



Fuel Cell

Future mobility now

Persinfo: www.hyundai.presscorner.be



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Future mobility now

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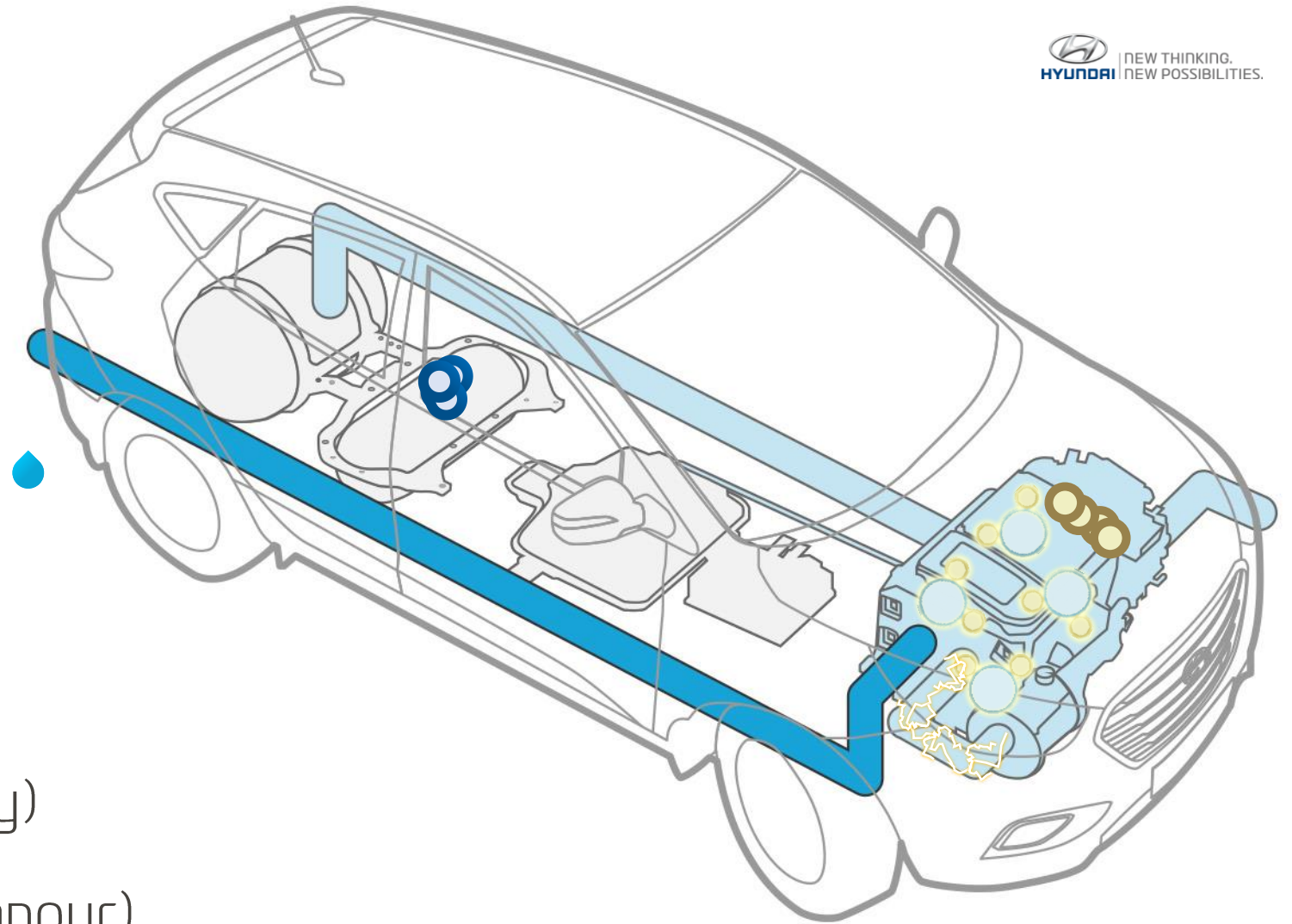


How does a
Fuel Cell
really work?



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really work?

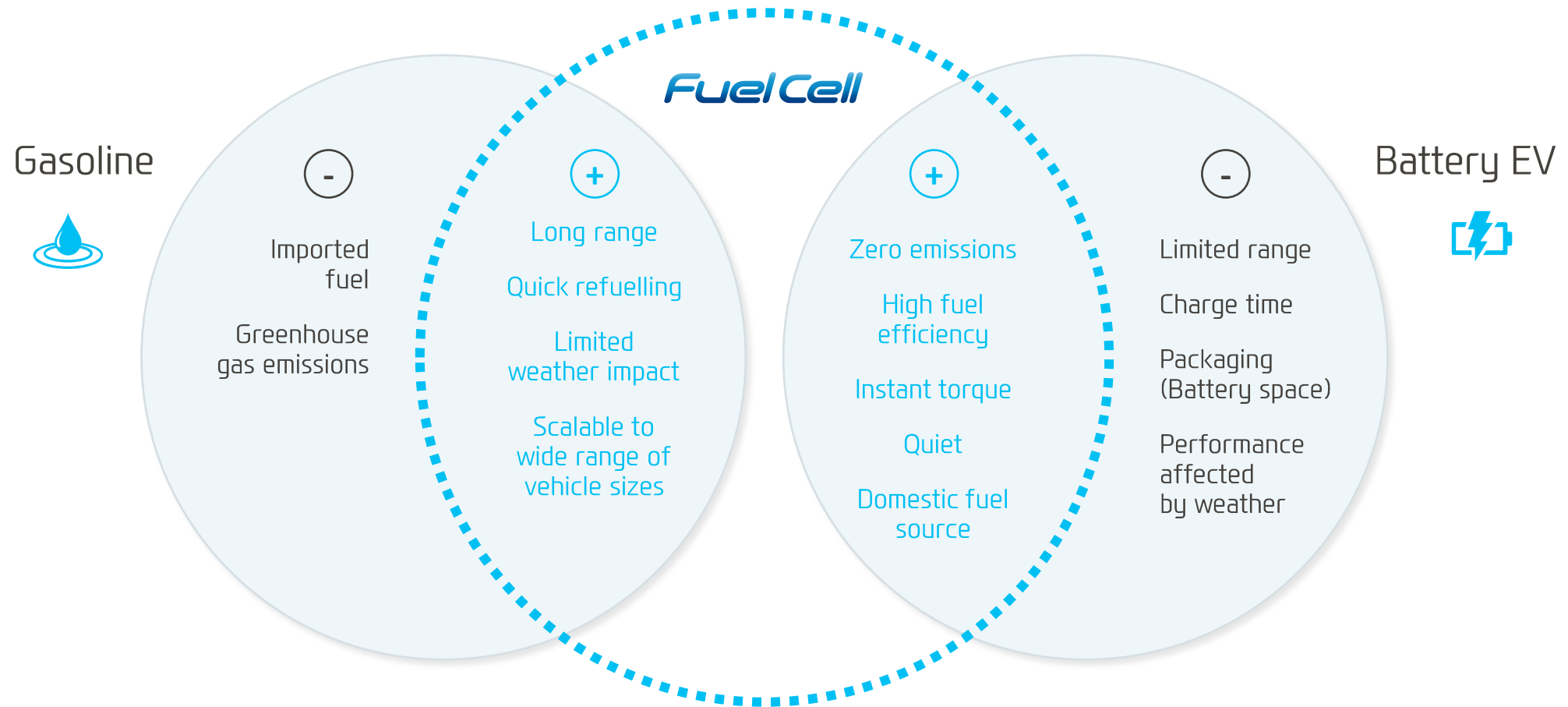
1. Hydrogen supply
2. Air inflow (oxygen)
3. Reverse water splitting
4. Electricity (motor, battery)
5. Zero emissions (water vapour)



Why hydrogen?



The best of both worlds made better



Strong
performance

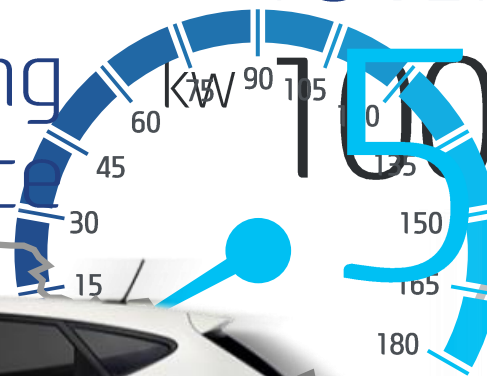


Strong performance

Total range of **1594** km

Up to **150** km/h

150 kW



Refuelled **in minutes**  **8:80** Min.



Refueled **Only in wait** **minutes**



3:00^{Min.}

emitted
from the
tailpipe





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Future mobility now

Adwin Martens
Directeur WaterstofNet



Waterstof en zero emissie mobiliteit

Adwin Martens
WaterstofNet

Kontich, 25 juni 2015



WaterstofNet vzw

- Opgericht in 2009
- Ontwikkelen en realiseren van **projecten/roadmaps** op vlak van **duurzame waterstof** ten behoeve van **zero-emissie-transport** en **energieopslag**
- Vlaanderen/Z-Nederland
- Europese programma's





Waterstof tankstation bij Colruyt in Halle (350 bar): > 2500 tankingen



Waterstof tankstation bij Colruyt Halle (350 bar)





Hyundai tankt bij station WaterstofNet



Ervaringen met Hyundai iX35 op waterstof

- * > 21.000 km probleemloos gereden
- * Brussel – Frankfurt (Duitsland)
- * Brussel – Vejle (Denemarken)
- * **AANDACHT:** tankstations



5 bussen (Van Hool) in Antwerpen tanken bij Solvay





Vlaanderen heeft industriële troeven

- Van Hool
- Colruyt Group
- Hydrogenics
- Air Liquide
- Umicore
- Borit
- Hyundai
- E-Trucks
- Siemens
- Atlas Copco
- Toyota Motor Europe
- Triphase



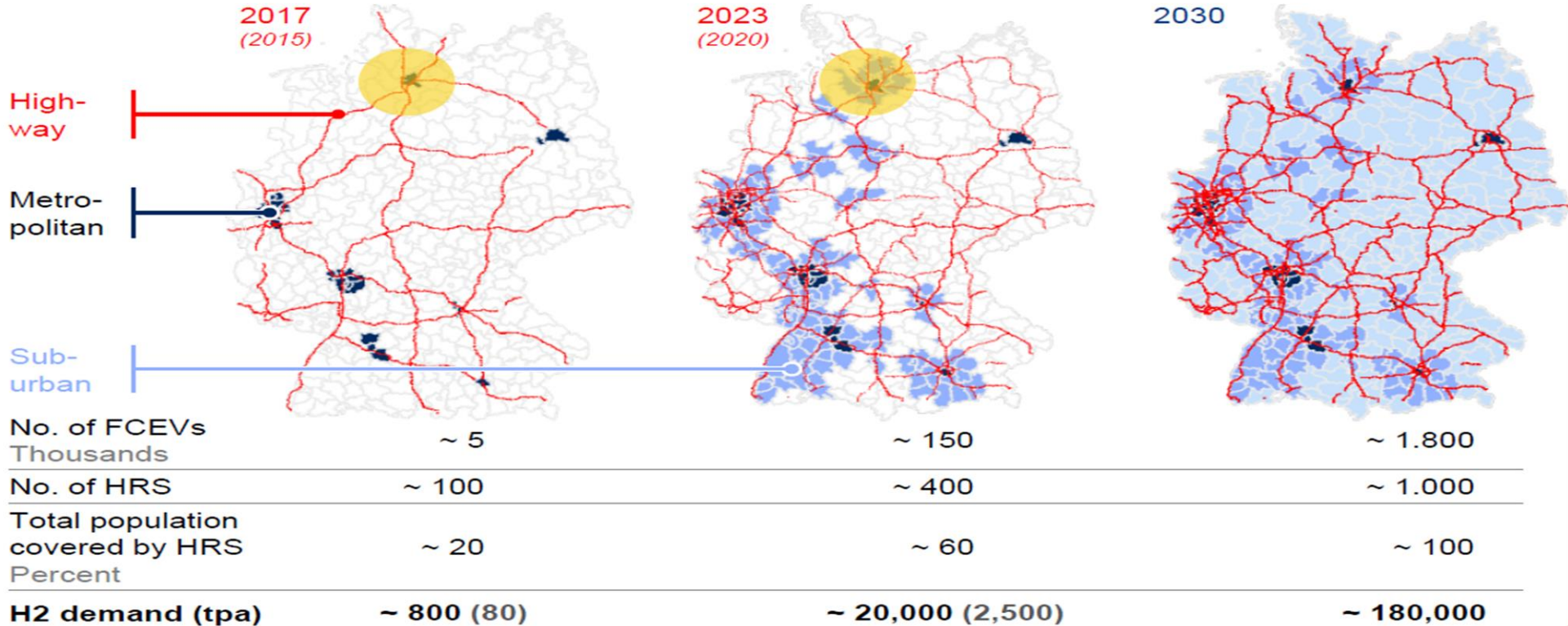
EU: Clean power for transport

- Waterstofroadmaps: H2Mobility
 - Germany
 - UK
 - France
 - Denmark
 - Sweden
 - Norway
 - Finland
 - The Netherlands
 - Japan



Germany

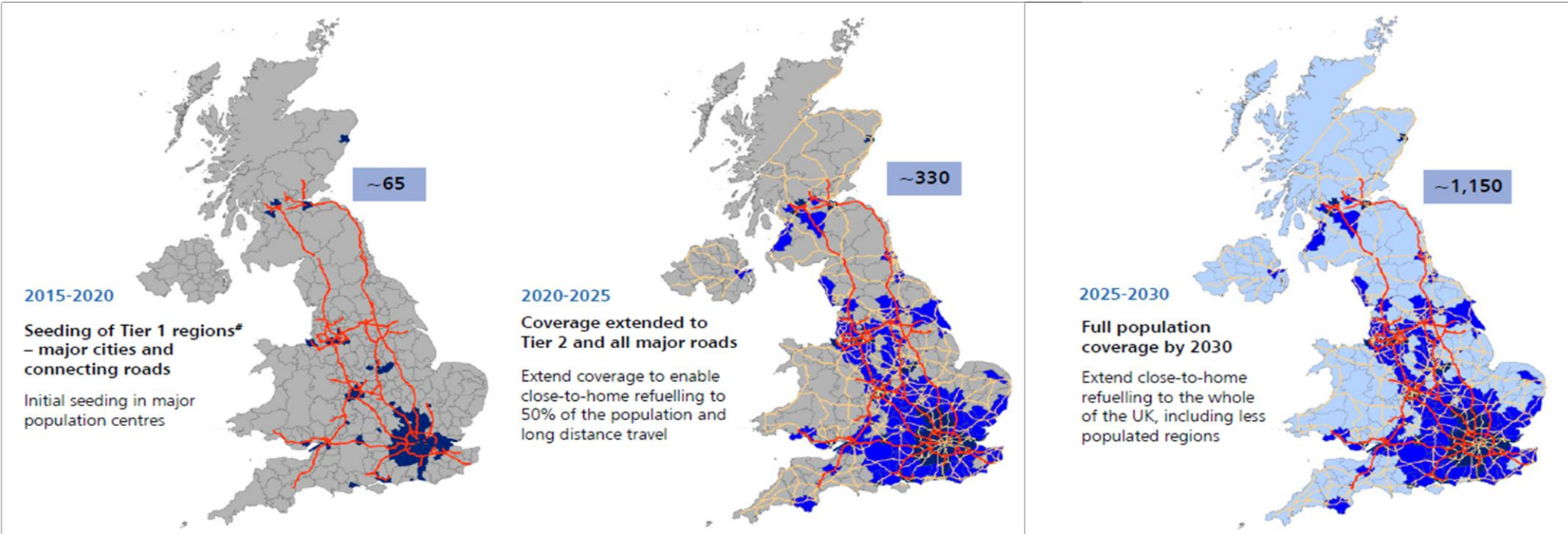
H₂ Mobility



Demand in greater Hamburg area ~ 10% of H₂ demand in Germany

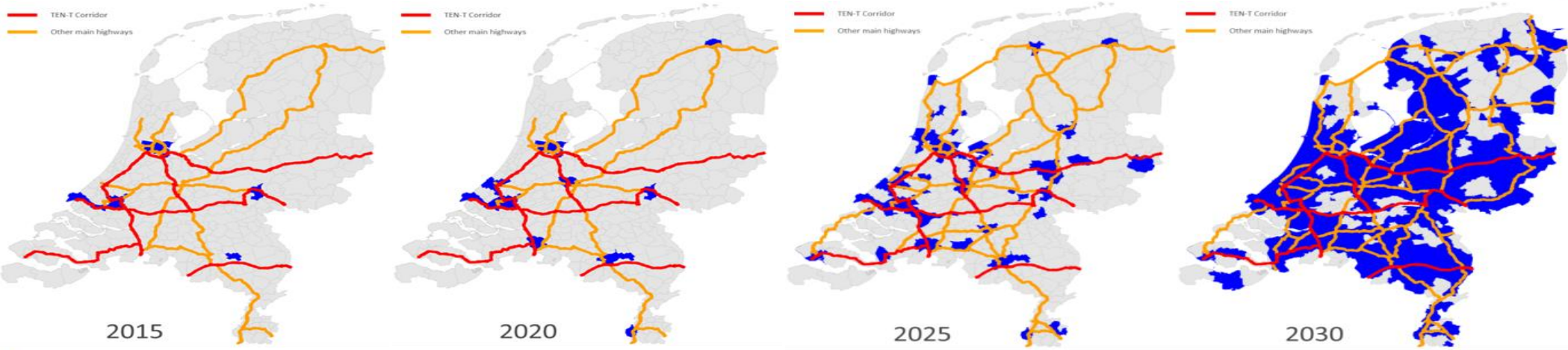


UK





The Netherlands



	2015 – 2020 Market preparation	2020 – 2025 Early market intro	2025 – 2030 Full market intro	2030-2050 Mass market
Car fleet	few → 1,500	1,500 → 15,000	15,000 → 125,000	→ >2.5 mln
HRS network	4 → 20	20 → 75	75 → 200	→ ≥ 1,000
Bus fleet	→ 50 - 100	50 - 100 → 250 - 500	250 - 500 → 1,000	→ 2,000 - 3,500
HRS at depot	→ 5 - 7	5 - 7 → 10 - 25	10 - 25 → 25 - 50	→ ≥ 50

H₂ Mobility Belgium



 Hydrogen Infrastructure for Transport





Objective H₂ Mobility Belgium

To develop a national implementation plan (NIP), also taking into account the surrounding HRS plans, for the development of a hydrogen refueling infrastructure in Belgium end 2015.

and indirectly...

To prepare the Belgium market for the introduction of FCEV (buses and passenger vehicles).

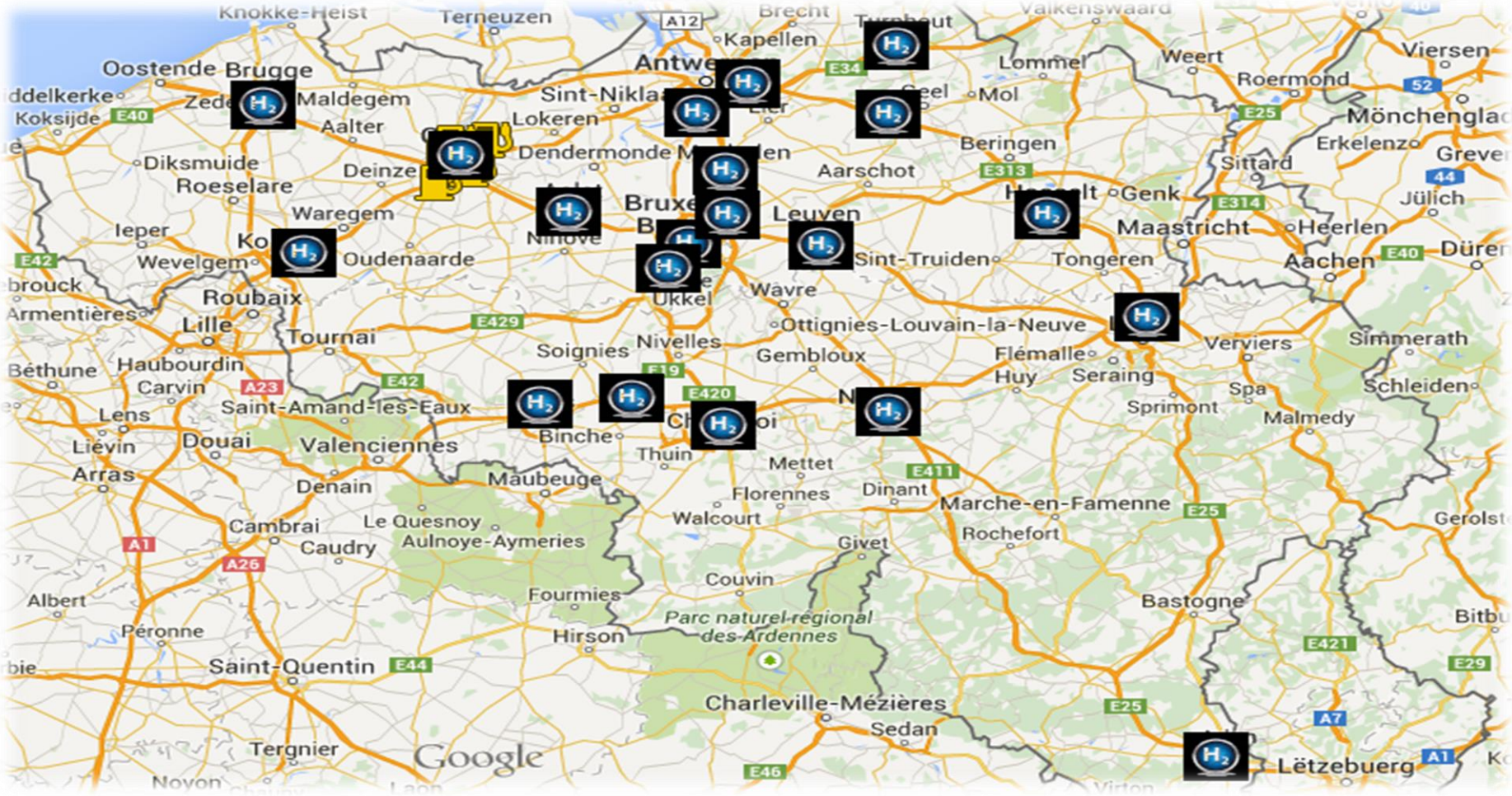
Timeframe plan: 2015-2030

Final report 2015

Funding: TEN-T (EU) en Vlaams Gewest



Possible locations



Aansluiting bij buurlanden

	Aachen AirLiquide (Planned)	Düsseldorf Airliquide Höherweg	Düsseldorf AirLiquide (Planned)	Cologne west A4/A1 (Planned)	Cologne Airport/Bonn (Planned)	Cologne (Hürth)
Belgian Border	10 km	90 km	80 km	60 km	85 km	70 km

Table 2: Distance to refueling stations from Belgian border



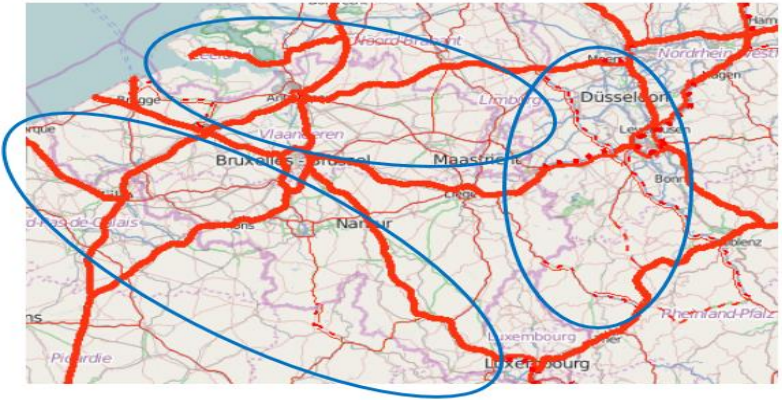
	Breda	Helmond (WatersofNet)	Eindhoven	Rhoon (AirLiquide)
Belgian Border	10 km	40 km	25 km	60 km

Table 5: Distance refueling stations to Belgian border



	Dunkerque	Arras	Boulogne sur Mèr	Sarreguemines
Belgian Border	<15 km	~50 km	80 km	>125 km

Table 8: Distances refueling stations to the Belgian border





Waterstofinfrastructuur

Aanbevelingen:

- Waterstof meenemen in actieplan van Europese CPT
- Realistisch roll-out plan in direct overleg met industrie/overheden, is beschikbaar eind 2015
- Eerste idee: aantal voertuigen en tankstations (10 – 20) beperkt tot 2020 en in lijn met Europa
- Initieel mogelijk combinaties van afnemers: auto's en bussen
- Slimme incentives voor voertuigen
- Vlaanderen kan belangrijke technologiespeler zijn
- Inspelen op EU-fondsen (JU-FCH, enkel waterstof, 1,3 miljard euro, TEN-T,.....)



Besluit

- Voertuigen op waterstof zijn commercieel verkrijgbaar
- Hyundai is eerst, andere volgen
- Vlaanderen heeft industriële troeven
- Vereist voor implementatie:
 - waterstoftankstations (10 – 20 in 2020, in lijn met EU)
 - Incentives voertuigen
- Vlaanderen kan belangrijke technologiespeler zijn
- Inspelen op EU-fondsen (JU-FCH, enkel waterstof, 1,3 miljard euro, TEN-T,.....)



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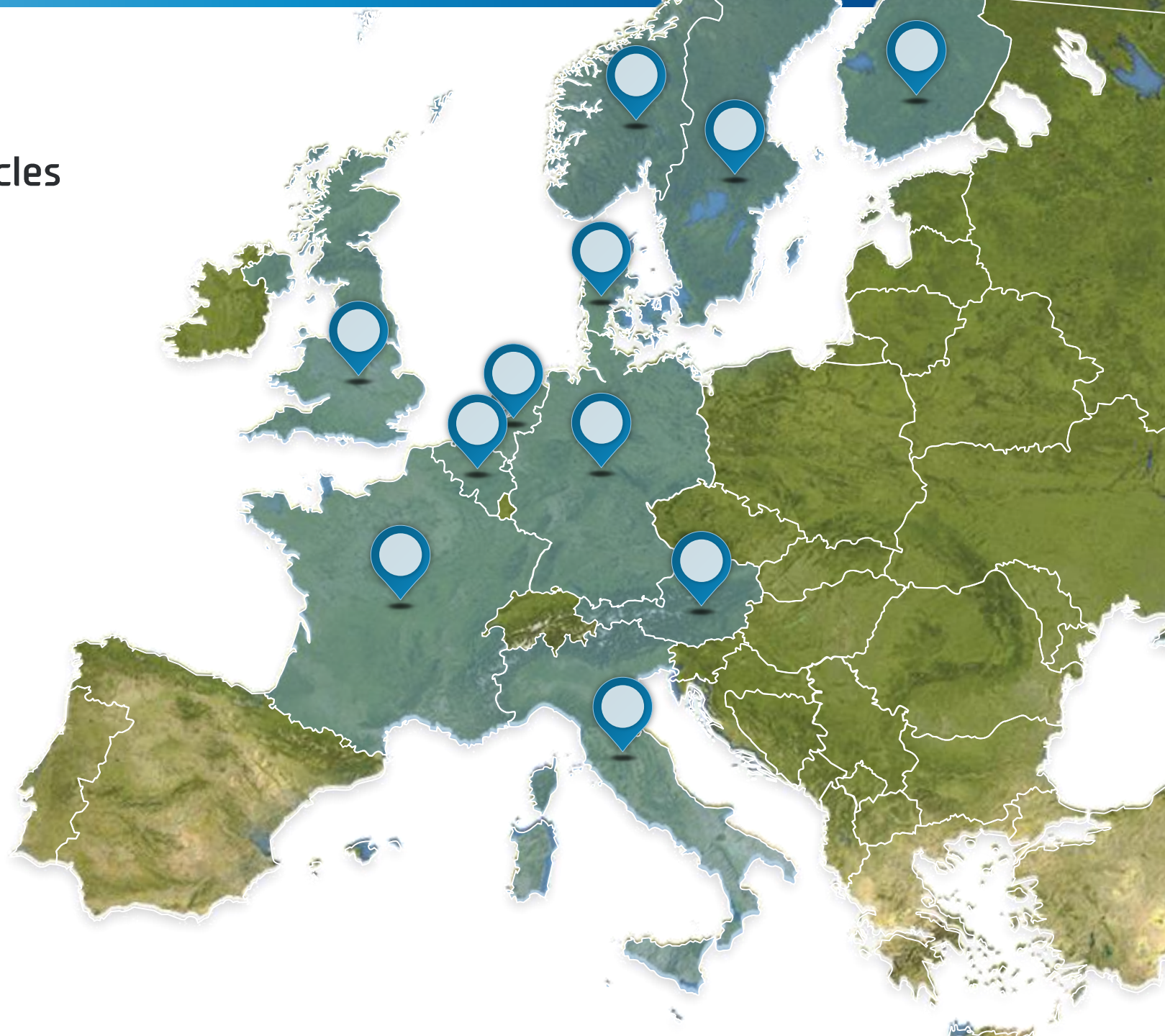
Olivier SERMEUS
Managing Director Hyundai Belgium

Deployment of Fuel Cell vehicles

- | | |
|--|---|
|  Italy |  Austria |
|  Netherlands |  Belgium |
|  Norway |  Denmark |
|  Sweden |  France |
|  United Kingdom |  Finland |
| |  Germany |



Countries
in Europe



2015

+30

refuelling
stations across
Europe





ix35 FCEV
55.000 €



ix35 Fuel Cell

Hyundai's journey to leadership





Fuel Cell

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Annemie Turtelboom
Vlaams Vice-Minister President
Minister van Energie



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