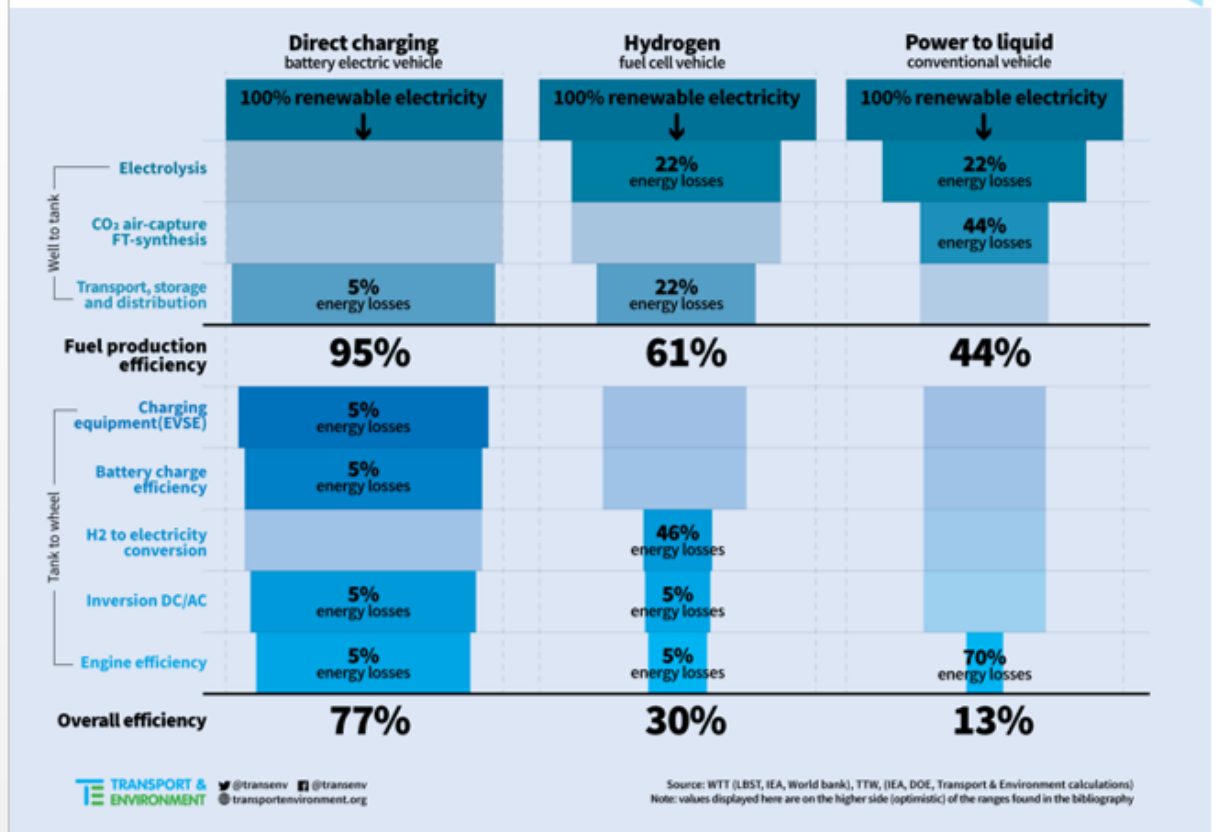
IL PERCORSO OTTIMALE

MINIMIZZARE L'ELETTRICITA' ADDIZIONALE NECESSARIA

Transport mode	Electricity Generation for electric vehicles (TWh)	Electrofuels		Optimal pathway (TWh)
		Hydrogen/Ammonia ⁵ (TWh)	Synthetic fuels (diesel, petrol, gas and kerosene) (TWh)	
Motorbikes	34 (1.1%)	90 (2.8%)	203 (6.3%)	34 (1.1%)
Cars	475 (14.7%)	1236 (38.3%)	2187 (67.6%)	475 (14.7%)
Vans	146 (4.5%)	381 (11.8%)	672 (20.8%)	146 (4.5%)
Buses	119 (3.7%)	310 (9.6%)	547 (16.9%)	119 (3.7%)
Trucks (<16t)	112 (3.5%)	292 (9.0%)	515 (15.9%)	112 (3.5%)
Trucks (>16t)	364 (11.2%)	949 (29.4%)	1676 (51.8%)	364 (11.2%)
Trains	145 (4.5%)	219 (6.8%) [§]	NA	145 (4.5%)
Total land transport:	1395 (43.1%)	3479 (107.6%)	5799 (179.3%)	1395 (43.1%)
Shipping	350 (11%)	1032-1192 (32-37%)	1718 (53%)	798 (25%)
Aviation	N/A	N/A	912 (28.2%)	912 (28.2%)

EFFICIENCY FIRST

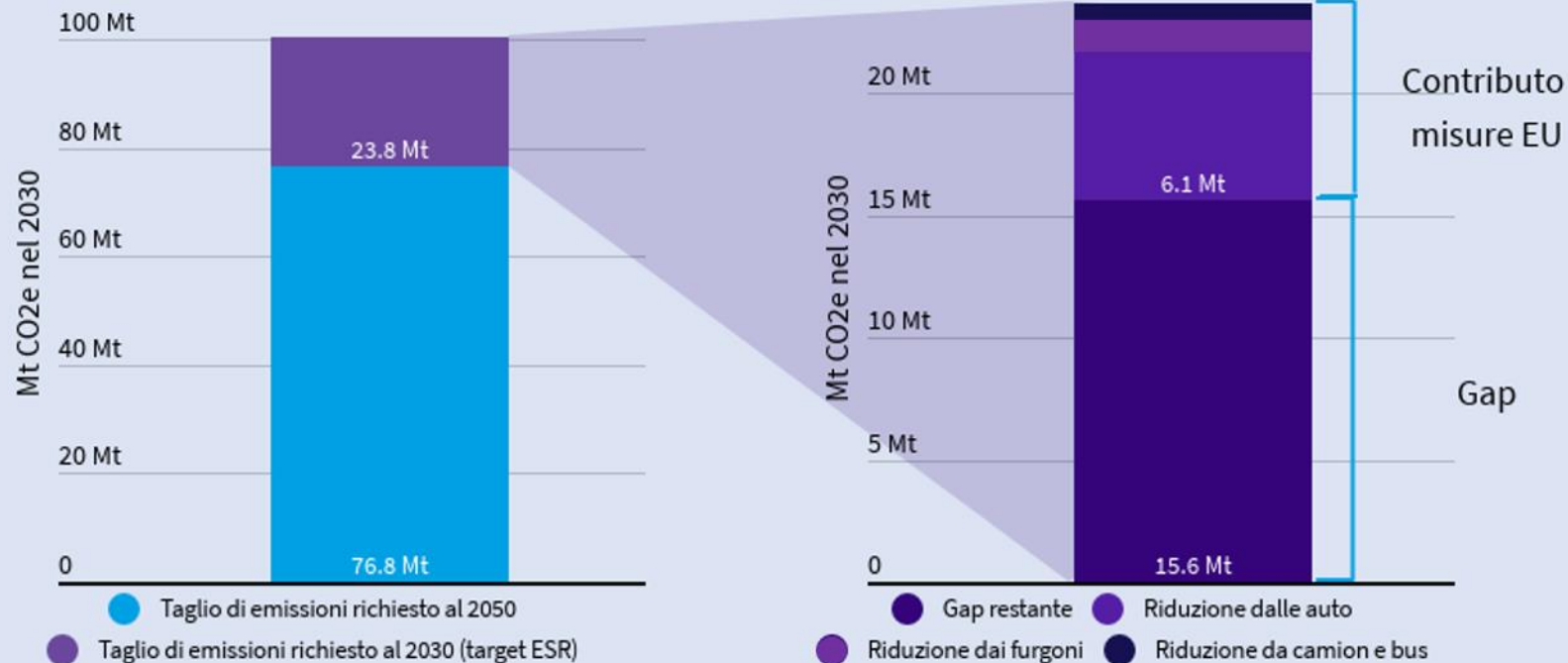
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CARBON BUDGET?

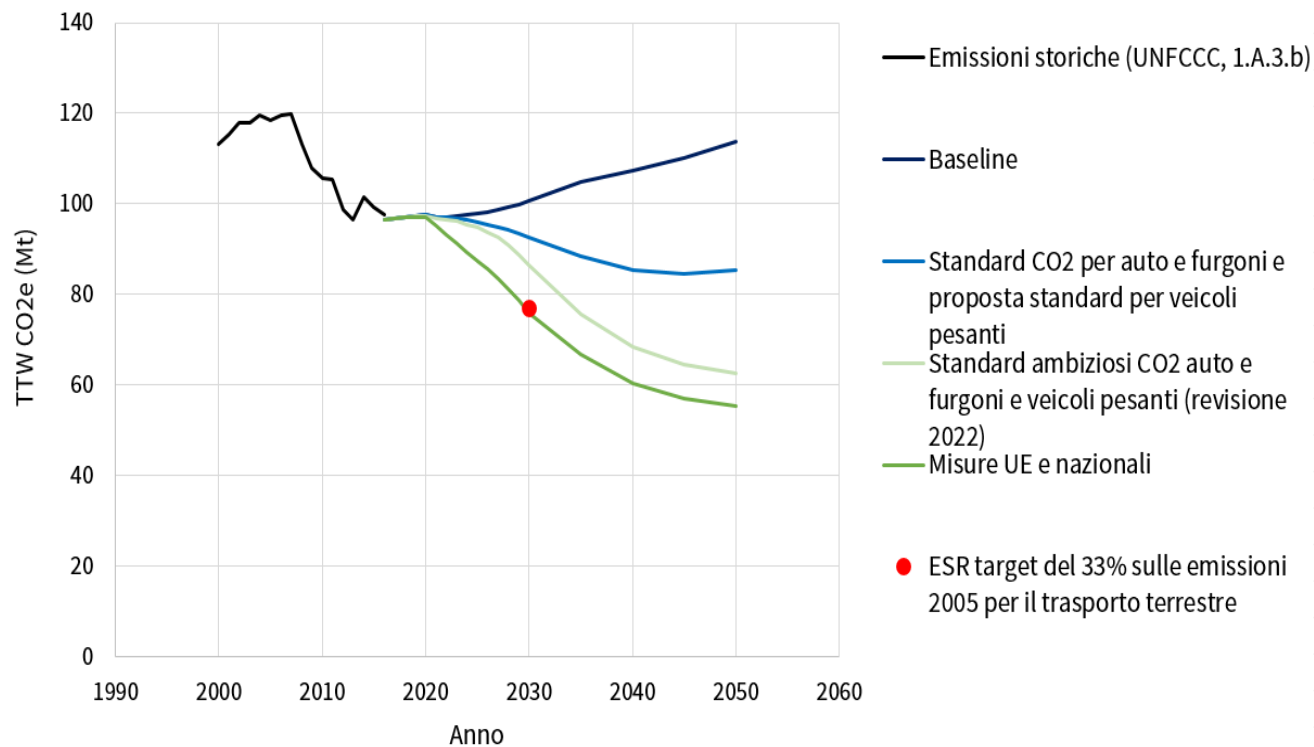
Transport mode	Share of EU emissions in 2016	Carbon Budget from 2018 (Mt CO ₂ eq.; 66% probability)		Cumulative emissions 2018 to 2050 (Gt CO ₂ eq)
		1.5°C	2°C	
Motorbikes	0.23%	89	227	439
Cars	11.90%	4564	11628	9225
Vans	2.32%	891	2269	1721
Trucks & buses	5.16%	1979	5041	4976
Trains	0.14%	55	139	112
Aviation	3.64%	1395	3553	3861
Total^s	23.39%	8972	22857	20310

I TARGET 2030 E 2050 PER L'ITALIA



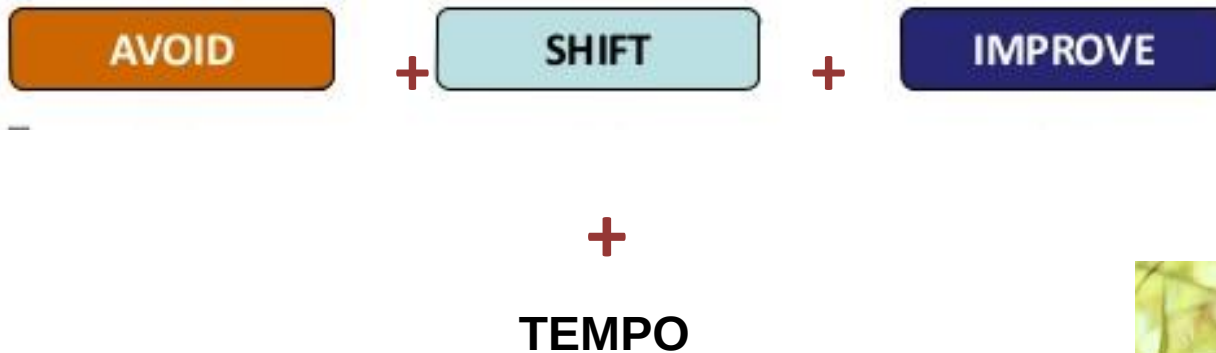
TRANSPORT & ENVIRONMENT

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RICAPITOLANDO

Pre-requisito:
contemporanea decarbonizzazione delle rete elettrica:



RACCOMANDAZIONI

- **No a scelte breve termine: il gas è un combustibile fossile**
- **I biocombustibili non sono scalabili. Disponibilità limitata**
- **Non affidare al lento rinnovo della flotta il miglioramento della QA**
- **Dare certezza di investimento all'industria: data di STOP vendita ICEs + ban**
- **Iniziare ADESSO!**



GRAZIE PER L'ATTENZIONE

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BACK UP SLIDE



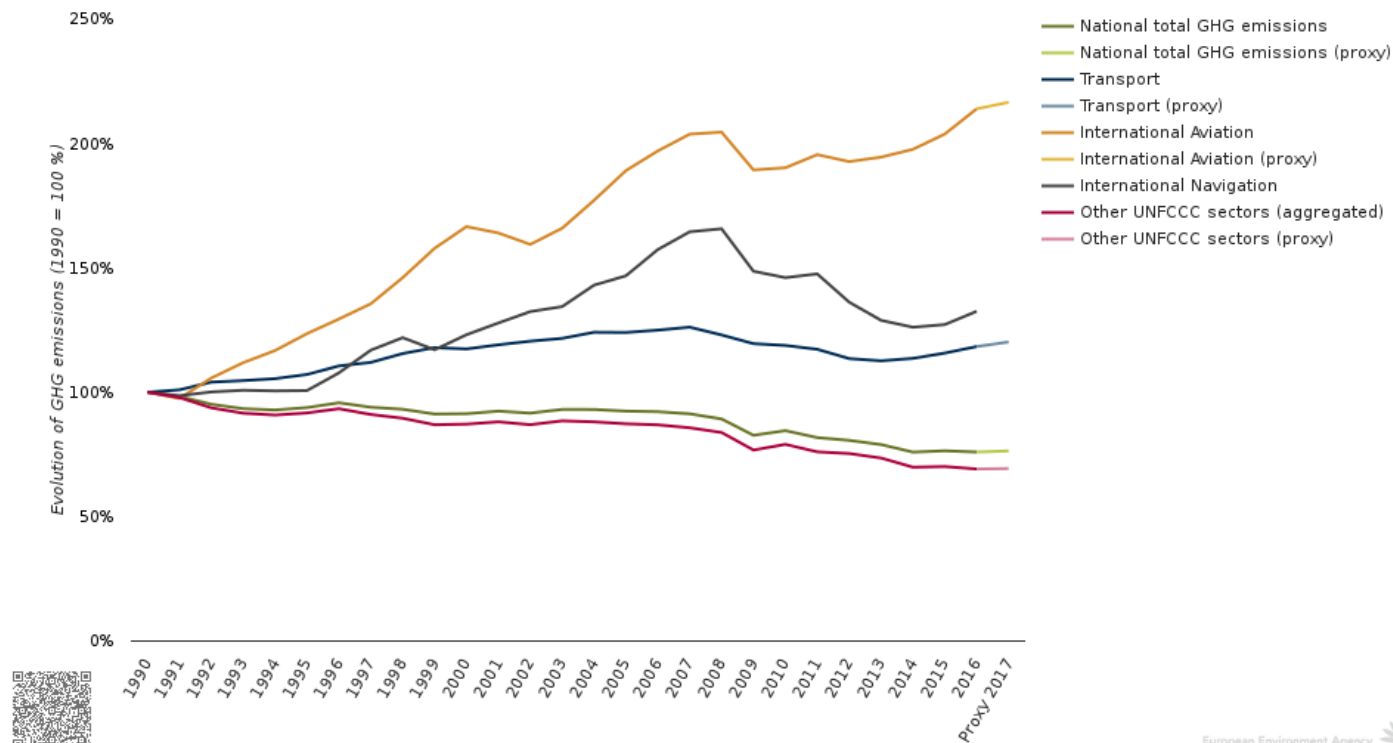
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Regolamento/ Direttiva	Target 2025/2030	Destinatario
Standard CO ₂ per auto	-15% / -37,5%	Costruttori
Standard CO ₂ per furgoni	-15% / -31%	Costruttori
Standard CO ₂ per veicoli pesanti	15% / 30%	Costruttori
REDII	14% FER nei trasporti al 2030 in Transport in 2030 (di cui 7% obbligatorio da biocarburanti avanzati e elettricità rinnovabile e max 7% opzionale da biocarburanti convenzionali)	Stato Membro su Fornitori di Carburante
Direttiva Veicoli Puliti	45% al 65% di HVD puliti, di cui almeno dal 22,5% al 32,5% a zero emissioni	PA

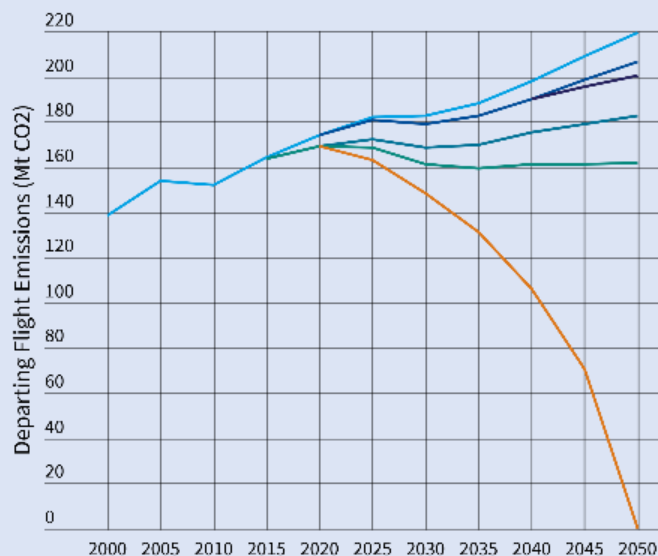
Tabella 4: Requisiti minimi UE 2030 per la riduzione delle emissioni di gas serra del settore trasporti. Fonte: T&E.

AVIATION OUT OF CONTROL



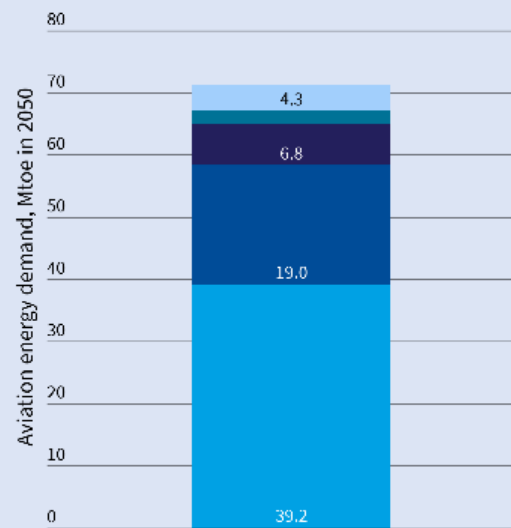
AVIATION

How electrofuels can reduce CO₂ emissions of European departing flights



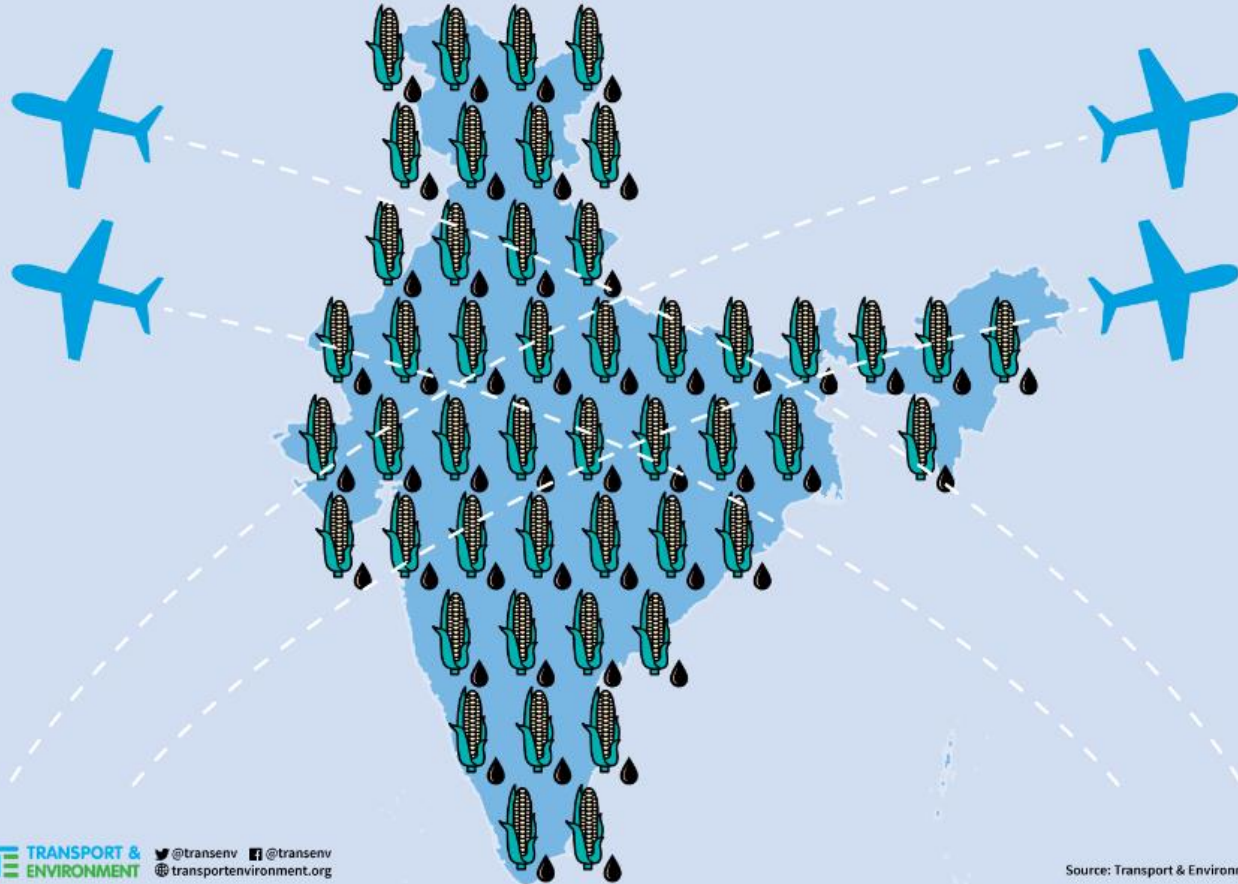
- BaU (1% p.a. fleet fuel efficiency gain)
- 0.2% p.a. improvement conventional fleet
- Gen II aircraft from 2040
- €150/tCO₂ carbon price
- Advanced biofuels uptake (7500 ktOE)
- Electrofuels

Electrofuel consumption by European departing flights



- Remaining Energy demand, covered by PtL
- Reduction from electrofuel uptake
- Reduction from advanced biofuels uptake (7500 ktOE)
- Reduction from Gen II aircraft from 2040
- Reduction from 0.2% p.a. improvement conventional fleet

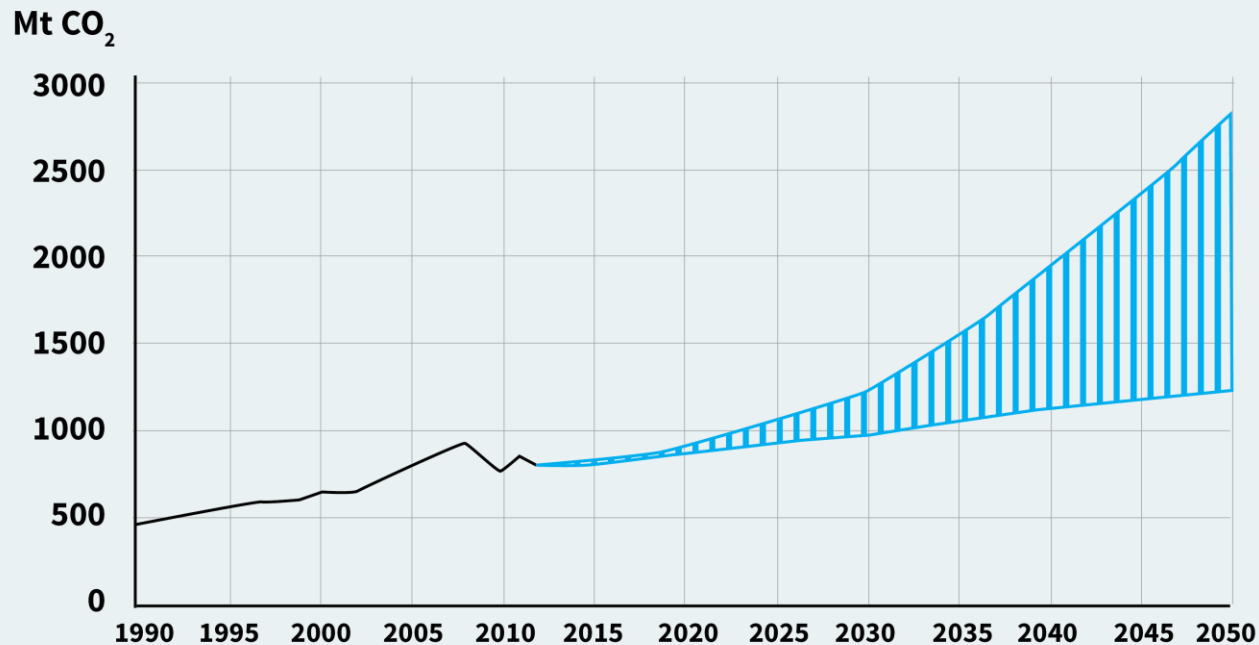
Area the size of India required to fuel aviation with biofuels





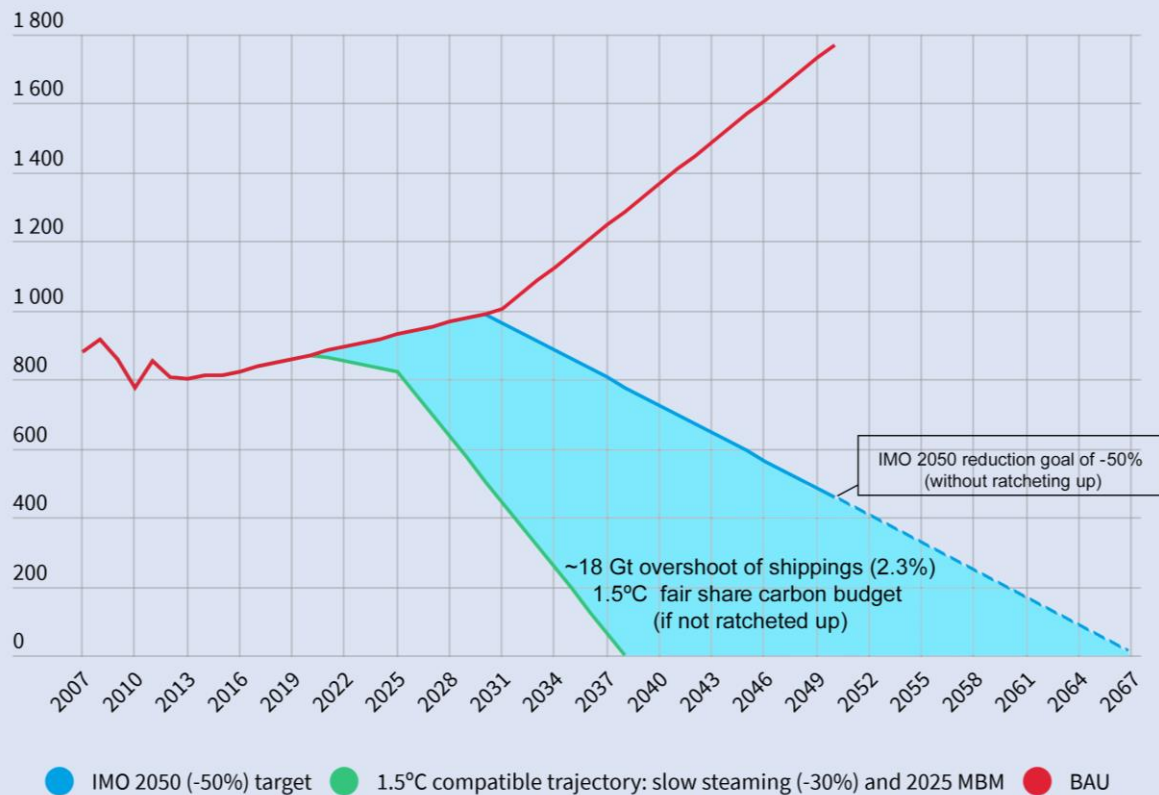
• SHIPPING

Range of expected increase in GHG emissions from shipping



Source: Third IMO GHG Study (2014)
Transport & Environment

IMO 2050 target vs. 1.5°C compatible trajectory

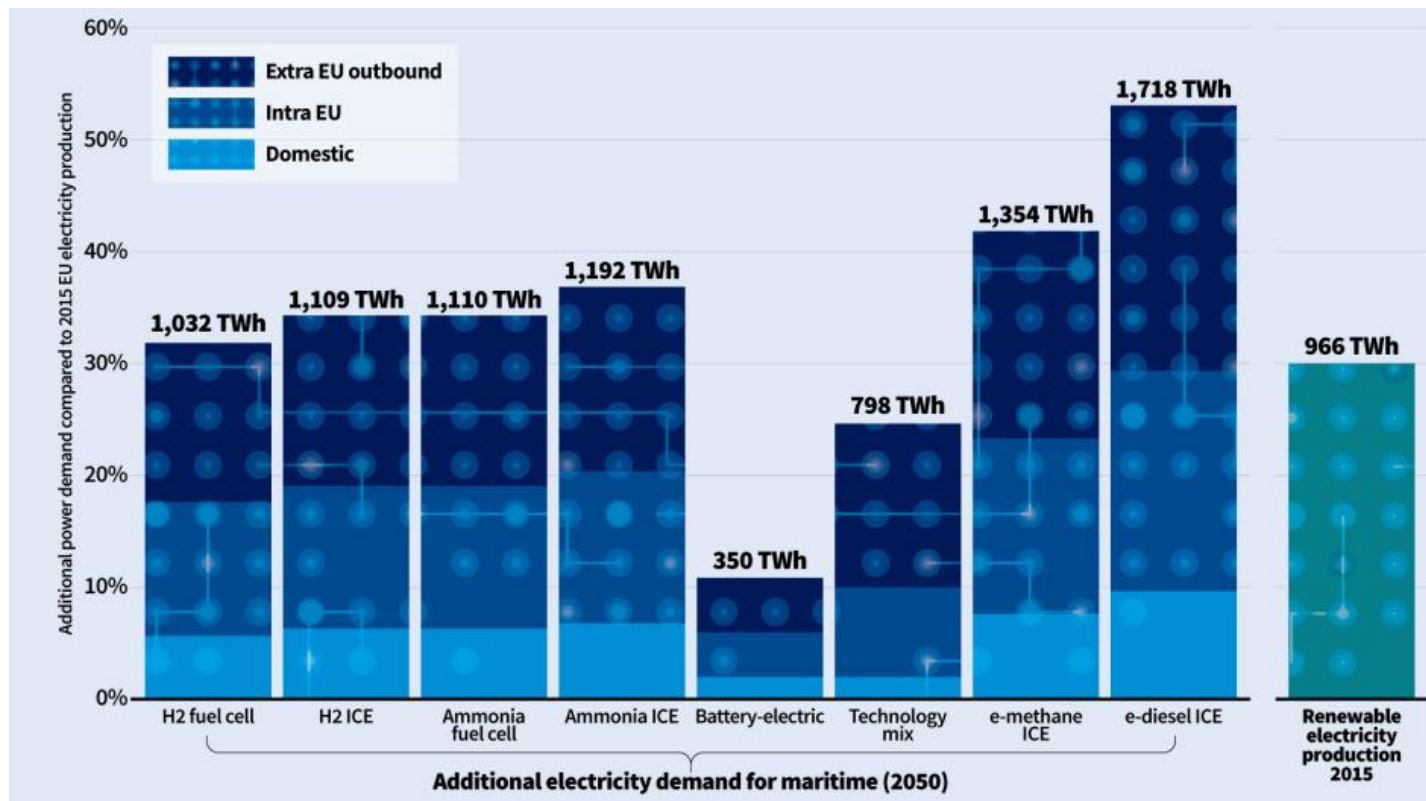


Source: 3rd IMO GHG Study (2014), UMAS (2016), CE Delft (2017), ICCT (2017)

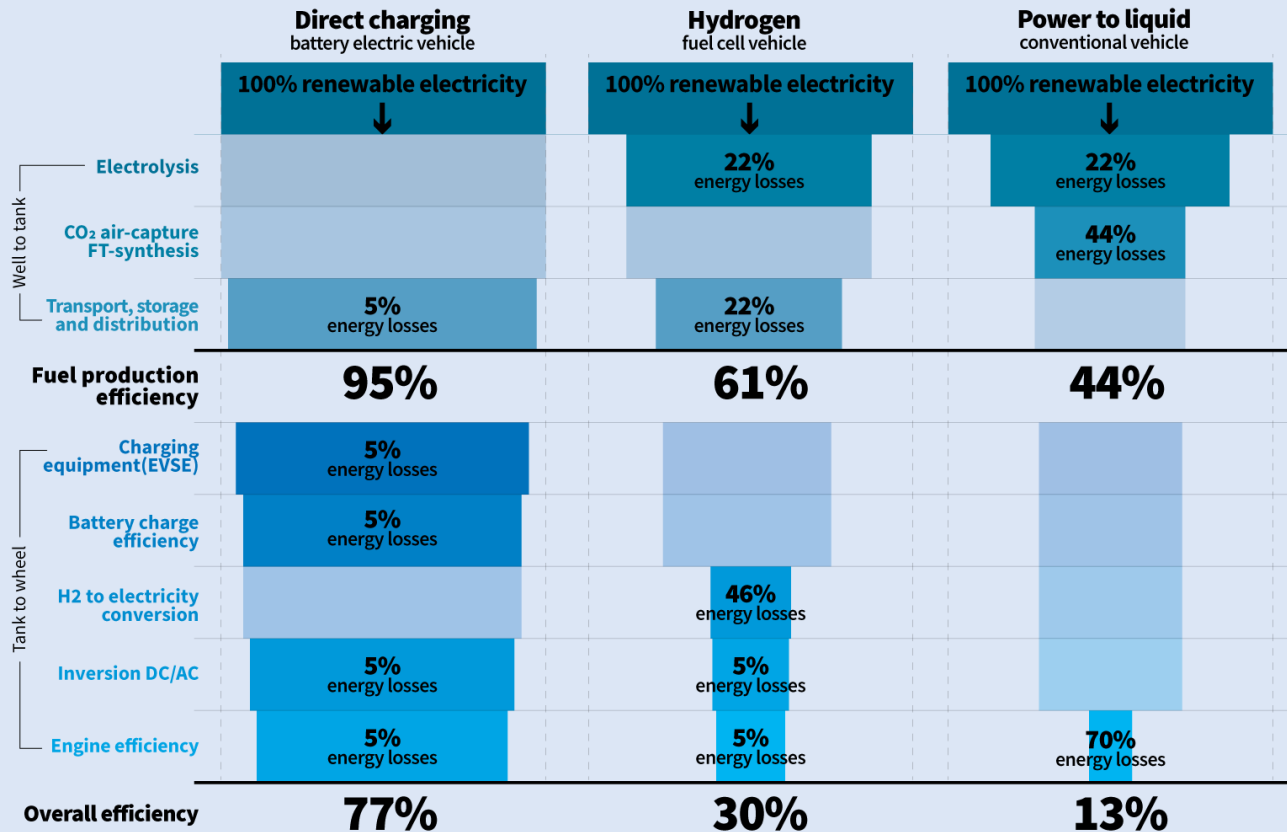
Technology pathways analysed

Technology	Propulsion	Energy storage
Battery ships	Electric motor	Batteries
Hydrogen fuel-cells	Electric motor	Liquid H ₂
Hydrogen ICE	Internal combustion engine (ICE)	Liquid H ₂
Ammonia fuel-cells	Electric motor	Liquid ammonia
Ammonia ICE	ICE	Liquid ammonia
Electro-methane	ICE	Synthetic methane from electricity
Electro-diesel ICE	ICE	Synthetic diesel from electricity
Technology mix	Battery-electric, H ₂ fuel cell & Ammonia fuel cell	

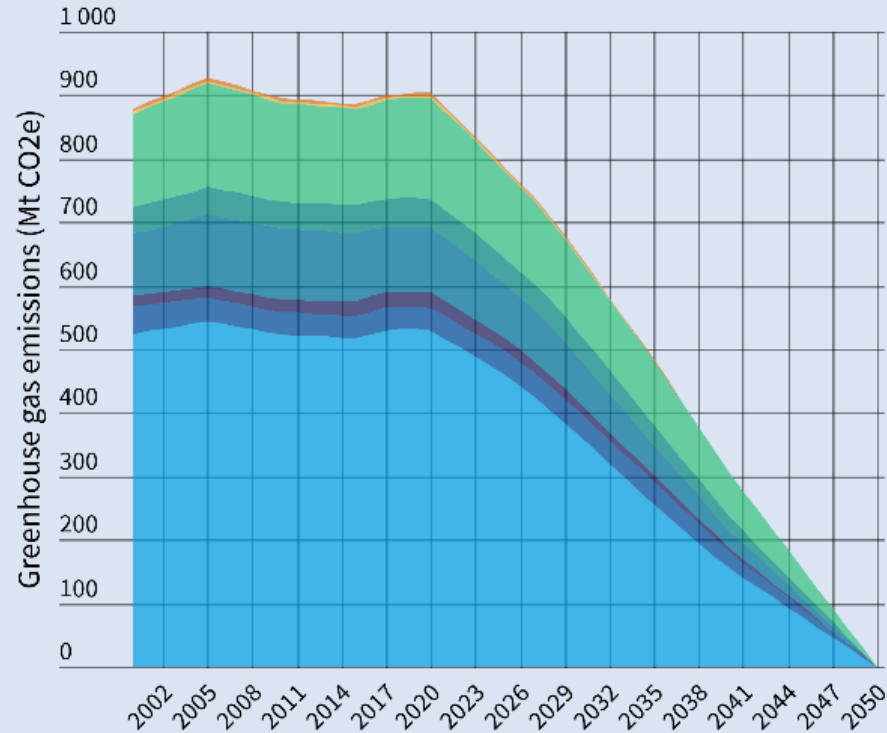
SHIPPING

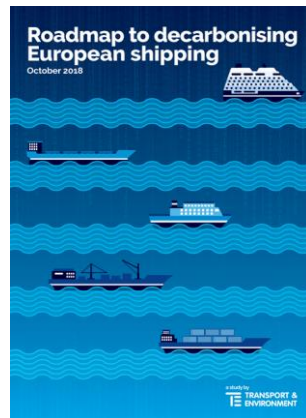


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LEGACY FLEET PHASE OUT





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