



Autostrada del Brennero SpA
Brennerautobahn AG

AUTONOME
PROVINZ
BOZEN
SÜDTIROL



PROVINCIA
AUTONOMA
DI BOLZANO
ALTO ADIGE



PROVINCIA AUTONOMA DI TRENTO



UNIVERSITÀ DEGLI STUDI
DI TRENTO



iDM
SÜDTIROL
ALTO ADIGE

LIFE Platform Meeting on Air Quality



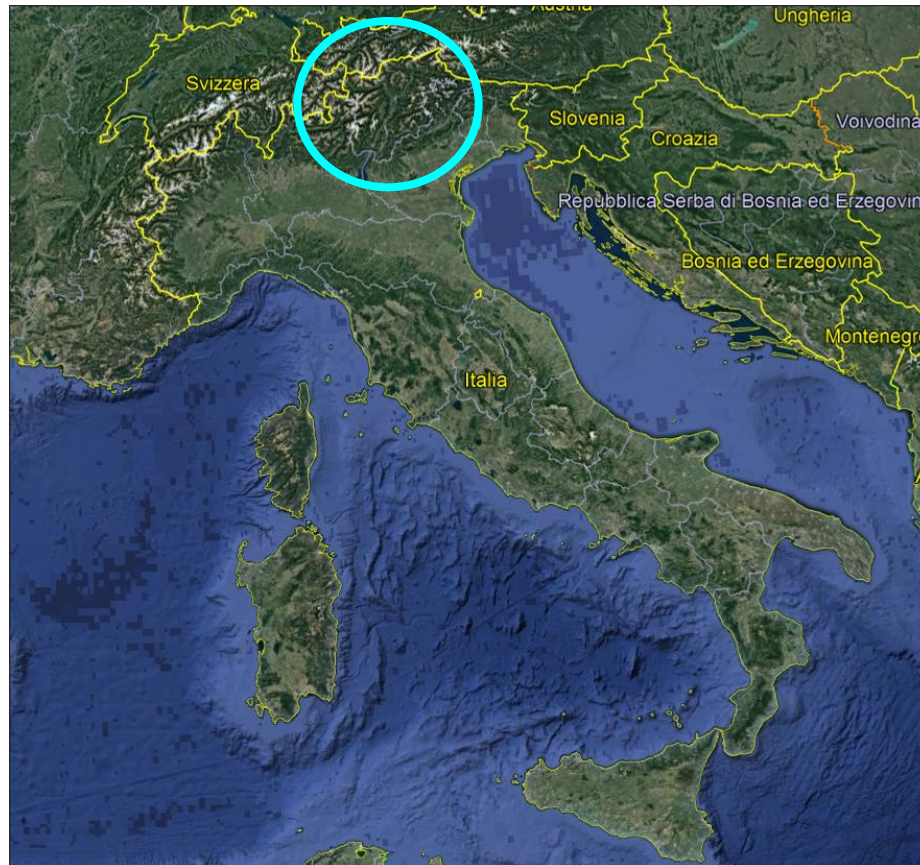
«Brenner Lower Emissions Corridor»

Project LIFE15-ENV-IT-000281

Laura Pretto

Environmental Protection Agency - Autonomous Province of Trento (Italy)

PROJECT AREA: TRENTINO-ALTO ADIGE REGION



PROJECT AREA: TRENTINO-ALTO ADIGE REGION



THE BRENNER MOTORWAY

ALPINE SECTION

PLAIN SECTION

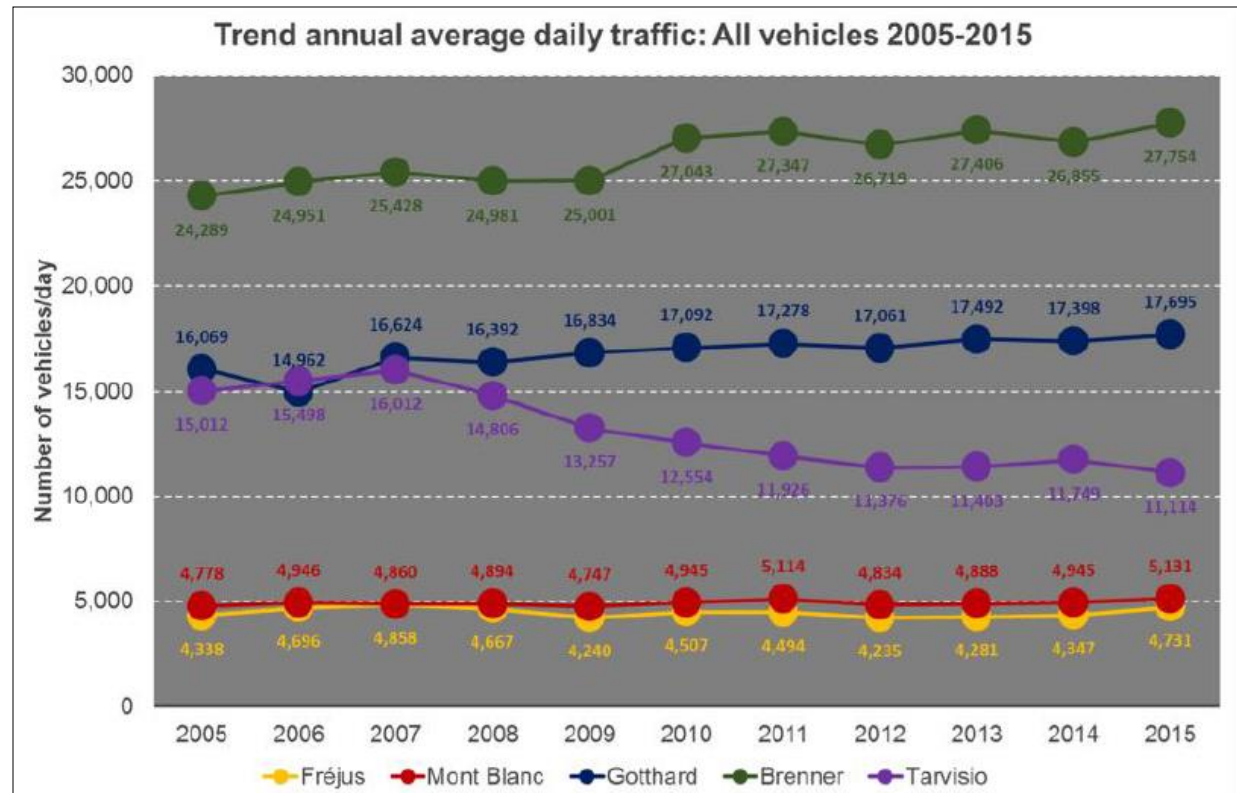
Length: 314 km

Difference in altitude: 50 - 1375 m
above sea level



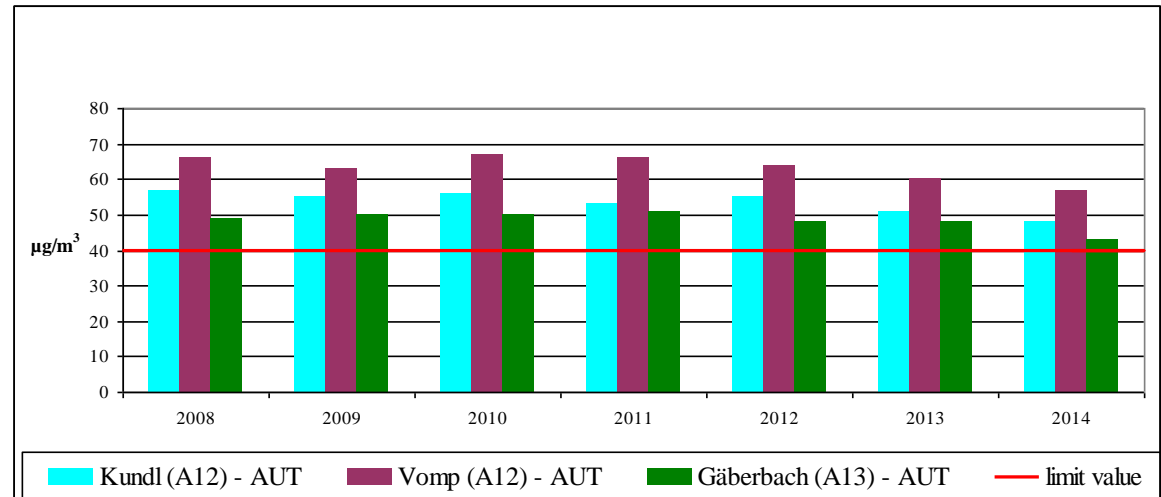
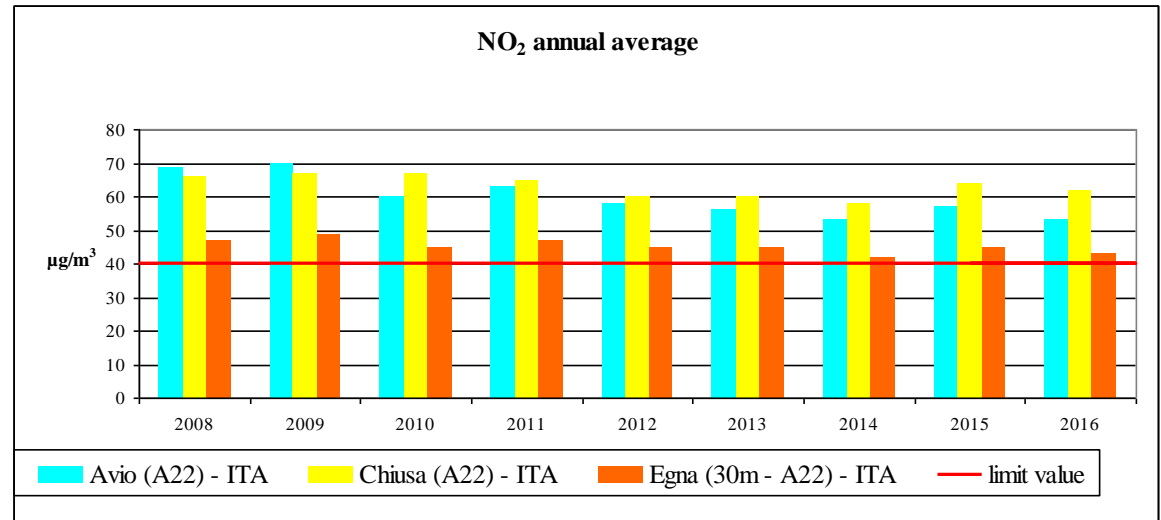
THE BRENNER MOTORWAY

High volumes of traffic



THE BRENNER MOTORWAY

An environmental concern



THE «BRENNER LOWER EMISSIONS CORRIDOR» PROJECT

Partners	Autostrada del Brennero A22 (coordinator) Environmental Protection Agency – Autonomous Province of Bolzano Environmental Protection Agency – Autonomous Province of Trento University of Trento CISMA IDM Südtirol / Alto Adige
Duration	01.09.2016 – 30.04.2021
Overall budget	€ 4.018.005
Eligible budget	€ 3.311.365
LIFE co-financing	€ 1.922.772



THE «BRENNER LOWER EMISSIONS CORRIDOR» PROJECT



To develop a «**Low Emissions Corridor**» concept to be applied to the Brenner highway [A22] by means of the experimental and scientific study of an **integrated set of dynamic policies** to manage traffic on the basis of a proactive logic

To define the modalities to exploit the concept to the whole Alpine corridor («**Alpine BLEC**»)



THE «BRENNER LOWER EMISSIONS CORRIDOR» PROJECT



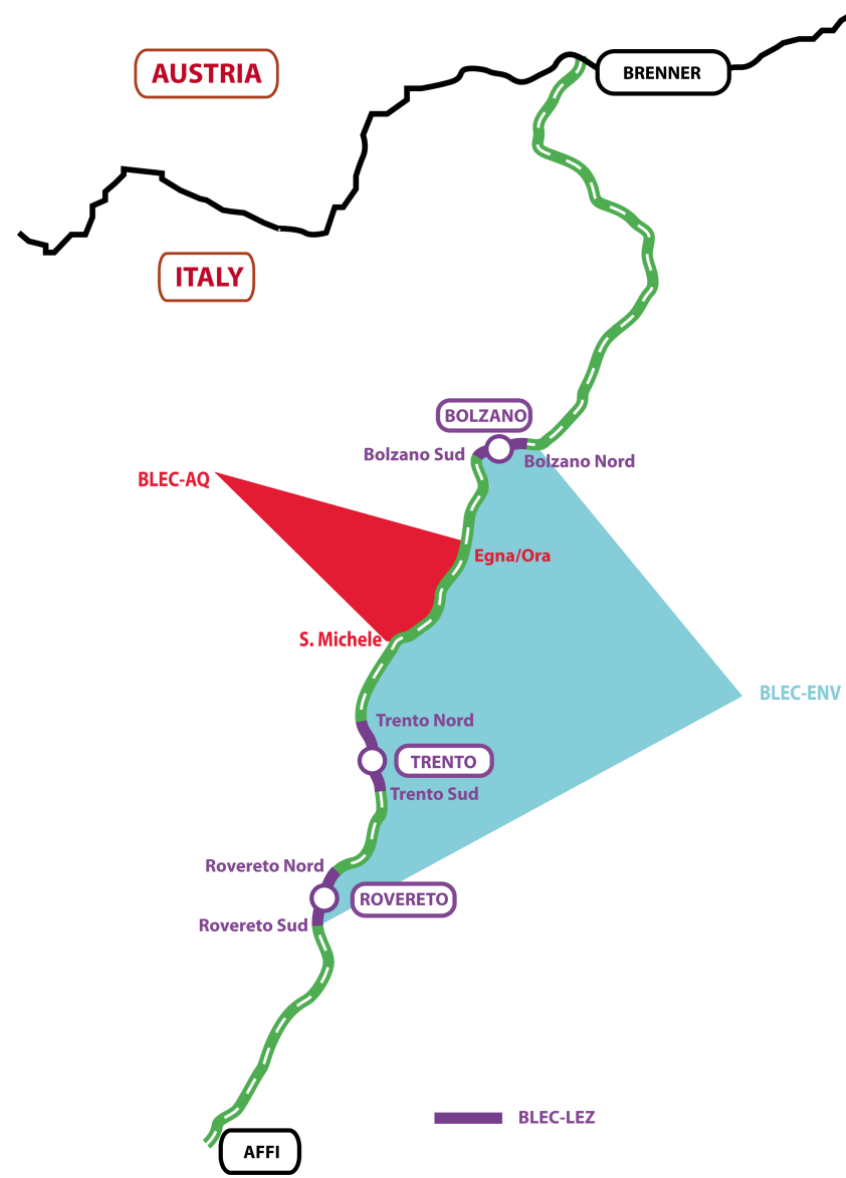
maximum environmental
benefits,
minimum inconvenience for
users,
optimal use of the existent
infrastructure,
maximum safety level

AlpineBLEC: Kufstein (A) - Affi (I)



WHAT POLICIES ?

Dynamic management of speed limits
for passengers cars
under heavy traffic conditions and in case of
severe atmospheric pollution



AIR QUALITY MONITORING

3 air quality monitoring station + meteorological station



AIR QUALITY MONITORING

Concentration's measurement of most relevant pollutants

Innovative NO₂ "low cost" sensors

NO - NO₂



PM

- gravimetric
- ultrafine



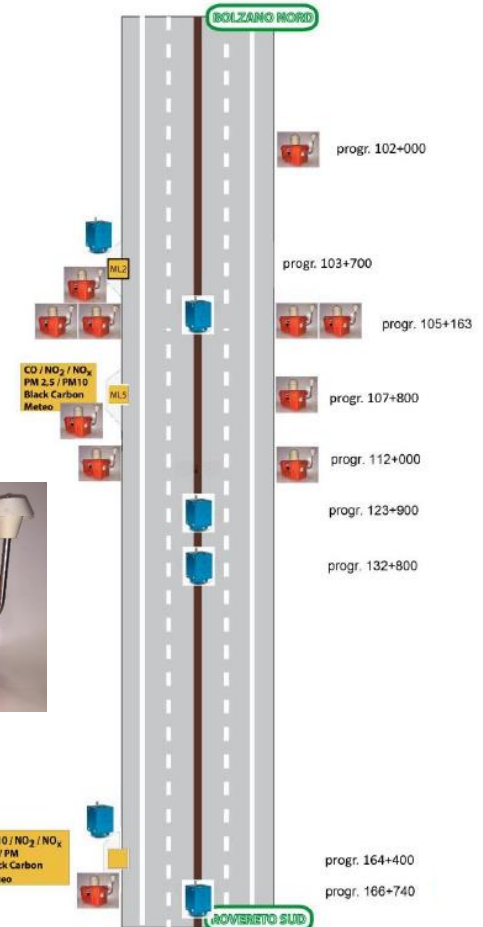
Black Carbon



PAH



CO



1° EXPERIMENTAL POLICY

Under heavy traffic conditions:
dynamic reduction of speed limits for passengers cars



REDUCING SPEED LIMITS WITH HEAVY TRAFFIC CONDITIONS...

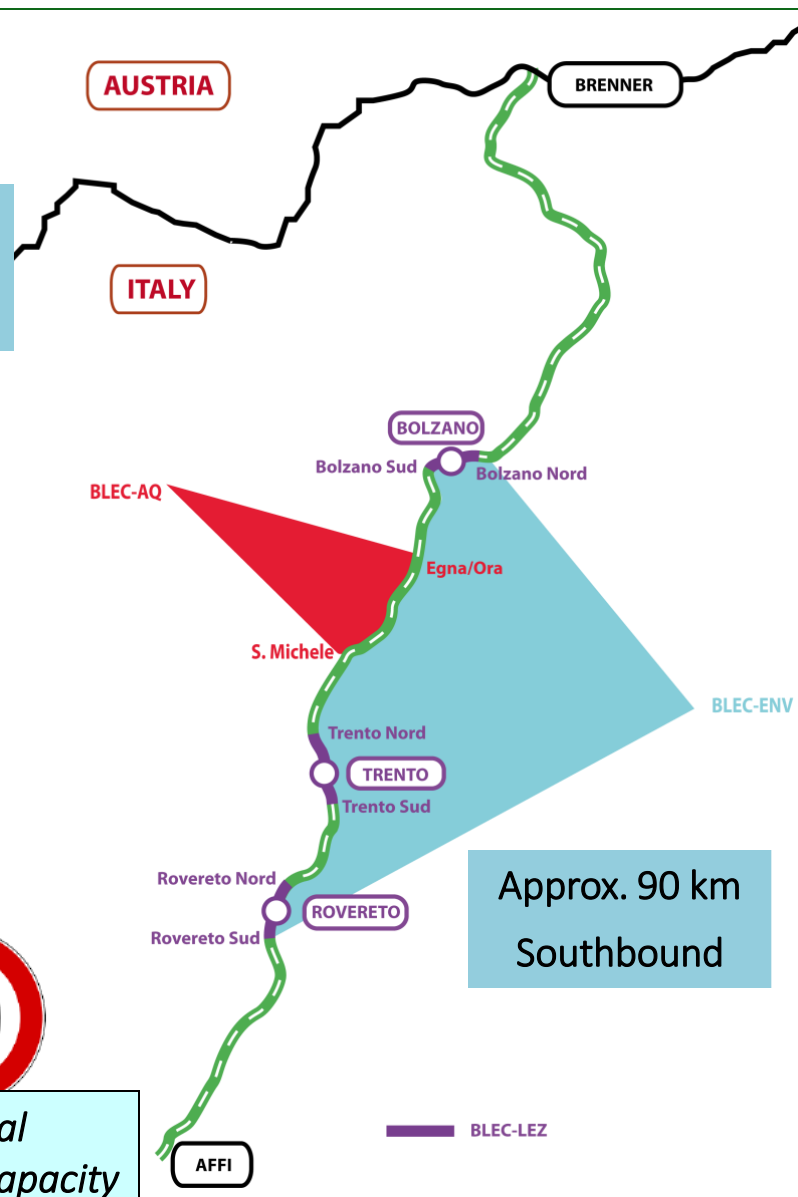
... to increase the motorway capacity

... to smoothen traffic and reduce stop&go condition

... to reduce pollution



*maximal
motorway capacity*



Approx. 90 km
Southbound

BLEC-LEZ

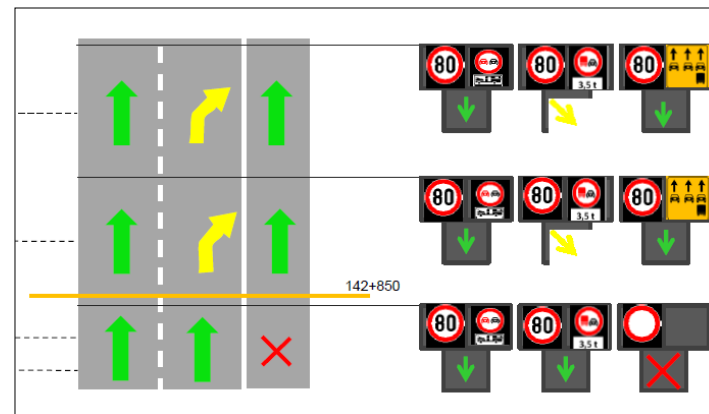
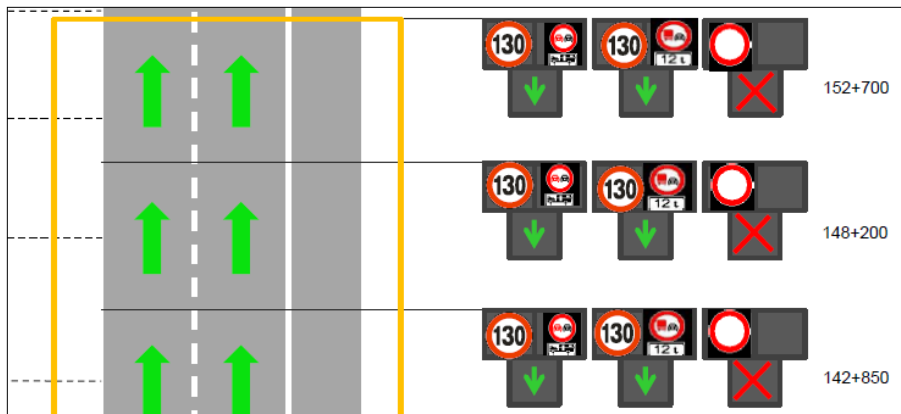
1° EXPERIMENTAL POLICY

Under almost saturated conditions:

temporary use of the hard shoulder as additional transit lane



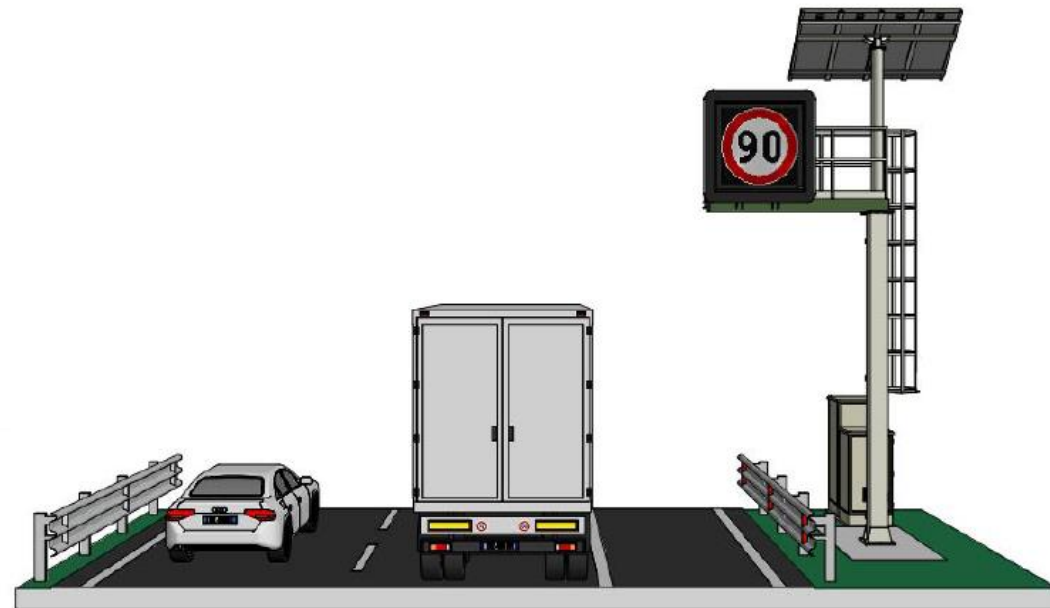
- In order to **increase the motorway capacity** from 3,000 vehicles/hr to 4,000-4,200 vehicles/hr
- Already **infrastructured** motorway section
- According to a **special regulation**



INFRASTRUCTURES

- Gantries and variable message signs
- Inductive loops to detect traffic
- Videocameras

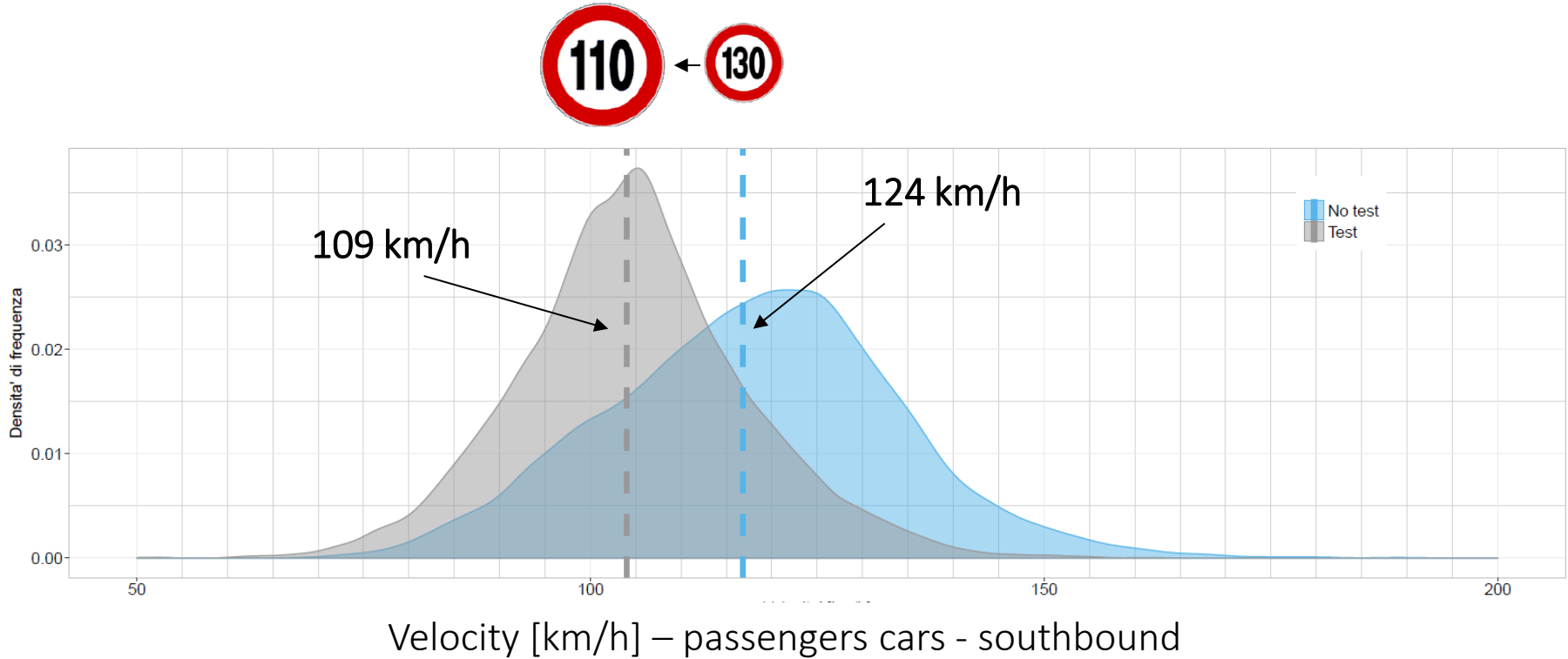
PMV IN ITINERE KM 140+605 - 156+565 - 164+300 SUD



FIRST ANALYSIS

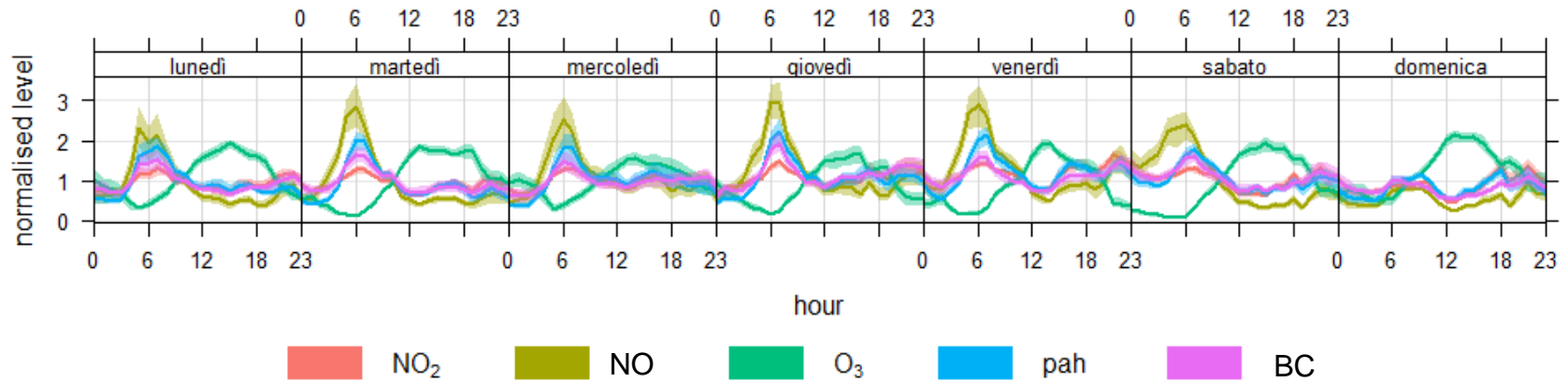
Positive response from motorway users

- average speed close to the lower speed limit
- decreasing of the variance

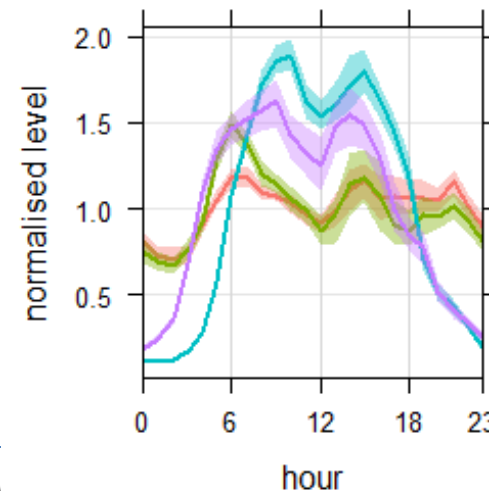
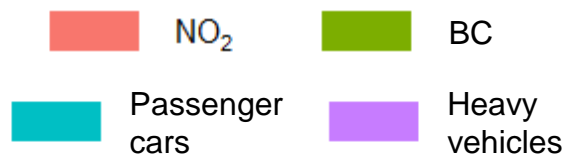


FIRST ANALYSIS

Air quality data analysis



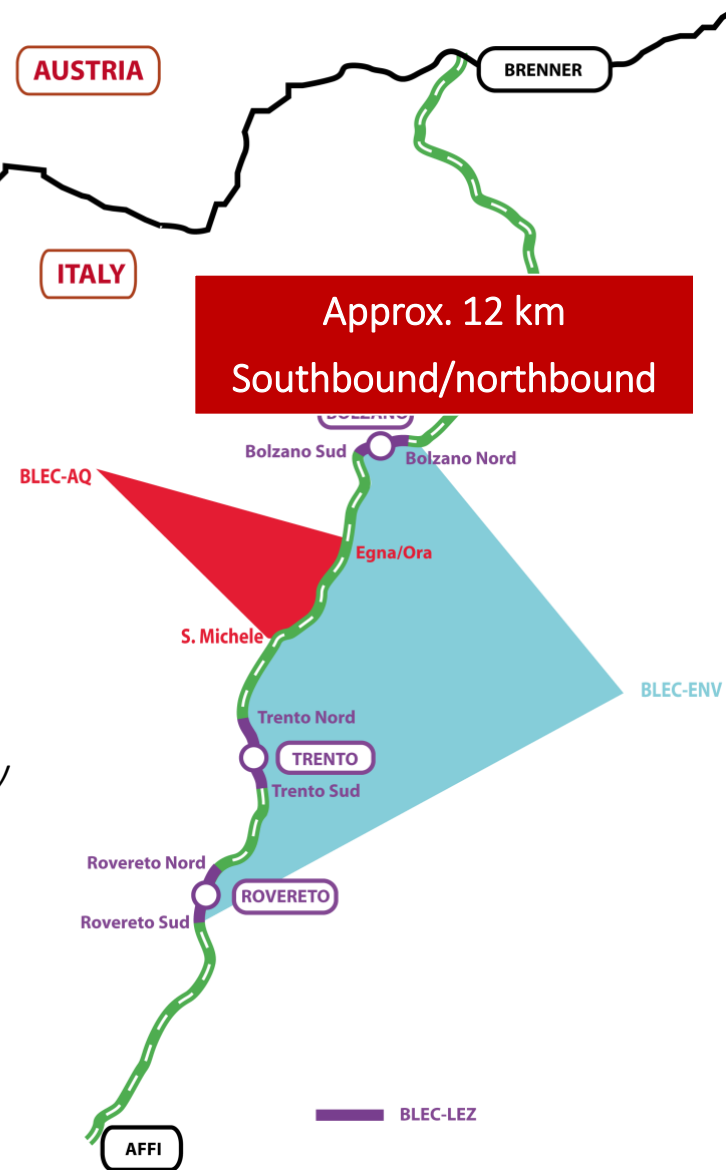
Correlation air quality data vs traffic data



2° EXPERIMENTAL POLICY

Under conditions of high atmospheric pollution:
dynamic reduction of speed limits for passengers cars

- Speed limits reduction from 130 km/h to 110 km/h - 100 km/h - 90 km/h (even variable speed limits within the same motorway stretch)
- Speed management according to the measured air quality conditions (reactive system)
- Speed management according to the foreseen air quality conditions (proactive system)



PROACTIVE SYSTEM

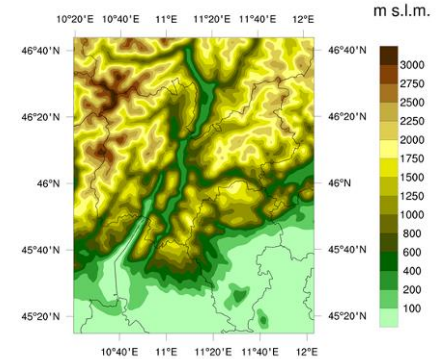
Traffic models and forecast

Emissions
(COPERT V)

Meteorological forecast
(WRF)

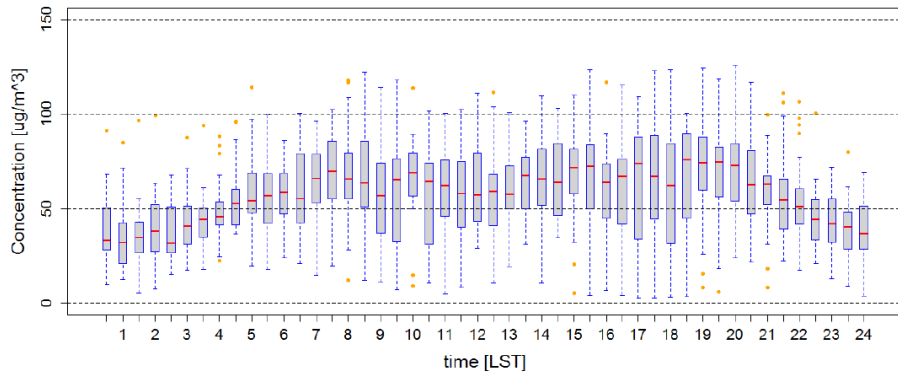
Air quality modelling and forecast
(CALPUFF, AUSTAL, AERMOD, RLINE models)

Implementation of POLICIES (speed limits reduction):
proactive system, supported by DSS

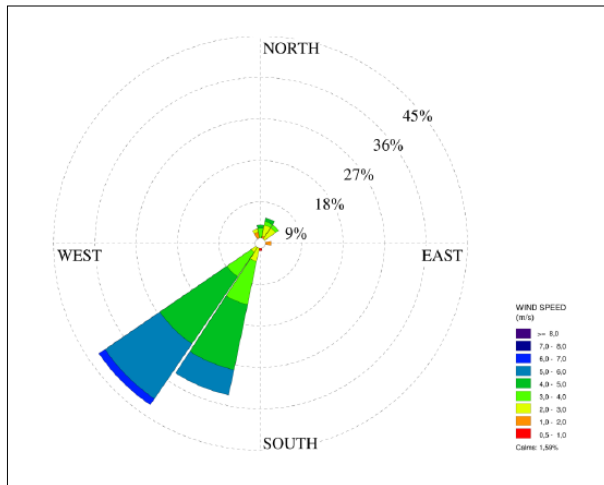


FIRST ANALYSIS

Day without test



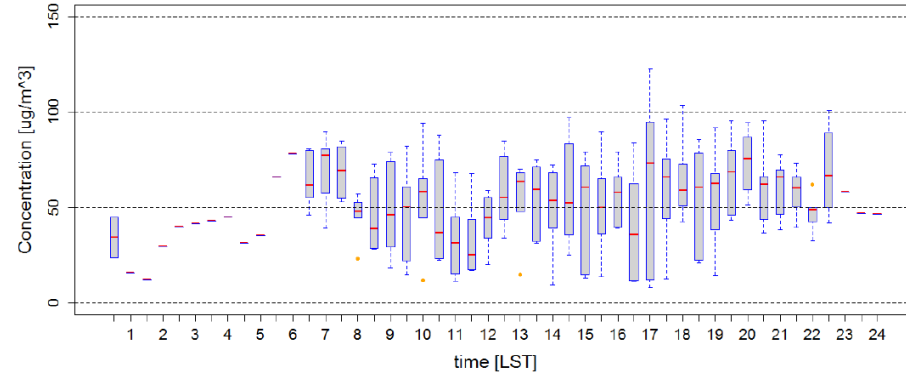
Average NO₂ = 56,3 µg/m³



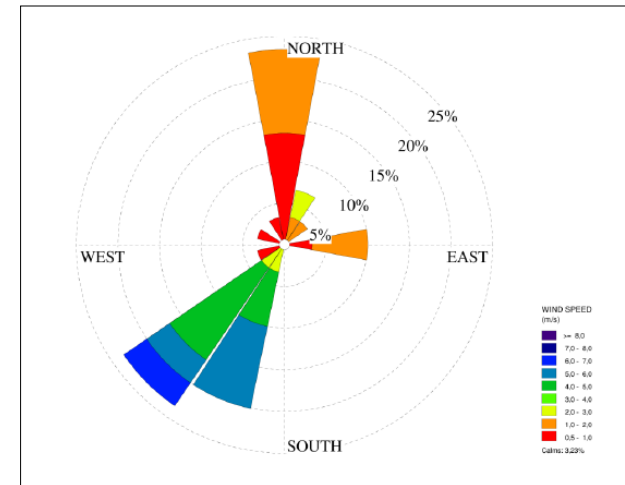
Pay attention to
the effect of the
meteorological
conditions

Wind
3PM-7PM

Day with test (speed reduction)



Average NO₂ = 53,6 µg/m³

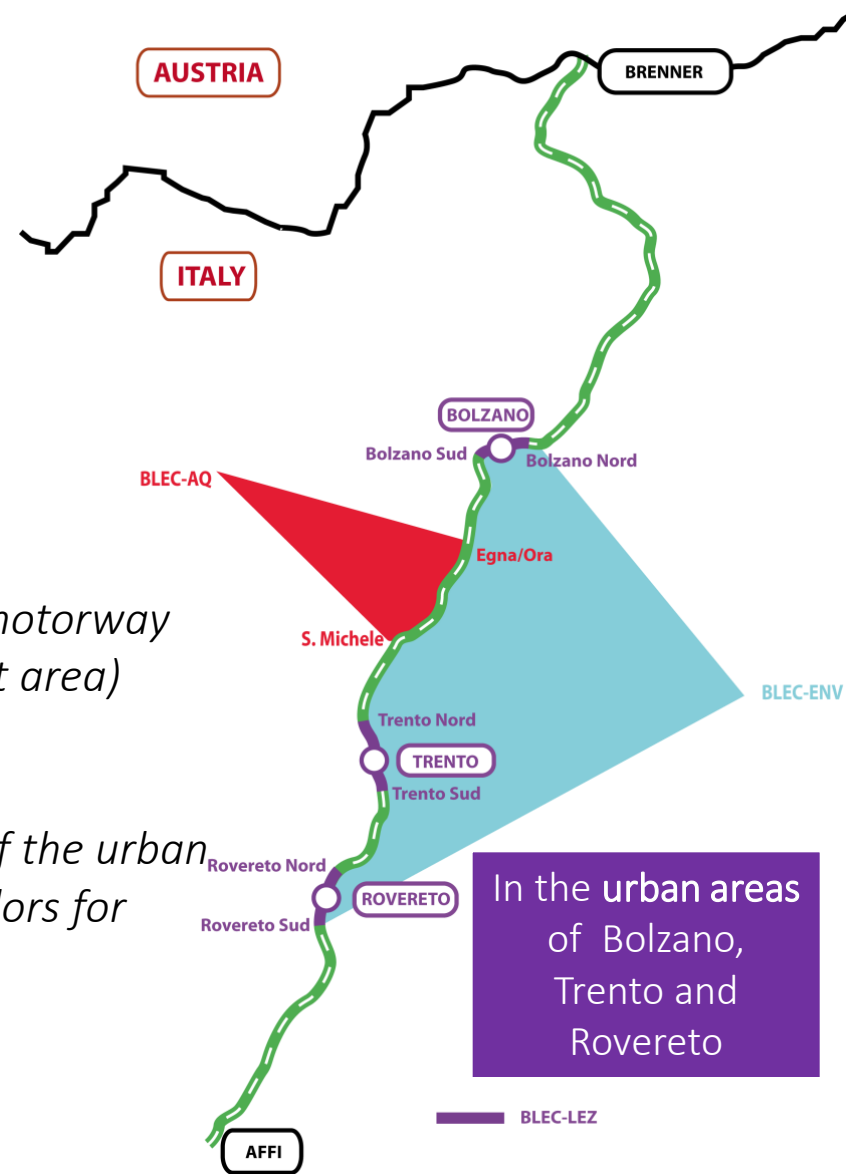


3° EXPERIMENTAL POLICY

Under traffic conditions in urban areas:
integrated use of information channels (VMS,
apps, etc.)

• *Interaction between traffic management centers: motorway ones and urban areas ones (main cities in the project area)*

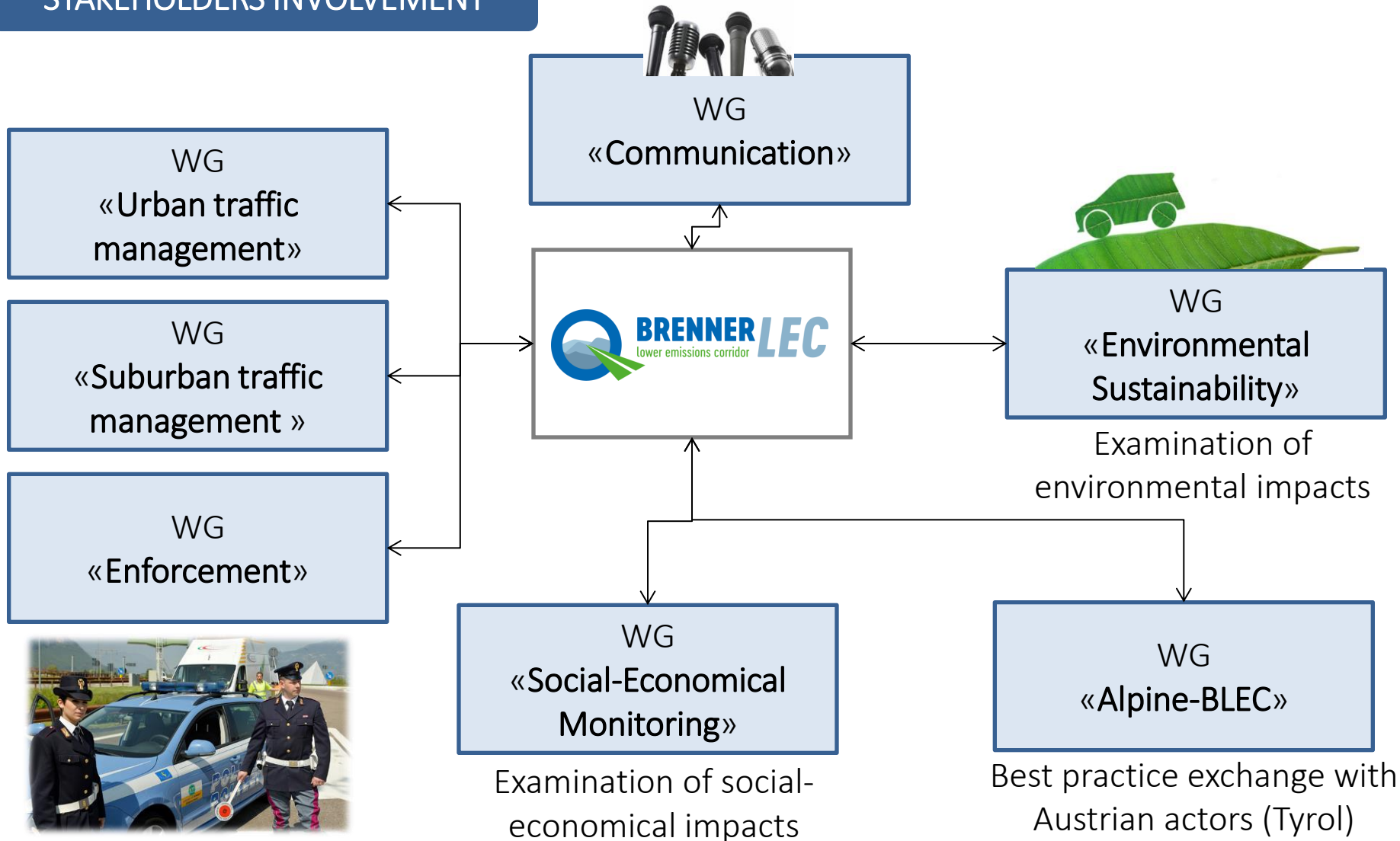
• *In order to optimize the use of the motorway and of the urban and suburban network → creation of dynamic corridors for traffic flows crossing urban areas*



In the urban areas
of Bolzano,
Trento and
Rovereto

BLEC-LEZ

STAKEHOLDERS INVOLVEMENT



DISSEMINATION



Press conference

Website www.brennerlec.life



Posters



Media activities



Flyers

NETWORKING

Call for papers for the **Air Pollution 2018** conference

Aim: set up a session on **EU-LIFE projects** dealing (even partly) with the themes of «Air pollutants» «Air quality monitoring»

Reason: to **share** ideas, **exchange** feedbacks, **improve** the quality of EU-LIFE projects and **disseminate** results → publication of proceedings on the **open-access** journal «WIT Transactions on Ecology and the Environment»



For more information

- Contact person: Marco Schiavon (marco.schiavon@unitn.it)
- Conference website: <http://www.wessex.ac.uk/conferences/2018/air-pollution-2018>



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THANKS FOR THE ATTENTION

low emissions
improve air
Quality