DECARBONIZING ROAD FREIGHT TRANSPORT

VEHICLES AND INFRASTRUCTURE AVAILABILITY

ALICE

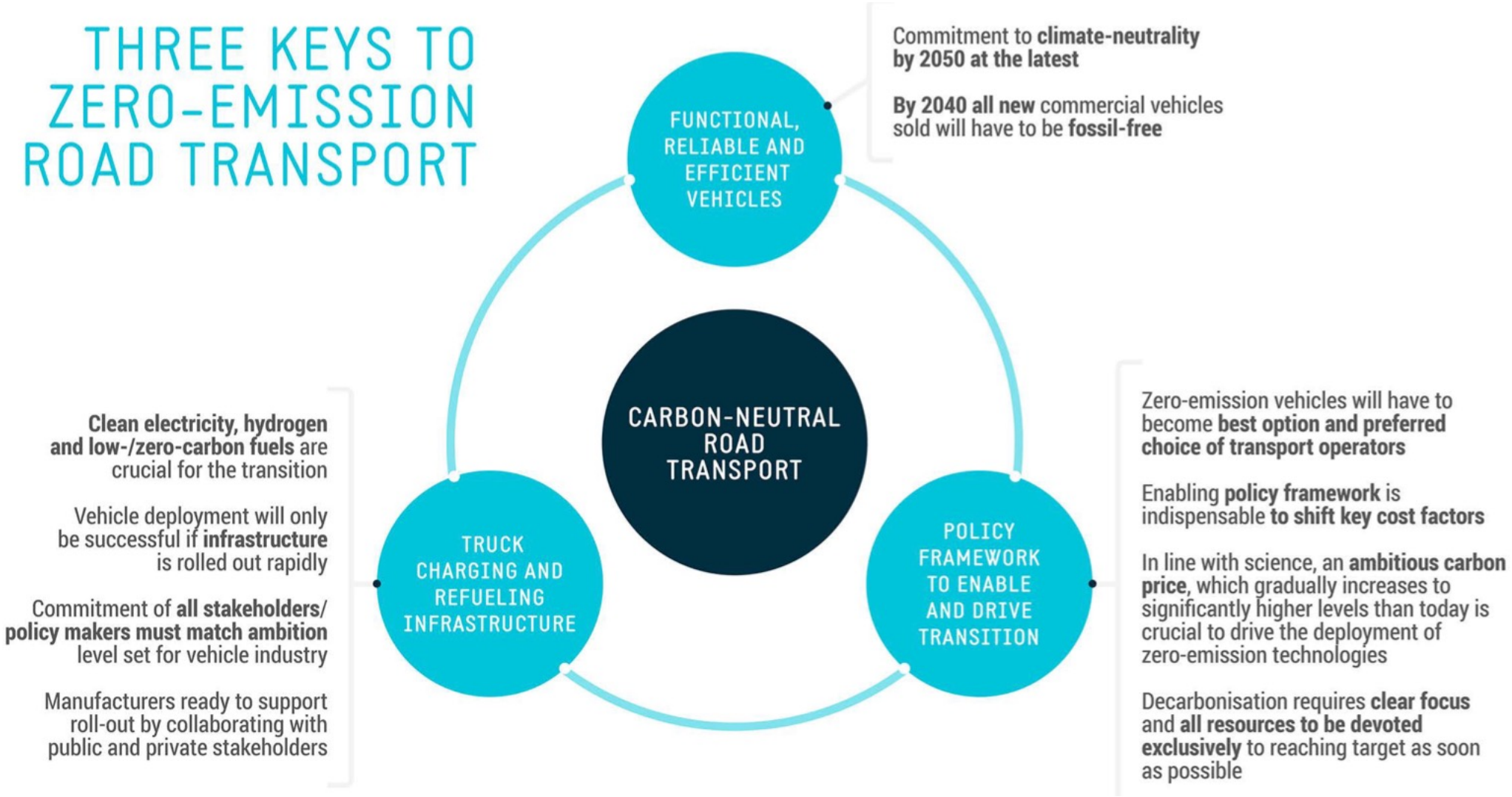
Webinar

15 September 2022

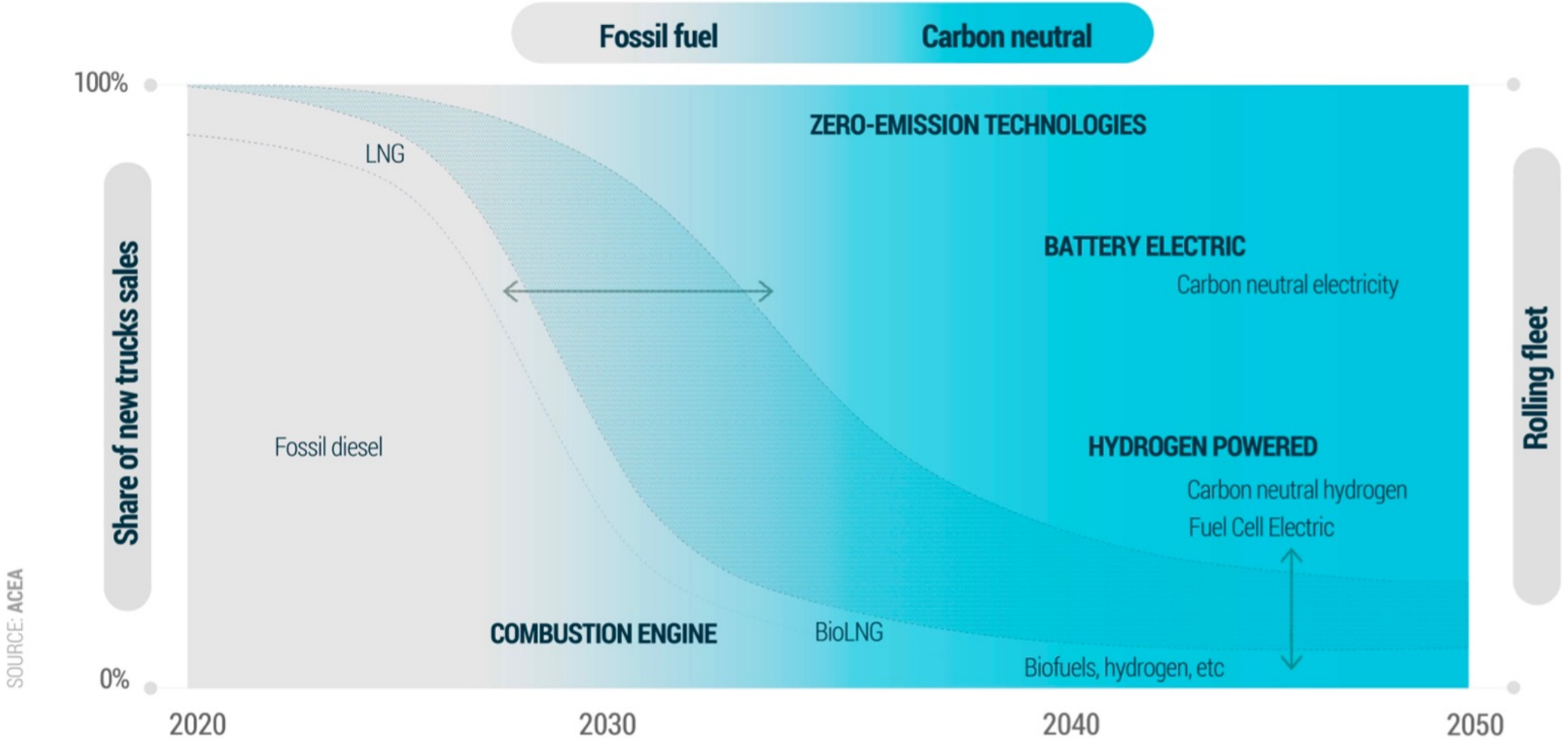
acea

DECARBONISING ROAD TRANSPORT

DECARBONISING ROAD TRANSPORT



100% FOSSIL-FREE BY 2040



VEHICLES WILL NOT BE THE BOTTLENECK

Zero and low-emission heavy-duty vehicles (trucks)

Name		GVW (t)	GTW (t)*	Application	Range (km)**	Availability
Iveco						
Nikola Tre	BEV	40t		General Haulage	up to 550	2022
Nikola Tre	FCEV	40t		General Haulage	>800	2023
DAF						
LF Electric	BEV	19t.		Urban/National distribution	240-270km	Series production
CF Electric	BEV	20t	37t	Urban/National distribution	200-230km	Series production
CF Electric	BEV	29t	37t	Urban/ National distribution	200-230km	Series production
CF Hybrid	HEV	20t	40t	National distribution	50km electric	Field trial
XF Hydrogen	ICE H2	20t	44t	National distribution/ long-haul	600-800km	prototype
Daimler Truck						
eCanter	BEV	7.49t		Urban delivery	100 km	Series production since 2017
eActros 300	BEV	19t - 27t	40t	Regional delivery	300 km	Series production since 2021
eActros 400	BEV	27t		Regional delivery	400 km	Series production since 2021
eEconic 300	BEV	27t		Municipality / urban delivery	100 - 150 km	2022
eActros LongHaul	BEV		40t	Regional delivery/long haul	500 km	Series announced for 2024
GenH2	FCEV		40t	Long haul		Prototypes
GenH2	FCEV		40t	Long haul	up to 1,000 km	Series announced for 2027
MAN						
eTGM	BEV	26		Distribution	up to 180 km	Short Series
eTruck	BEV	tbd	tbd	Distribution	tbd	Series Production announced for 2024
Bayernflotte	FCEV	tbd	tbd	Long Haul	tbd	Customer demo fleet 2024
Scania						
	HEV		36	Long haul / distribution	15	Series Production
	PHEV		36	Distribution	60	Series Production
25L or 25P	BEV	19		Distribution	100	Series Production
25L or 25P	BEV		29	Distribution	250	Series Production
R- or S-	BEV	29	64	Regional	Up to 420	Sales start 2022
	BEV	29	64	Distribution/ Regional/ Long haul/ Construction	Up to 490	Series production 2024
Volvo Trucks						
FH Electric	BEV		44	Regional	300	Sales start 2021
FM Electric	BEV		44	Regional	380	Sales start 2021

Zero and low-emission heavy-duty vehicles (buses and coaches)

Name		GVW (t)	Application	Range (km)*	Availability
Iveco					
EWAY	BEV	20/30 t	City bus		Series production
CREALIS	Trolleybus	30 t	City bus BRT	unlimited	Series production
CROSSWAY LE	BEV	20 t	City bus		2023
CROSSWAY LE	BEV	20 t	Intercity bus		2023
Daimler Truck					
eCitaro Solo	BEV	20t	City Bus	200 - 320	Series production
eCitaro Artic.	BEV	20t	City Bus	180 - 220	Series production
eO500U	BEV		City Bus	up to 250	announced 2022
MAN					
Lion's City 12 E	BEV		City Bus	up to 350 km	Series Production
Lion's City 18 E	BEV		City Bus	up to 350 km	Series Production
Lion's City 12 E	BEV		City Bus	up to 350 km	Series Production
Scania					
Citywide	HEV	20t	City Bus		Series Production
Citywide	BEV		City Bus	250	Series Production
Volvo Trucks					
7900 Electric	BEV	19,5	City bus		
7900 Electric Articulated	BEV	30	City bus		
7900 S-Charge	HEV	19	City bus		
7901 S-Charge Articulated	HEV	29	City bus		
BZL Electric	BEV	19,5			

* Currently, there is no official methodology how the range of alternatively powered vehicles should be determined. Figures are based on the manufacturers' individual assessment.

https://www.acea.auto/files/ACEA-position-paper-2022_HDV-CO2-Review.pdf

REVIEW OF HDV CO2 STANDARDS

ACEA POSITION

- Vehicles will not be the bottleneck
- Set fixed ambition level for 2030 now
- Set targets for 2035 and 2040 now
  - But review them again in view of enabling conditions
- No interim target before 2030
- No 100%-target or ICE phase-out for all vehicle groups at this point in time
- Put strong incentives schemes for zero-emission vehicles in place
- Improve and extend credit/ debit system beyond 2030
- Additional vehicle groups can be included if…
  - CO2 certification framework is in place and individual baselines are established

DECARBONISATION OF ROAD TRANSPORT

ICE AND THE ROLE OF RENEWABLE FUELS

- Going fossil-free requires more than “just” the electrification of vehicles
  - Close cooperation between all stakeholders needed to enable fossil-free transportation and infrastructure industry
- ICE will continue to play an important, long-term role despite focus on zero-emission technologies
  - Decarbonisation of all energy carriers is a crucial cornerstone
  - Transition of the transport sector will take time
  - Emission reductions from vehicle stock will needed
  - If powered by fossil-free fuels, ICE will have a future in heavy-duty trucking until 2040 and beyond
- Renewable fuels will have to play a (rapidly) increasing role in road transport
- Current regulatory framework is insufficient to ensure widespread availability in necessary quantities

HDV CHARGING INFRASTRUCTURE

HDV INFRASTRUCTURE REQUIREMENTS

Specifications are distinctly different for trucks

- Particularly with respect to:
  - Locations of charging and refuelling stations
  - Space requirements
  - Minimum power output levels
  - Others

HDV CHARGING INFRASTRUCTURE

ELECTRIC CHARGING INFRASTRUCTURE

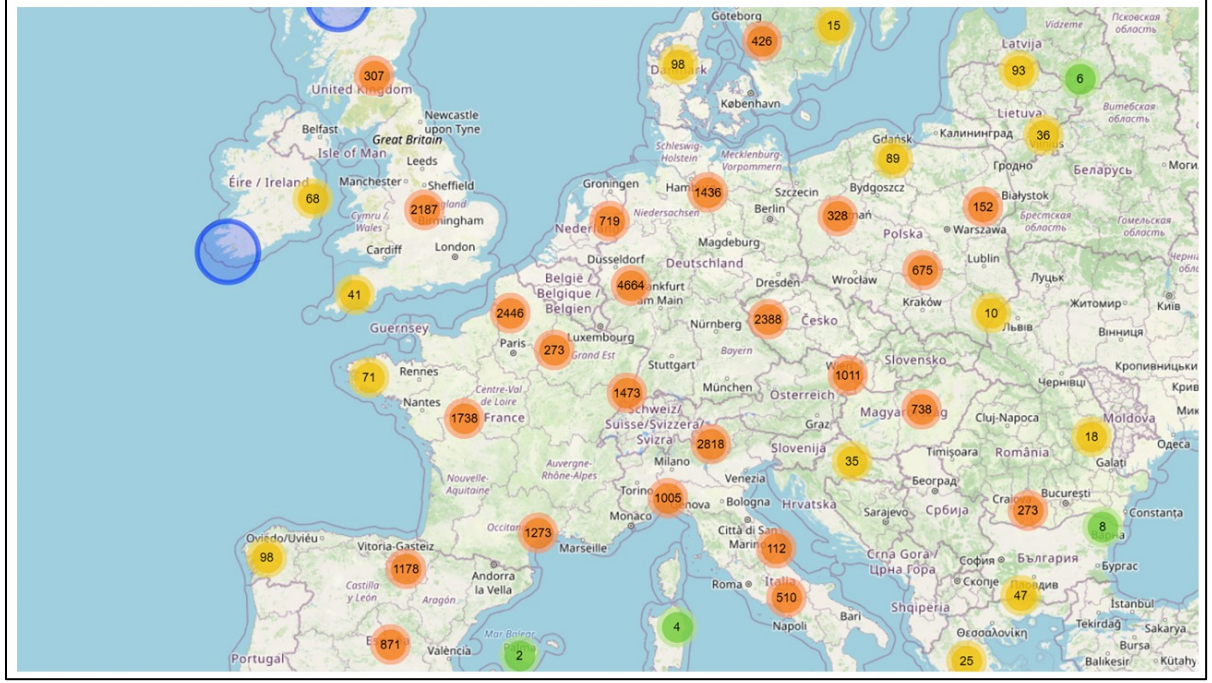
	COMMISSION PROPOSAL			NEEDED IN REALITY			
TEN-T core network	31 Dec 2025	31 Dec 2030	31 Dec 2035	1 July 2025	1 July 2027	1 July 2030	1 July 2035
Power output per recharging pool	≥1,400kW	≥3,500kW		≥5,000kW		≥6,500kW	
Number / power of recharging stations	1 x 350kW	2 x 350kW		4 x 350kW 4 x 800kW		4 x 1,200kW	
TEN-T comprehensive network	31 Dec 2025	31 Dec 2030	31 Dec 2035	1 July 2025	1 July 2027	1 July 2030	1 July 2035
Power output per recharging pool		≥1,400kW	≥3,500kW		≥1,400kW	≥3,000kW	≥5,000k
Number / power of recharging stations		1 x 350kW	2 x 350kW		2 x 350kW	2 x 800kW	2 x 1,200kW
Safe and secure parking areas	31 Dec 2025	31 Dec 2030	31 Dec 2035	1 July 2025	1 July 2027	1 July 2030	1 July 2035
		1 x 100kW		4 x 100kW			
Urban nodes	31 Dec 2025	31 Dec 2030	31 Dec 2035	1 July 2025	1 July 2027	1 July 2030	1 July 2035
Aggregated power output	≥600kW	≥1,200kW				≥1,600kW	
Individual power output	≥150kW	≥150kW				All ≥150kW + 2 x 350kW	

AFIR: TRUCK-SUITABLE INFRASTRUCTURE

TRUCK STOP LOCATIONS (JUNE 2021)

- High power fast charging network needed
- Objectives
  - Analyse truck stop locations and
  - Identify locations where shared charging infrastructure could be located
- Input data
  - 750,000 locations of 400,000 trucks in operation over a period of 12 months
  - Clustered to 30,000 long-haul and 4,000 regional locations

Electric trucks: new study pinpoints precise locations for charging infrastructure across EU



Source: ACEA 2021, https://www.acea.auto/press-release/electric-trucks-new-study-pinpoints-precise-locations-for-charging-infrastructure-across-eu/

AFIR: TRUCK-SUITABLE INFRASTRUCTURE

WHERE TO START ?

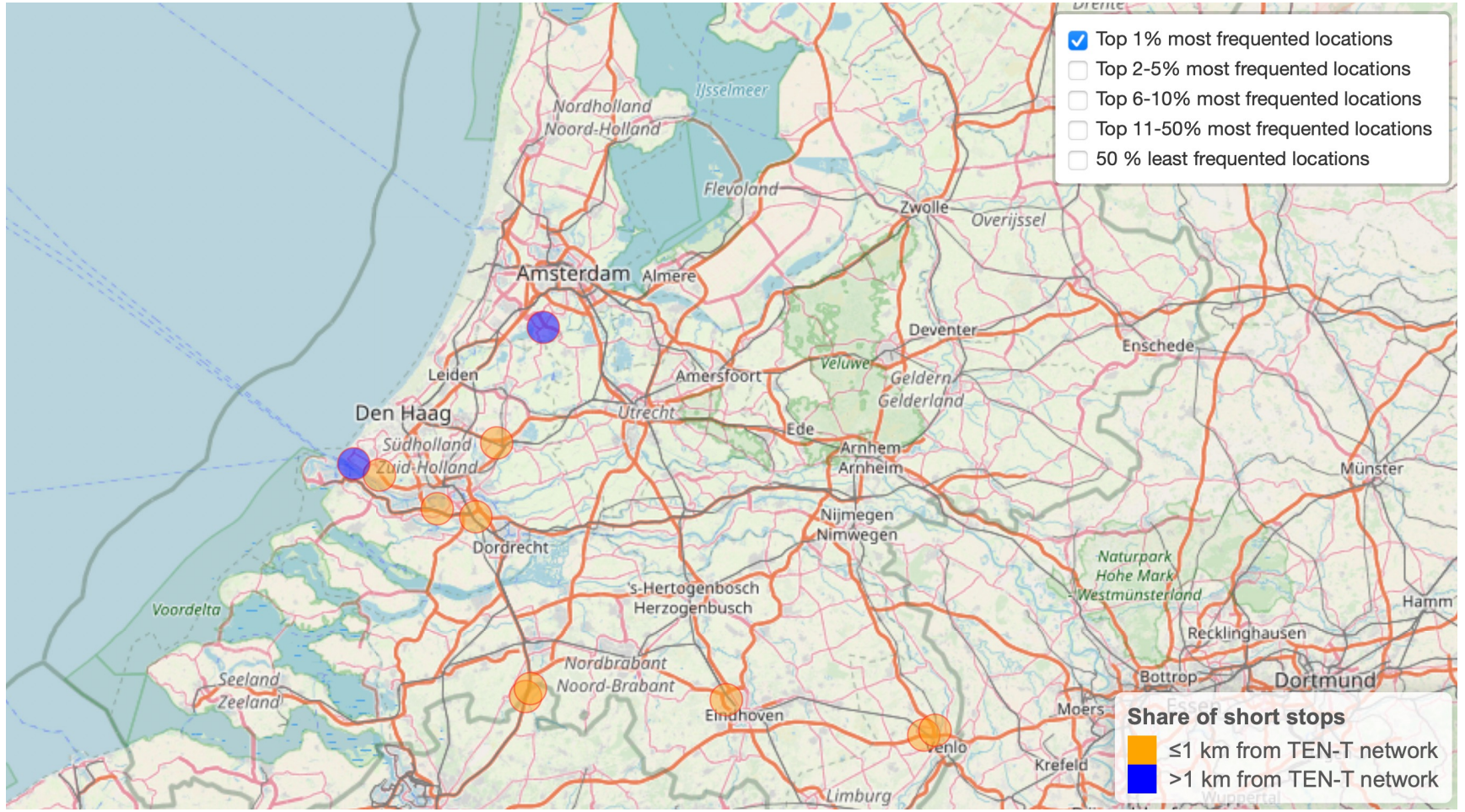
- Do not expect behavioural changes
  - Truck operators will want to recharge where they usually stop today
  - But other factors (eg grid capacity) must also be considered
- Focus on most utilised locations
  - Aim for top 10% locations in operation by 2027 (~3.000 locations ≈ 50% of all stops)
  - Minimum network must be fully operational no later than 2030
- Do it right from the start
  - Start with regional locations/ urban nodes (by 2025)
  - But focus on MCS (ready by mid-2024 at the latest)

- Also: Let's not forget about H2

- More details: https://www.acea.auto/press-release/electric-trucks-new-data-maps-out-priority-locations-for-charging-points/

AFIR: TRUCK-SUITABLE INFRASTRUCTURE

TOP 1% LOCATIONS – NETHERLANDS (2022)



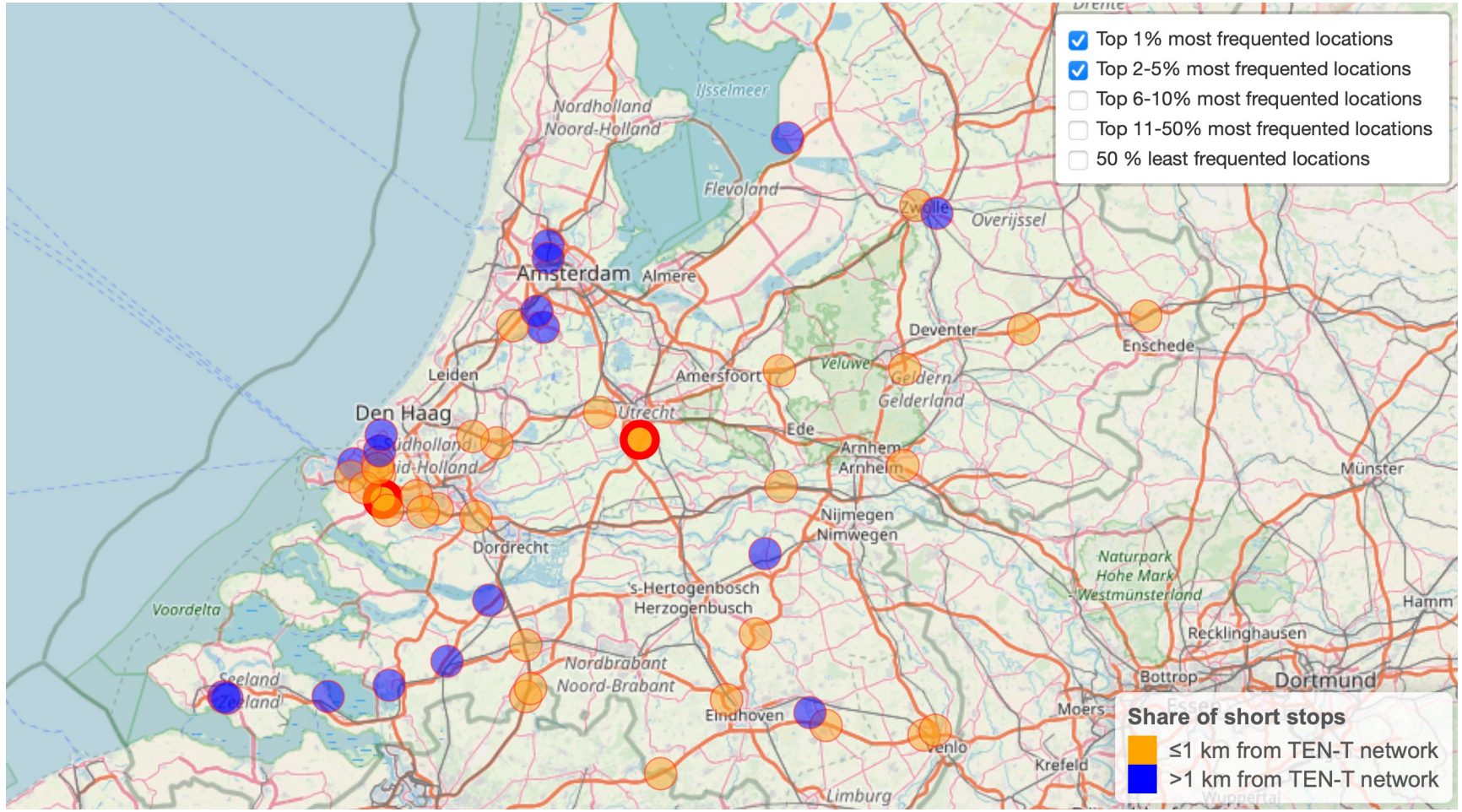
TOP 1%

- 11 locations
- Approx. 843 stops/ day

- Representing ~20% of all truck stops/ day

AFIR: TRUCK-SUITABLE INFRASTRUCTURE

TOP 5% LOCATIONS – NETHERLANDS (2022)



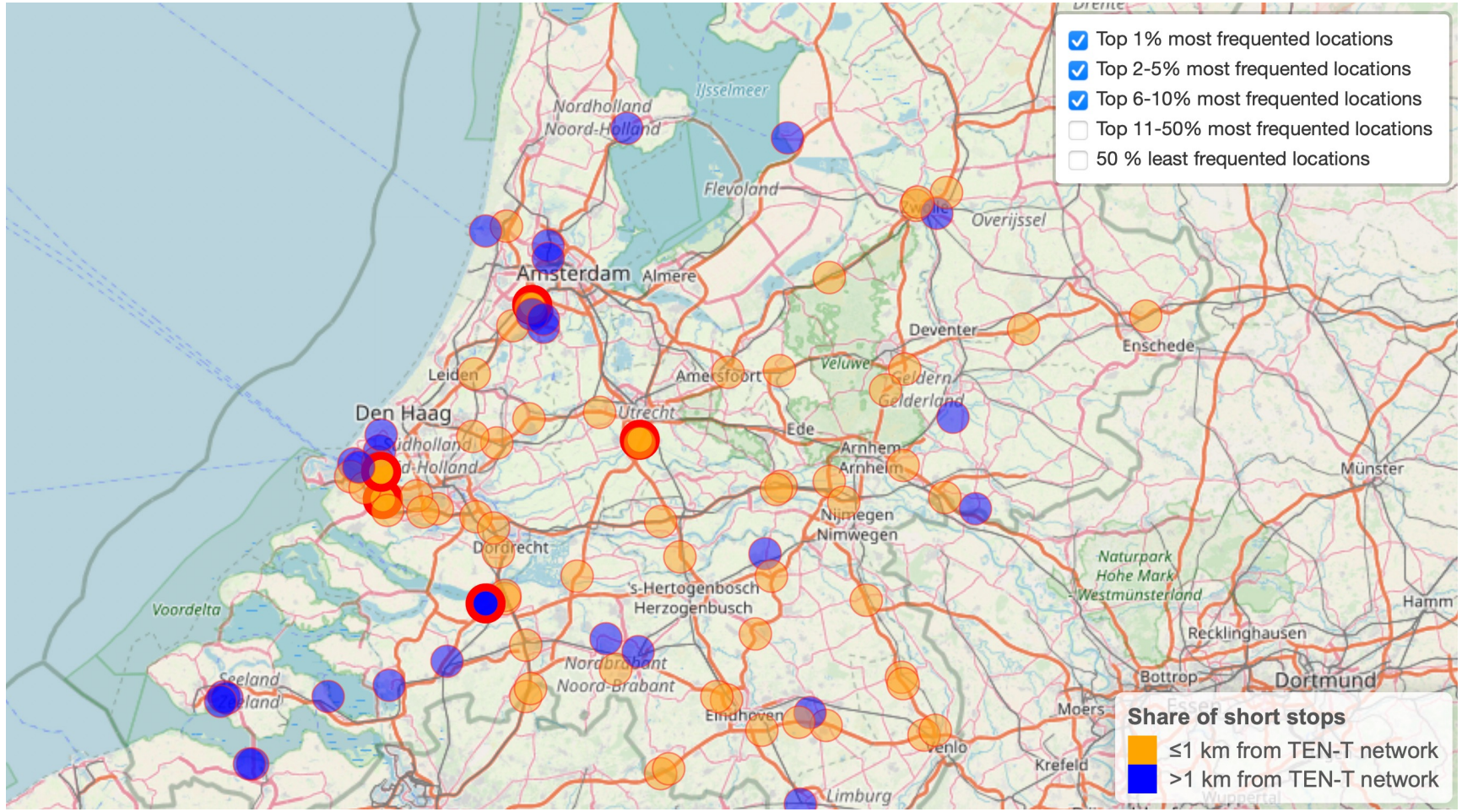
TOP 5%

- 51 locations
- 1.749 stops/ day

- 2 locations with >50% short stops (less than 1h)

AFIR: TRUCK-SUITABLE INFRASTRUCTURE

TOP 10% LOCATIONS – NETHERLANDS (2022)

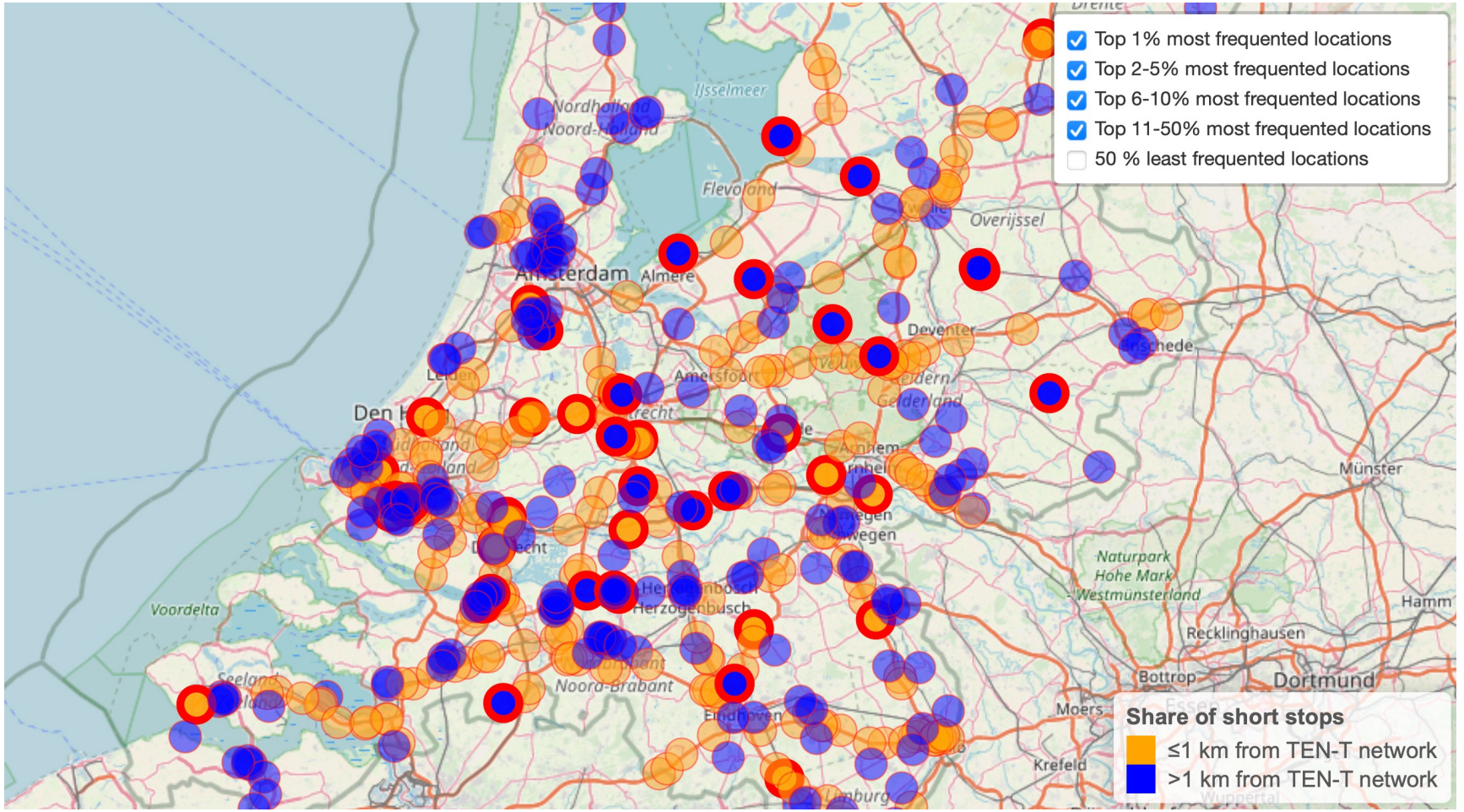


TOP 10%

- 102 locations
- 2.345 stops/ day
- 4 locations with >50% short stops (less than 1h)
- Representing ~53% of all truck stops/ day

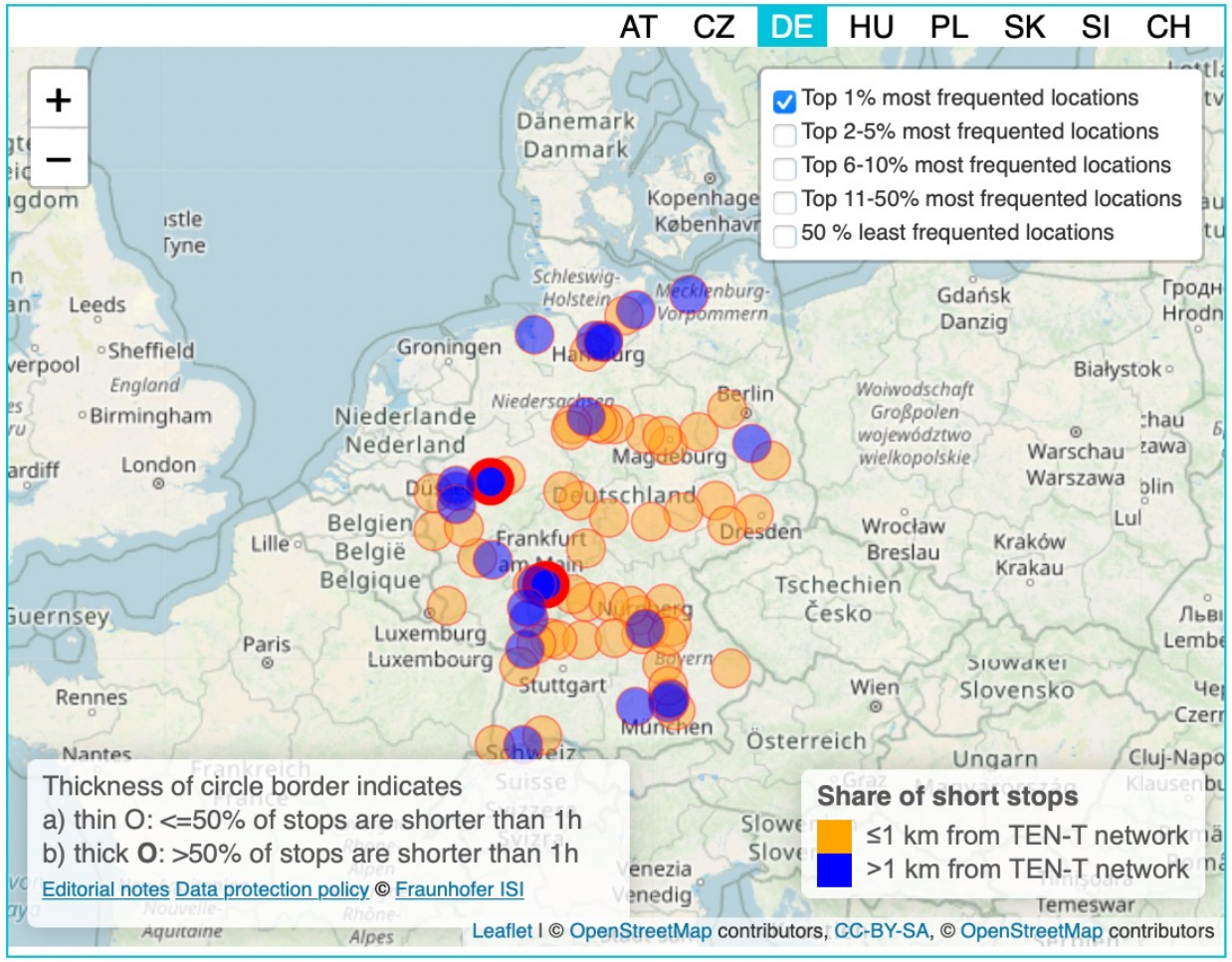
AFIR: TRUCK-SUITABLE INFRASTRUCTURE

TOP 50% LOCATIONS – NETHERLANDS (2022)



AFIR: TRUCK-SUITABLE INFRASTRUCTURE

TOP 1% LOCATIONS – GERMANY (MCS)



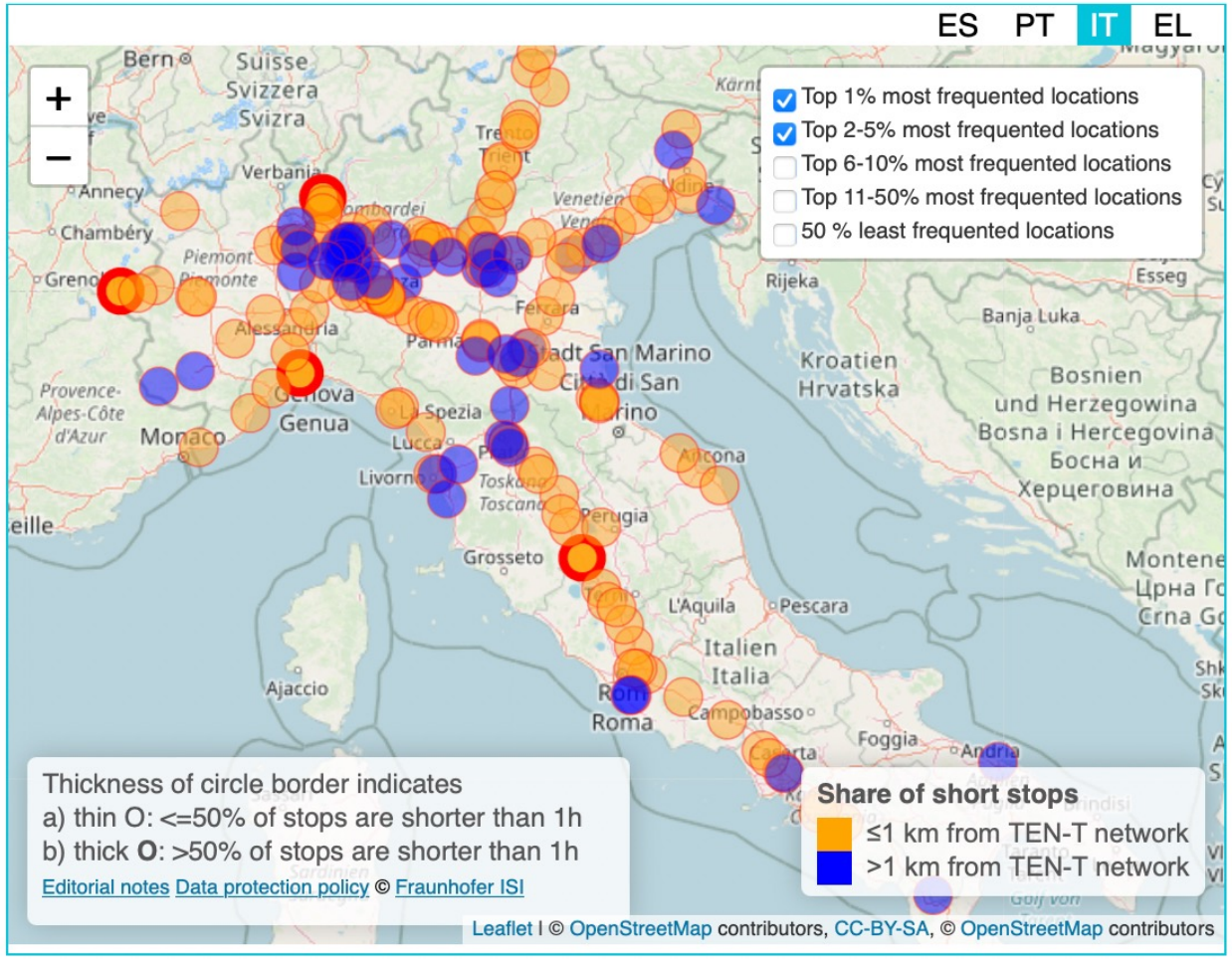
TOP 1%

- ~75 locations
- ~4.500 stops/ day

- Representing ~13% of all truck stops/ day

AFIR: TRUCK-SUITABLE INFRASTRUCTURE

TOP 5% LOCATIONS – ITALY (MCS)



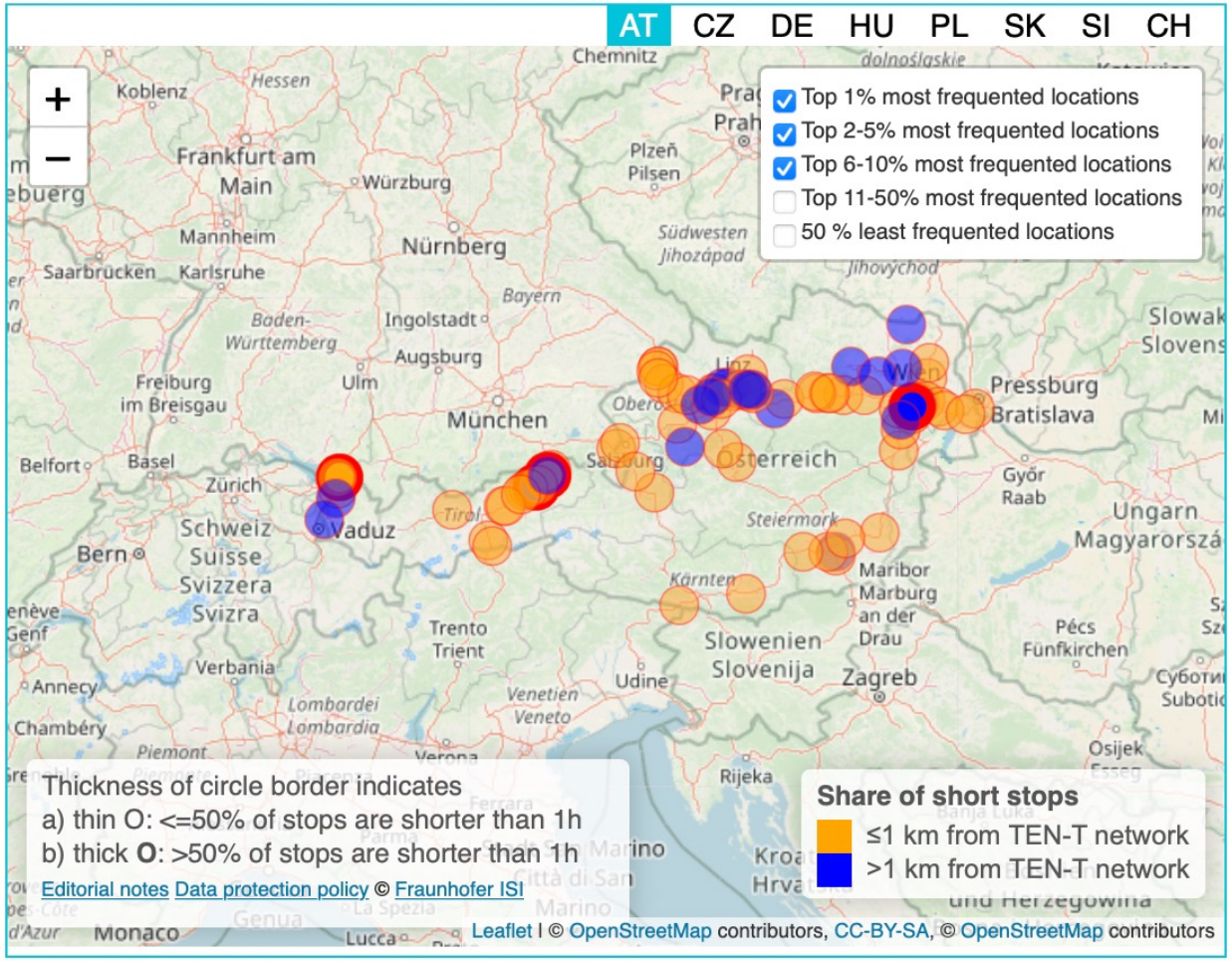
TOP 5%

- 169 locations
- 4.300 stops/ day

- 4 locations with >50% short stops (less than 1h)

AFIR: TRUCK-SUITABLE INFRASTRUCTURE

TOP 10% LOCATIONS – AUSTRIA (MCS)



TOP 10%

- 88 locations
- 2.235 stops/ day

- 4 locations with >50% short stops (less than 1h)

CONCLUSIONS

CONCLUSIONS

KEY ENABLING FACTORS

- **Decarbonizing road transport requires more than “just” CO2 standards**

    1. Zero-emission vehicles
    2. Charging and refueling infrastructure
    3. Cost parity

- **Coherent policy framework to support transition**

REPRESENTING EUROPE'S 15 MAJOR CAR, VAN, TRUCK AND BUS MANUFACTURERS

ACEA
European Automobile
Manufacturers' Association
+32 2 732 55 50
info@acea.auto

www.acea.auto

twitter.com/ACEA_auto

linkedin.com/company/acea

youtube.com/c/ACEAauto