LIFE15-ENV-IT-000281 «BrennerLEC»

The BrennerLEC project: advanced traffic control measures for a new balance between transportation and environmental issues

BRENNER LEC
lower emissions corridor

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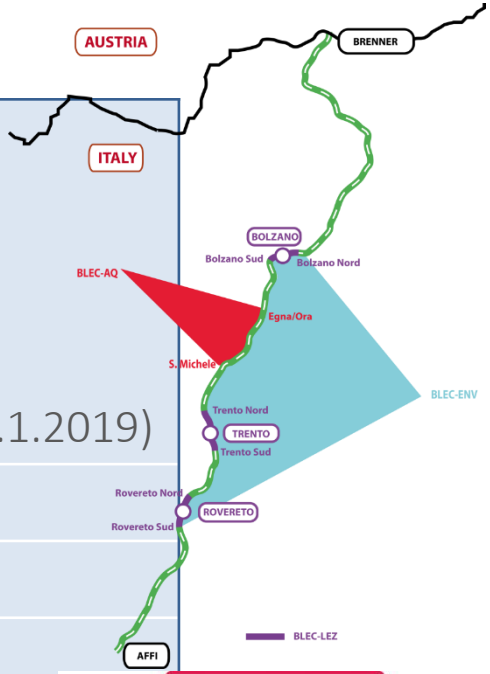
The BrennerLEC project

Partners	A22 (coordinator) APPA - Provincia Autonoma di Bolzano APPA - Provincia Autonoma di Trento Università degli Studi di Trento CISMA IDM Südtirol / Alto Adige (NOI Techpark since 1.1.2019)
Duration	01.09.2016 – 30.04.2021
Overall budget	€ 4.018.005
Eligible budget	€ 3.311.365
LIFE co-financing	€ 1.922.772 (approx. 60% of the eligible budget)



Main objective: develop and demonstrate a «Low Emissions Corridor» concept to be applied on the A22 highway (in perspective on the entire Kuftstein – Affi corridor) by means of an integrated set of dynamic traffic control measures (in particular VSL and HSR) to be activated on the basis of a proactive logic.

The BrennerLEC project

Measures	Test phases (ACTUAL)
Measure 1 ("B3"): **Dynamic control triggered by traffic**	1. 03.2017 – 09.2018 (first «non standardized» VSL application tests on reduced BLEC-ENV stretch) 2. 10.2018 – 05.2019 (first «standardized» VSL application tests on reduced BLEC-ENV stretch) 3. 06.2019 – 12.2019 (first tests with VSL activated on DSS, on the whole BLEC-ENV + first tests with HSR) 4. 01.2020 – 04.2021 (consolidated VSL + HSR activation logic testing)
Measure 2 ("B4"): **Dynamic control triggered by air quality**	1. 02.2017 – 06.2018 (first data sample collection, VSL = 100 [km/h] activated on calendar basis) 2. 07.2018 – 06.2019 (further data sample collection for first results validation, multiple VSL activated on calendar basis) 3. 06.2019 – 12.2019 (VSL activated based on DSS, «reactive» mode) 4. 01.2020 – 04.2021 (VSL activated based on DSS, «proactive» mode

For more information about the project:

[1] BrennerLEC Proposal Public Summary, available at
http://brennerlec.life/documents/10165/185570/190131_report.pdf/52d932cd-e022-4e81-9c3b-3d4f3dcf2ad1

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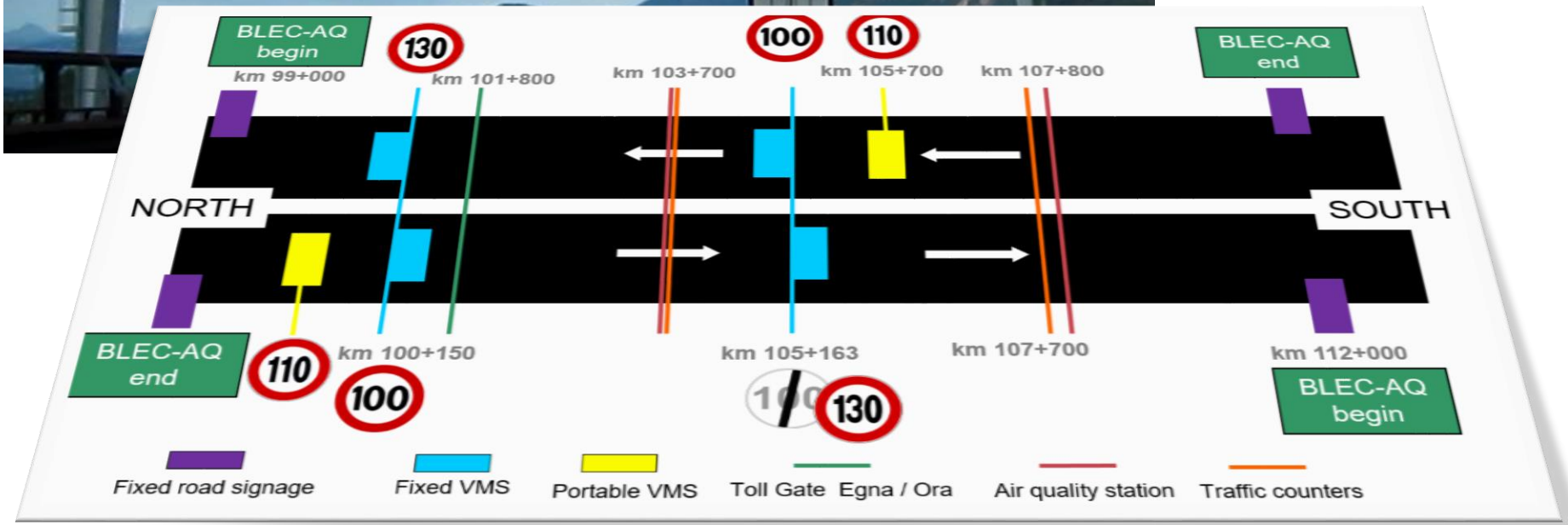
Preliminary findings from 1° pilot phase

Measure 2 ("B4"): Dynamic control triggered by air quality

1.918 hours of tests collected (**1.227 hours** of valid tests hours, representative of a calendar year)



Preliminary findings from 1° pilot phase

Measure 2 ("B4"): Dynamic control triggered by air quality

Test Hr.

00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
14	13	10	11	11	10	15	26	28	37	37	38	38	47	46	40	37	40	47	46	45	41	35	20

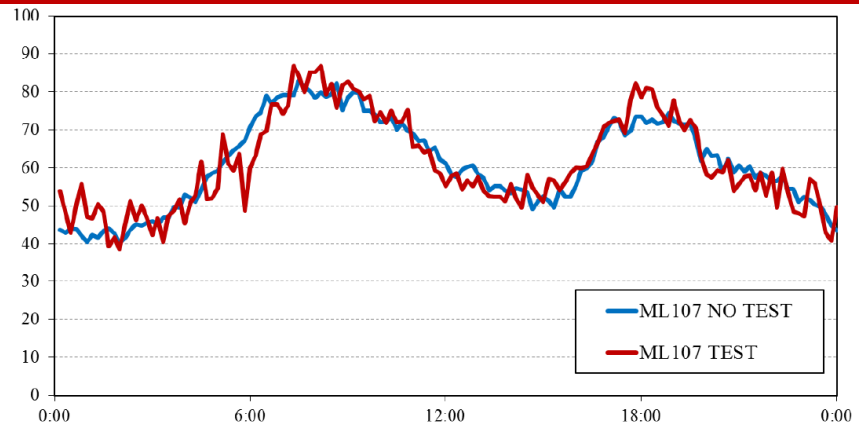
NO_2

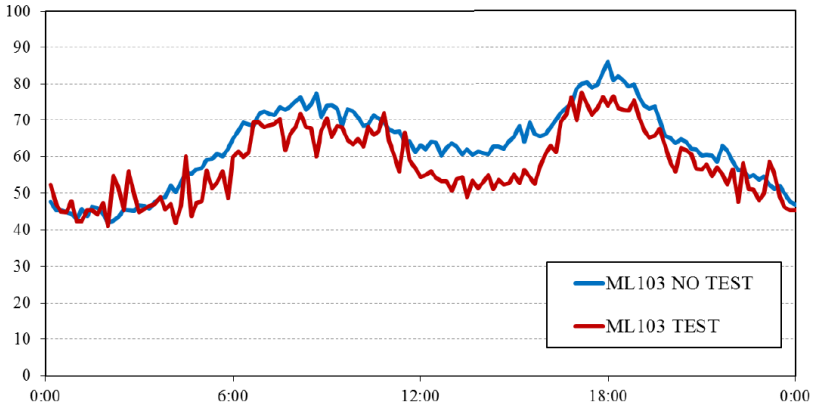
00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1.5	5.3	2.2	-3.1	-0.4	5.1	1.8	-0.6	8.7	9.0	7.2	3.4	2.2	6.3	7.4	10.4	15.9	4.5	11.6	10.9	5.4	0.0	3.0	1.5

NO

00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
-0.8	5.2	3.8	-1.4	-2.3	4.0	0.9	-3.5	20.8	17.9	13.2	0.8	1.5	5.9	4.4	7.6	11.8	1.4	10.0	11.1	8.1	2.3	6.5	5.2

-10% concentrations (at roadside level) with an average speed reduction of 15 [km/h]





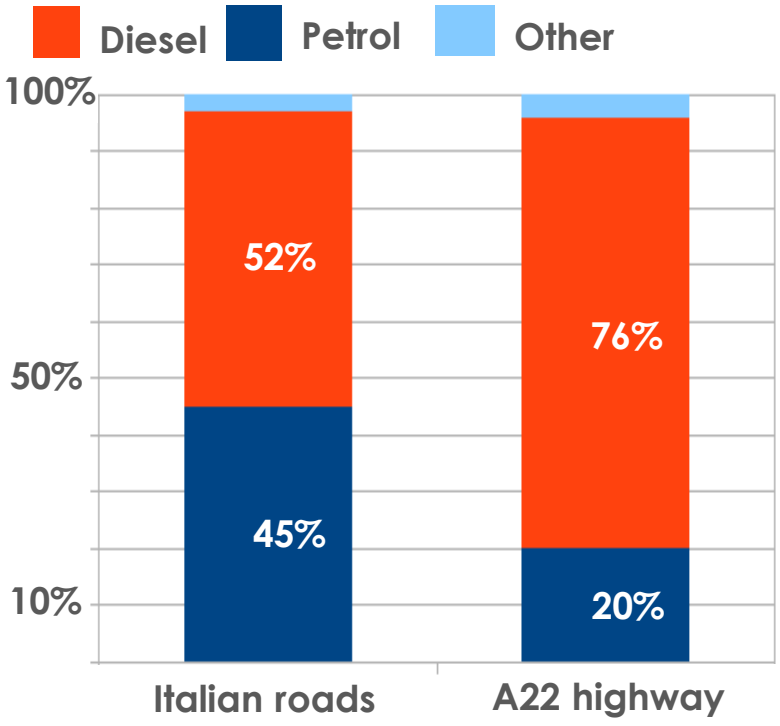
For more details on impact assessment methodology:

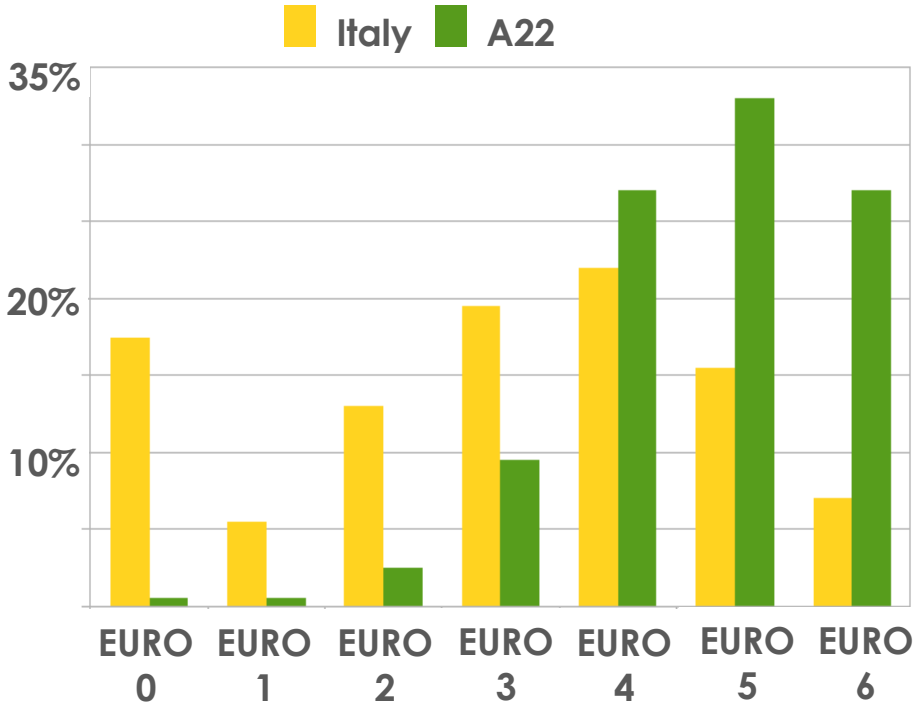
[2] Report on 1° pilot phase findings, available at http://brennerlec.life/documents/10165/185570/180904_ReportRisultatiFase1_final_v2.pdf/c8f20764-673b-4458-8a13-8a5376786482

Preliminary findings from 1° pilot phase

Measure 2 ("B4"): Dynamic control triggered by air quality

Preliminary analysis of the fleet of the vehicles driving on the A22 highway, based on ANPR data and compared with reference statistics of Italian circulating fleet.

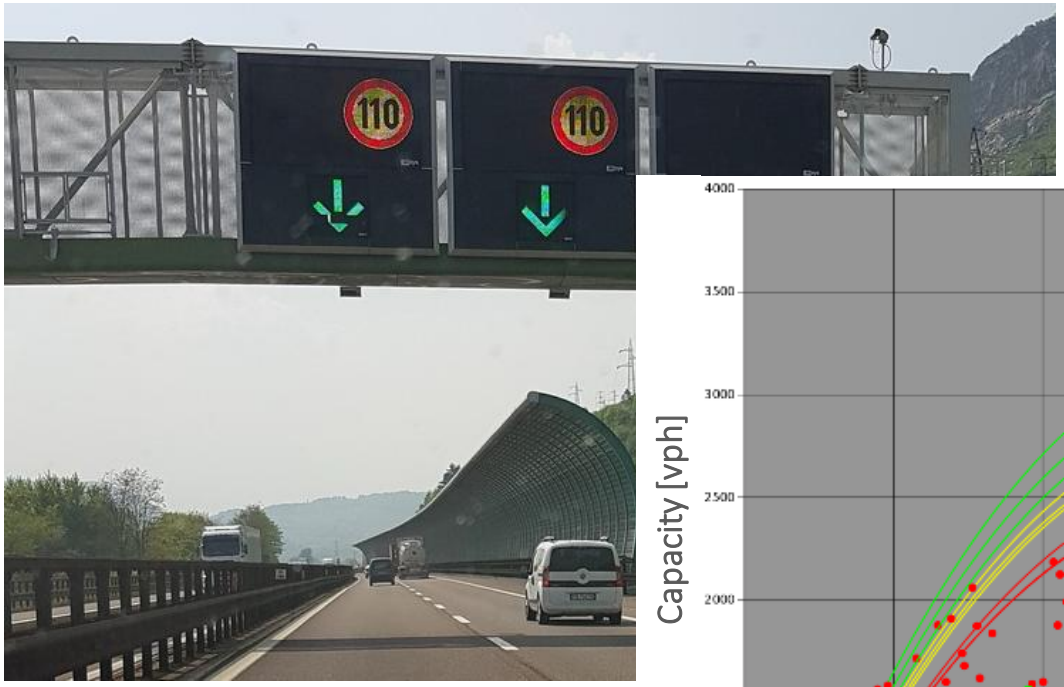




Much modern vehicles on the highway, but the potential benefits on the environment are however balanced by the significantly higher percentage of diesel vehicles.

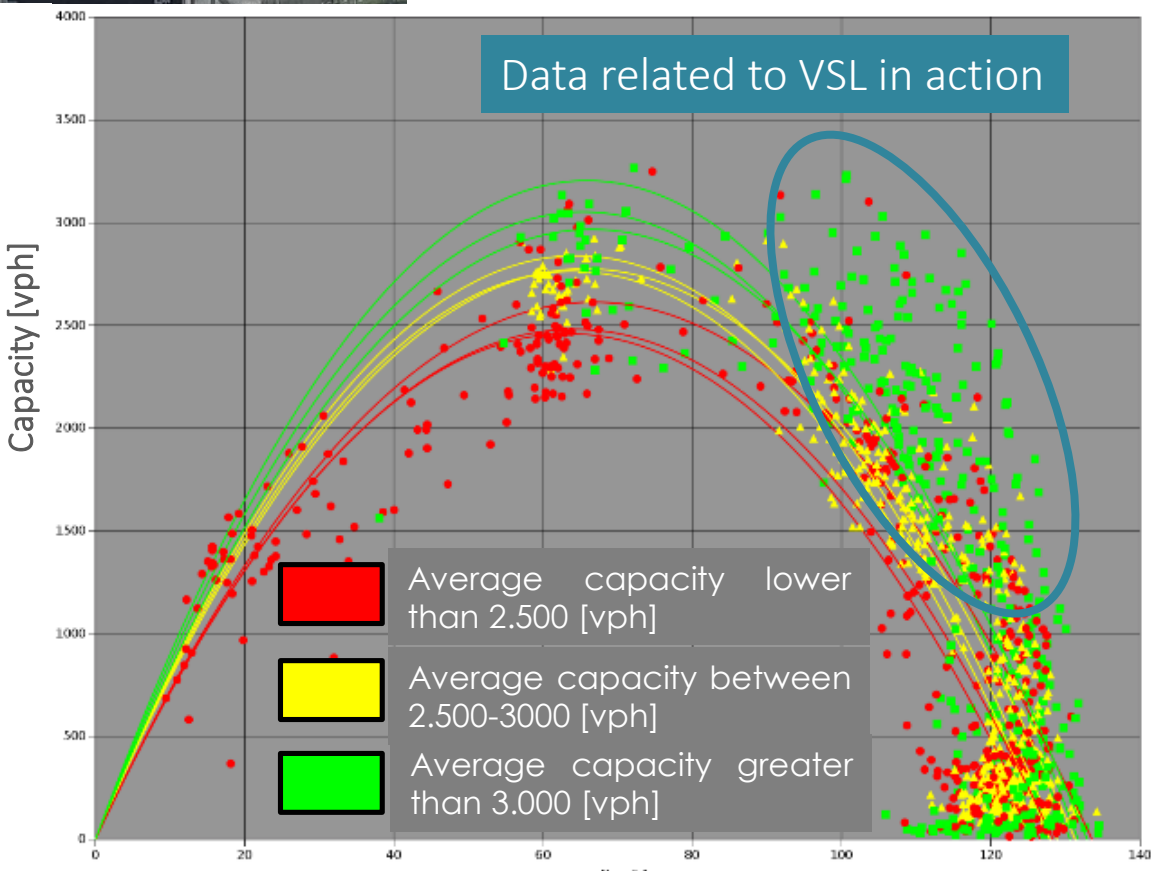
Preliminary findings from 1° pilot phase

Measure 1 ("B3"): Dynamic control triggered by **traffic**



34 tests sessions

(23 valid sessions)



Increased traffic stability and levels of services if VSL are timely activated.

First qualitative estimation: +8% road capacity

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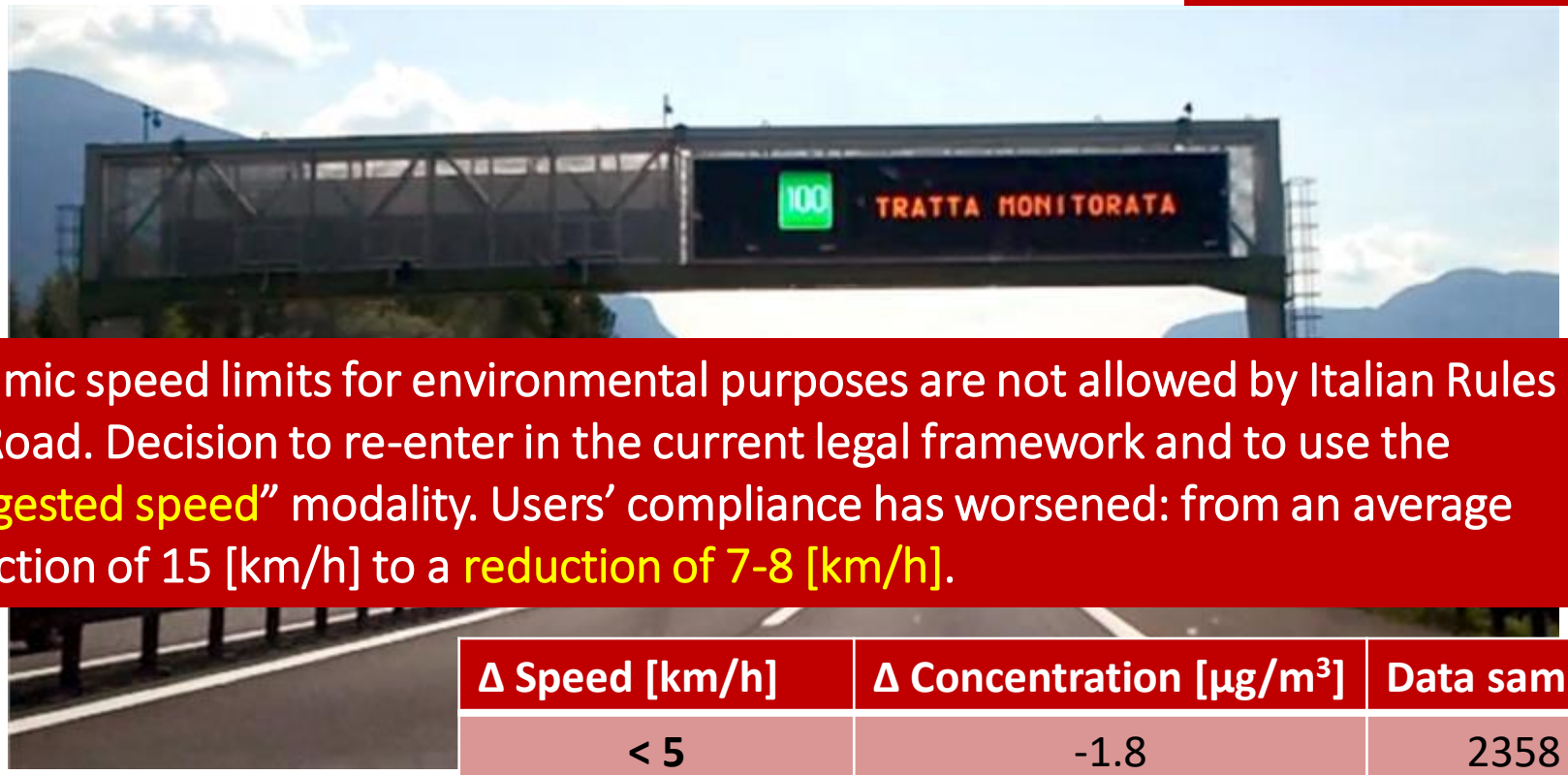
A glance to 2° pilot phase progress

Measure 2 ("B4"): Dynamic control triggered by air quality

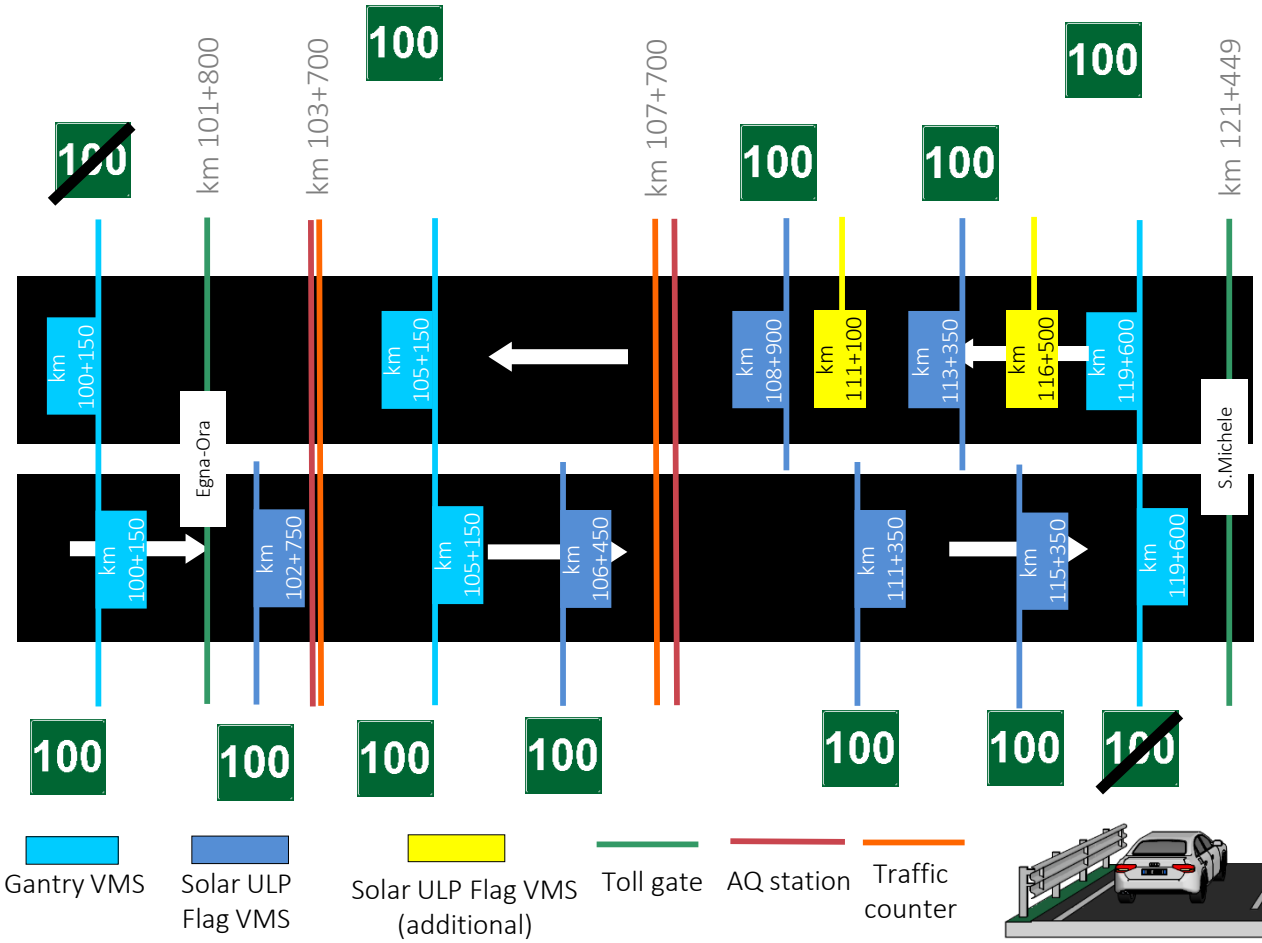


Dynamic speed limits for environmental purposes are not allowed by Italian Rules of the Road. Decision to re-enter in the current legal framework and to use the "suggested speed" modality. Users' compliance has worsened: from an average reduction of 15 [km/h] to a reduction of 7-8 [km/h].

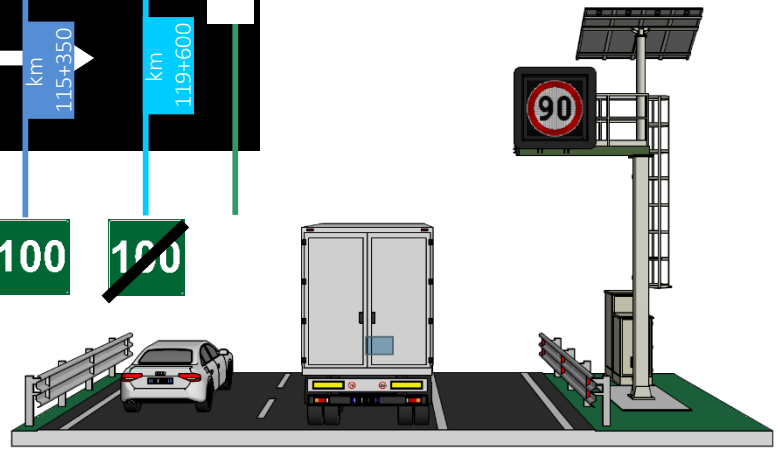
	Δ Speed [km/h]	Δ Concentration [µg/m³]	Data sample
	< 5	-1.8	2358
Phase 2	5 – 10	0.2	2606
Phase 1	10 -15	2.6	938
Phase 1	> 15	5.0	546

A glance to 2° pilot phase progress

Measure 2 ("B4"): Dynamic control triggered by air quality



Extension of test stretch in order to better highlight dynamic speed limits also in direction north through a gantry VMS (from phase 3).



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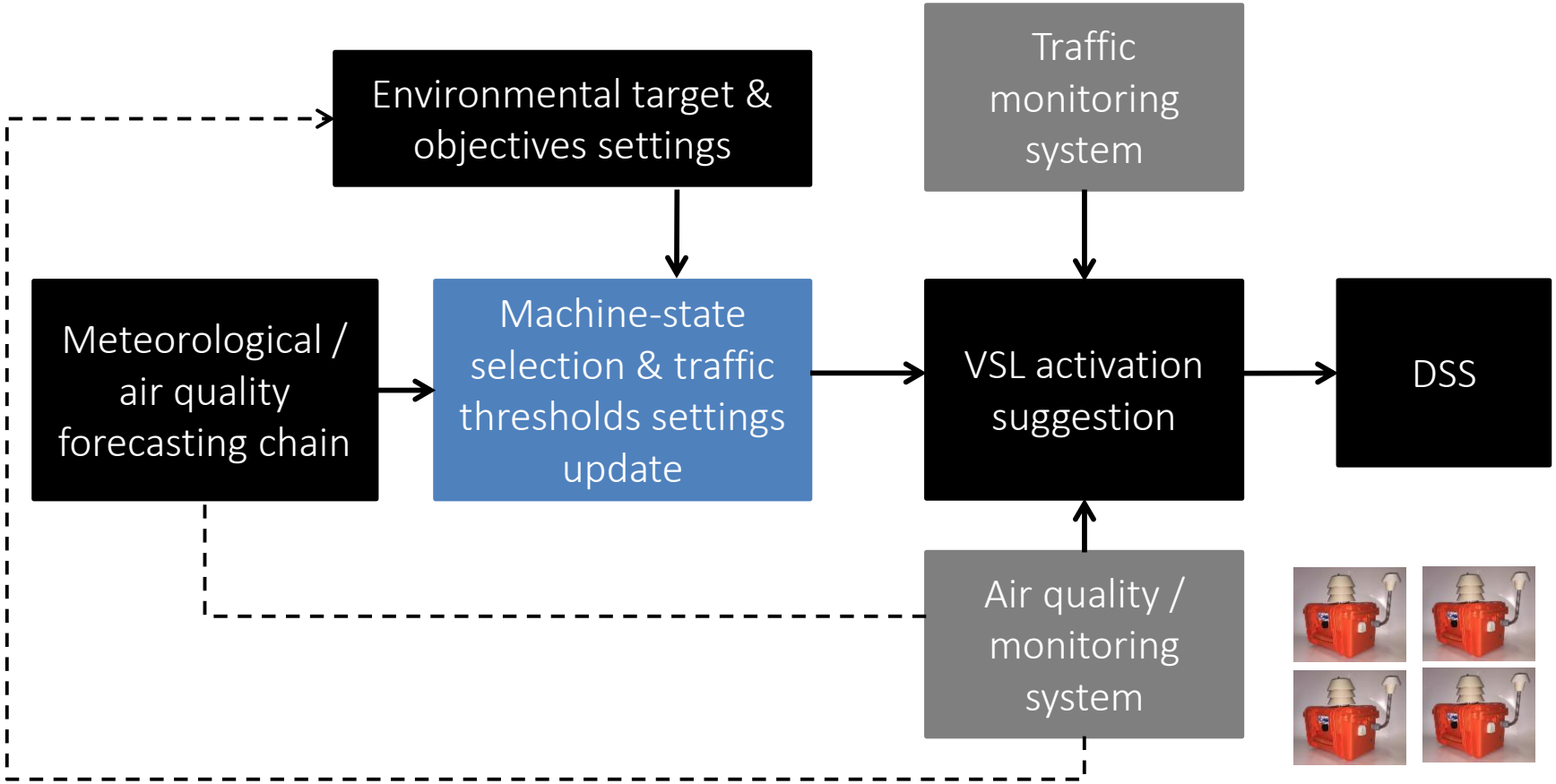
The Decision Support System under implementation for the final pilot phases

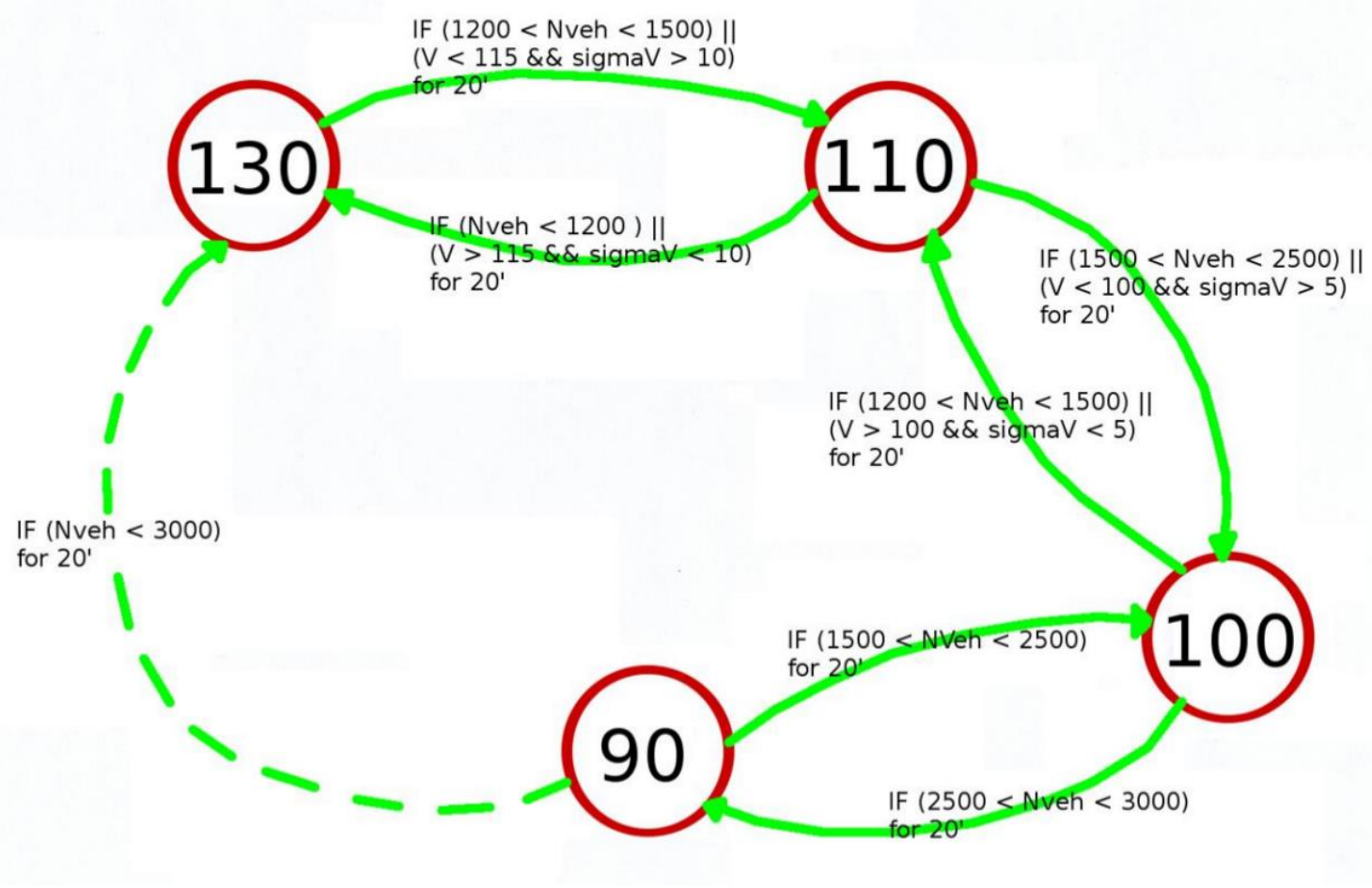
Traffic Class [Nr. Light Vehicles]	NO concentration difference in unstable atmospheric conditions [µg/m³]	NO concentration difference in neutral atmospheric conditions [µg/m³]	NO concentration difference in stable atmospheric conditions [µg/m³]
< 500	-	1.1	4.5
500 – 1.000	-	2.5	11.2
1.000 – 1.500	1.5	11.4	21.3
1.500 – 2.000	10.5	13.2	26.5
2.000 – 2.500	18.6	18.9	-
2.500 – 3.000	13.9	9.0	-
> 3.000	7.7	10.6	-

The Decision Support System under implementation for the final pilot phases



The Decision Support System under implementation for the final pilot phases

Measure 1 ("B3"): Dynamic control triggered by traffic



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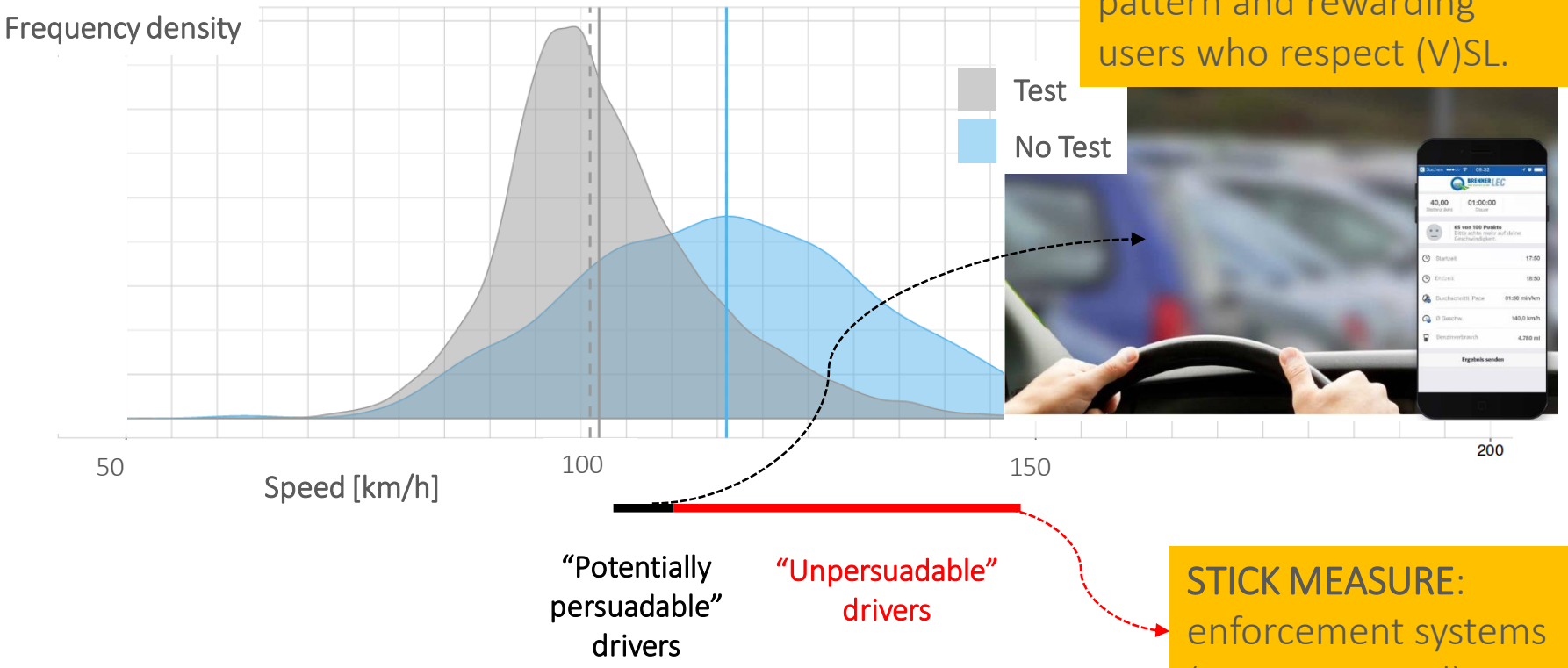
Final remarks and other infos

One of the key factor for the project's success is **VSL compliance**.



CARROT MEASURE: app measuring the driving pattern and rewarding users who respect (V)SL.

STICK MEASURE: enforcement systems (section control).

Final remarks and other infos

- 11:00 **The "Lower Emissions Corridor" concept** [A22]
- 11:30 **Round Table "Sustainable transport management in Trentino South Tyrol"**
  - President A22
  - Representative Regional Government
  - Representative Italian Ministry of Transportation
  - Representative Italian Ministry of Environment
- 13:00 Lunch break
- 14:00 **Overview of EU strategies and regulations in the field of transportation, air quality and climate change** [DG MOVE / DG ENV]
- 14:30 **The importance of a "Lower Emissions Corridor" in the scope of the EUSALP policies** [representative AG4 EUSALP]
- 15:00 **Dynamic speed limits: an efficient measure for the improvement of roadside air quality** [Province BZ]
- 15:30 **Round Table "Sustainable transport management"** (with afternoon speakers)

High-Policy Event (Q3 2019)

Thanks a lot for the attention!

BRENNER LEC
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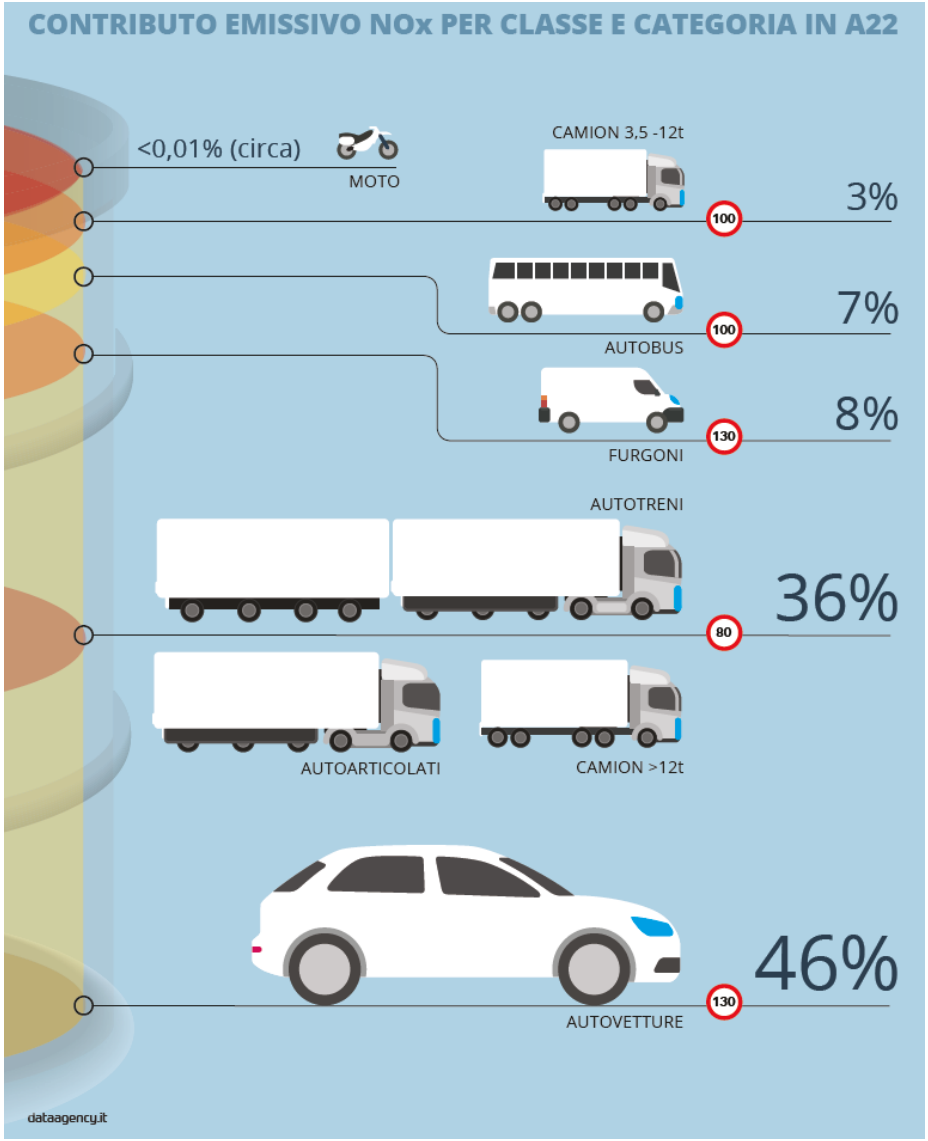
Roberto Cavaliere, NOI Techpark
r.cavaliere@noi.bz.it


CONTRIBUTO EMISSIVO NOx PER CLASSE E CATEGORIA IN A22
<0,01% (circa)
MOTO
CAMION 3,5 -12t
3%
100
7%
AUTOBUS
100
8%
FURGONI
130
AUTOTRENI
36%
80
AUTOARTICOLATI
CAMION >12t
46%
AUTOVETTURE
130
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