

Deliverable D.1.5.2

Recommendations on how to improve and finalise the ‘H2MA planning tool’

Activity 1.5

October, 2023



DOCUMENT CONTROL SHEET

Project reference

Project title	Green Hydrogen Mobility for Alpine Region Transportation
Acronym	H2MA
Programme priority	Carbon neutral and resource sensitive Alpine region
Specific objective	SO 2.1: Promoting energy efficiency and reducing greenhouse gas emissions
Duration	01.11.2022 – 31.10.2025
Project website	https://www.alpine-space.eu/project/h2ma/
Lead partner	KSSENA

Short description

H2MA brings together 11 partners from all 5 Interreg Alpine Space EU countries (SI, IT, DE, FR, AT), to coordinate and accelerate the transnational roll-out of green hydrogen (H2) infrastructure for transport and mobility in the Alpine region. Through the joint development of cooperation mechanisms, strategies, tools, and resources, H2MA will increase the capacities of territorial public authorities and stakeholders to overcome existing barriers and collaboratively plan and pilot test transalpine zero-emission H2 routes.

Document details

Full document's title	Organisational and thematic guidelines for the joint development of the 'H2MA planning tool'
Version	V1
Author/s	Metropolitan city Of TORINO (Giuseppe Estivo)
Organization/s responsible	Metropolitan City of Torino
Delivery period	2

IMPRINT

This document is issued by the consortium formed for the implementation of the **H2MA** project, and made by the following partners:

- PP1 (LP) Energy Agency of Savinjska, Saleska and Koroska Region (SI)
- PP2 BSC, Business Support Centre, Ltd, Kranj (SI)
- PP3 EUROMÉTROPOLE DE STRASBOURG (FR)
- PP4 Lombardy Foundation for the Environment (IT)
- PP5 Cluster Pole Véhicule du Futur (FR)
- PP6 Turin Metropolitan City (IT)
- PP7 Climate Partner Upper Rhine Valley (DE)
- PP8 4ward Energy Research Ltd (AT)
- PP9 Lombardy Region (IT)
- PP10 Codognotto Austria (AT)
- PP11 Italian German Chamber of Commerce Munich-Stuttgart (DE)

Responsible Partner/s for the compilation of this document

- PP6 Turin Metropolitan City (IT)

GLOSSARY

IEA	International Energy Agency
OPEC	Organization of the Petroleum Exporting Countries
GHG	Green-house gas
FCEV	Fuel Cell Electric Vehicle
BEV	Battery Electric Vehicle
NUTS	Nomenclature of territorial units for statistics (Eurostat)
HRS	Hydrogen refuelling station
OEM	Original equipment manufacturer (OEM)
EUSALP	EU Strategy for the Alpine Region
TEN-T	Trans-European Transport Network

TABLE OF CONTENTS

GLOSSARY.....3

ABSTRACT.....5

1. DELIVERABLE 1.5.1.....6

2. KEY PARAMETERS..... 6

3. TURIN WORKSHOP.....8

4. RECCOMADATIONS.....10

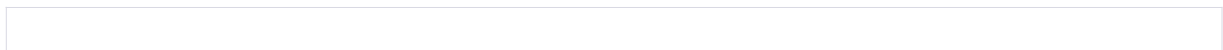
ANNEXS..... .FROM18

ABSTRACT

H2MA's **integrated planning** and implementation solutions for **H2 mobility** will enable the synchronised deployment of transnational infrastructure for **freight and passenger transport** (heavy-duty trucks and railway in the short-term, maritime and aviation in the long-term), in tandem with **urban mobility planning** (buses), amplifying the macro-regional impact of currently siloed initiatives. As a result, H2MA will contribute to **climate change mitigation** (by curbing GHG emissions), reduce **air and noise pollution**, and further support the growth of Alpine space as a sustainable transportation hub, significantly advancing the shift to low-carbon mobility

In the context of Activity 1.5 titled “Joint development of the ‘H2MA planning tool’ to cooperatively design transnational green H2 mobility supply and distribution networks across the Alpine space”, **Region Lombardy** will develop a prototype of the **H2MA tool**; based on **CMT’s guidelines**, partners with observers and EUSALP members will convene in Turin to review and discuss it. CMT will summarise **the workshop results** (recommendations) on how to customise and improve the tool according to partner areas’ specificities. RL will fine-tune and deliver the final version, to support the **design of infrastructure networks of green H2 mobility** as well as the optimisation of key nodes location (e.g., stations).

In particular about Deliverable 1.5.2 **CMT** will analyse participants’ suggestions to deliver **recommendations** on how to improve and **finalise the tool**, focusing on how it could integrate all **key parameters** (e.g., technical, territorial).



1. DELIVERABLE 1.5.1 – THE GUIDELINES

The Metropolitan City of Turin (CMT) has developed these guidelines starting from the experience gained in the implementation of Sustainable Mobility plans for people transport and goods, for which by national legislation it is charged of implementation.

Deliverable 1.5.1 follows the publication of Activity Deliverables 1.1. and 1.3, so its development is in line with guidance provided by these documents.

CMT's guidelines give a definition of H2MA Planning Tool as a computer tool designed to support decision-makers who want to define a local strategy for hydrogen mobility development, thus contributing to the creation of Hydrogen Routes within the Alpine Space Region.

As suggested by Deliverable 1.3.1 the tool will allow data and information to be uploaded and returned in graphical form through a development of a multilayer geographic portal based on the utilization of a GIS (Geographic Information System)

Guidelines define the structure of the toolkit structured into a multilayer format, in which main topics, information and data are:

- H₂ potential demand
- H₂ infrastructures
- H₂ policies and strategies

Final H2MA toolkit output of Deliverable 1.5.1 is a diagram, aimed to understand the hydrogen production and distribution technology potential and degree of maturity already achieved for goods and people mobility, staying within the boundaries of project scope.

2. KEY PARAMETERS

Following the presentation of Deliverable 1.5.1 during the Monthly Virtual meeting on June 6th 2023, the entire partnership agreed to create an expert group to assess the parameters, information and data to be included in the H2MA toolkit

The expert group met 6 times, thus defining 10 main parameters on which an information database will be built, meaning;

1. Spatial distribution of H₂ demand in H₂ mobility;
2. Off-site production on H₂ (H₂ production)

3. HRSs
4. H₂ pipeline routes
5. End price of H₂ for end user on the location of HRS
6. H₂ transportation costs
7. H₂ production cost
8. TEN-T Corridors locations
1. 9.National & Regional Strategies
9. TEN-T corridors - Existing filling stations (diesel, gasoline, CNG, LPG)

Regarding the structure of the information and data underlying these parameters, please refer to the attached table (Annex 1)

During the expert group meetings, the setting of the future Turin workshop agenda was also defined, which was developed in the view to better understand the demand of passenger and freight transport and trends on energy transition in general and related hydrogen impacts.

3. TURIN WORKSHOP

As per directions of the expert group, CMT designed an agenda (see Annex 2) based on three panel groups: public transport, freight transport, and the energy transition to hydrogen.

The three panels, moderated by Mr. Guido Piccoli, had following outcomes

Panel 1: Public Transport

Mrs Elisa Bracco of the Piedmont Mobility Agency presented the of public transportation in the Piedmont Region (Annex 3), the existing services, and financial support measures for public transportation via regional and national funds.

Following a round table discussion attended by Mrs Elisa Bracco , Mr. Gian Luigi Berrone of the Piedmont Region and CMT officer Giuseppe Estivo pointed out the availability of public economic funds for public transport companies for upgrading their vehicle fleets adopting low emission vehicles.

Those funds have already been invested mainly in urban areas for the purchase of zero-emission vehicles. For buses used for sub-urban services, market is not expressing today an adequate offer of zero-emission vehicles ensuring enough mileage, such as fuel cell vehicles.

In conclusion, It has been highlighted that, in the case of public transport but for logistic too, it would be envisaged that charging stations, both power and H2, are inside the bus vehicle depot rather than open-to-public stations on road network .

Panel 2: Freight and logistic

In his presentation, Mr. Guido Piccoli outlined the needs of freight and logistic sector (see ANNEX 4).

This was followed by a discussion attended by Mr. Matteo Benvenuti. representing CODOGNOTTO, Mr. Nicola Bassi representing the engineering company FITCONSULTING that, in support of CMT, is working on Urban Logistics plan of the metropolitan area of Torino, Mr. Oliver Jochum representing STRATEGISCHE PARTNER – KLIMASCHUTZ AM OBERRHEIN e. V. and Gerald Miklin representing the EV Union

From this discussion emerged the importance for logistics companies to modernize and upgrade their fleets facing the introduction of new environmental local and national policies, the latter aimed to achieve the EU 2050 air quality and carbon emissions goals.

However, not only environmental but also economic sustainability targets have to be pursued but, presently, public support funds are allocated to people public mobility and

the fewer to freight and logistic vehicles upgrade, so that investments are most often entirely borne by logistics companies.

A lot of importance has been given to the complexity of the situation regarding the transition to hydrogen vehicles. While it is true that hydrogen remains the preferred choice of the European Commission, it is equally true that there are currently issues with production shortages, supply, and the availability of vehicles that use it as a fuel.

All the more reason, then, to coordinate every possible action to ensure that the production and dissemination of hydrogen reach the critical mass necessary to make the adoption of hydrogen vehicles no longer an uncertainty for companies.

Panel 3: Hydrogen and energy transition

Mr. Massimo da Via' of ENVIROMENT PARK Spa, SCIENCE AND TECHNOLOGY PARK OF TORINO, (*He represents the company inside the Hydrogen Italian Association H2IT in WG "permitting and regulation", the National Energy cluster CTNE in WG "Hydrogen strategies", and EUSALP AGs#2 "economic development" and AG#9 "energy" as technical expert in support of Regione Piemonte*) has given a keynote speech illustrating the EU and international market scenario on hydrogen use in energy, mobility and industrial sectors. It emerged that, despite targets have been clearly established by EU policies, hydrogen is today a matter closer to industrial concerns, and the market responses more oriented to "hard to abate" needs than the mobility ones.

Those outcomes have been the object of a round table attended by Mrs Miriam Pirra of PIEMONTE INNOVA FOUNDATION, prof. Fabrizio FATTORI of POLITECNICO DI MILANO, Matevž Šilc of KESSNA and Matteo Gianpaolo of SEA – Airport Milano Malpensa highlighting the needs of further support to innovation in order to make hydrogen more competitive both at production and final use sides.

The list of attendees is given in Annex 6

4. Recommendations

The Turin workshop emphasized that the development of the tool will have to take into account the needs of end users.

The end users of the tool will mainly be public administrations, that will use it to support the definition of a territorial hydrogen strategy for use in the passengers and freights transport sectors. Nevertheless, the tool would be also used by private entities, and especially by public transport companies and logistics companies.

The latter two will use the tool to better design their internal development strategy for progressively replacing fossils fuelled vehicles with zero-emission ones such as hydrogen FC vehicles.

The aim is also to assess economical sustainability of such transition , analysing economic incentives needs and the adoption of support measures in the forms of policies and other admin acceleration measures by central and/or local government agencies.

Having H2MA project the mobility of people and goods as main topics, planning will profit of the European Union tools and best practise and, in particular, guidelines defined by ELTIS (<https://www.eltis.org/mobility-plans/sump-guidelines>) widely used in mobility planning in the Union.



In order to accomplish with ELTIS procedures, H2MA toolkit should primarily define:

The H2MA project is co-funded by the European Union through the Interreg Alpine Space programme

1. The area of interest
2. The initial state of implementation
3. The definition of the target scenario
4. The optimization of hydrogen infrastructure for mobility.

Regarding the area of interest, the tool will have to allow an analysis on a regional or district scale, corresponding to the standardized NUTS2 and NUTS3 areas. On this area, the toolkit would have a pre-loaded database of some basic data related to the area, which however can be updated by the user.

As far as the current state is concerned, the toolkit will allow a set of standardized data to be extracted from its database, and in particular parameters 2, 3, 4, 8 and 10 as developed by the expert group.

Furthermore, the toolkit should allow the entry of new data that by authorized user and a graphic restitution of datasets.

In order to facilitate the creation of a stable database it is necessary that data be readily available in standardized formats that can be easily uploaded on geographic information systems such as GIS or alike, i.e. *Openstreetmap*[™] or *Goggle*[™] maps.

With regard to scenario definition the toolkit should allow the input of information expressing the users enquiring it at spatial level, such as parameters 1 and 2 elaborated by the expert group.

Tool should take into account and include targets established by other policy planning tools such as regional air quality plans, people and goods transport plans and Urban mobility plans.

The toolkit will also make it possible to define policy targets such as:

- the reduction in the number of endothermic-powered vehicles
- the type of hydrogen production
- the spatial distribution of H2 demand in given areas

Furthermore, to complete the definition of the scenario the toolkit will provide guidance on the parameterization of investment and production costs.

Regarding the optimization of the distribution of hydrogen for mobility, the toolkit, through the analysis of specific data, will provide indications on amount of hydrogen

needed, suggesting the necessary infrastructure network for its production and distribution in a given planning area of interest. The restitution will be in both graphical and tabular form.

The developed tool will be tested by project partners in subsequent project phases. The test will be able to give further indications that will be collected in tool's guidelines, with regard to strategies and good practises already adopted at the national and local level in support of the use of hydrogen in the field of transport mobility.

The test may also allow design of recommendations on the involvement of stakeholders over specific topics, such as production, distribution, or scope of use.

ANNEX 1

Nr.	Parameter/ Input	Values						Existing	Planned
1	Spatial distribution of H2 demand in H2 mobility	Coloured areas - Kg/day	Regional fleet size of HDV (also LH2 trailers/CH2trailers), LDV and H2 buses	10%, 20%, 30% of current combined number	by 2030, 2040, 2050			YES	YES
2	Off-site production of H2 (H2 production)	Long.&Lat.	Power (MW)	Production-Kg/day	ones, Date of the implementation, Date of the operation			YES	YES
3	HRSs	Long.&Lat.	Power (MW)	Daily capacity (kg/day)	Date of the implementation, Date of the operation	On-site production or the H2 is imported	Colour of the H2? TBD in the development process...	YES	ONLY Regional /optimal
4	H2 pipeline routes	Coloured routes	Type (transmission or distribution)?	Pressure? (bars)	Name	GWh/day (if the capacity right)		YES (D.1.1.2 and H2inframap)	YES (H2inframap as an external database)
5	H2 for end user on the location of H2	€ per kg?						YES	
6	transportation costs	€ per km/CNG	€ per km/LHG	€ per km/pipeline /bars				YES	/
7	production costs	€ per kg?	regional					YES	/
8	corridors locations	Coloured routes	Name of the corridor	Number of km in country?				YES	NO?
9	National & Regional strategies	Colored area in GIS	Full name and owner	summary of the main objectives? (Electrolyzer capacity, FCEVs)				YES	NO?
10	corridors - Existing filling stations (diesel, gasoline, CNG, LPG)	Long.&Lat.	Name	Size in m2	Only on the corridors and in 10 km range or else			YES	NO?



H2MA

“Green Hydrogen Mobility for Alpine Region Transportation”

H2MA Project meeting Agenda

and

Workshop on organisational and thematic guidelines for the joint development of the ‘H2MA planning tool’

Date: 11th and 12th October 2023

Metropolitan city of Torino Palace, Corso Inghilterra 7 Torino - Italy



For any additional information please contact us at:

Giuseppe Estivo

giuseppe.estivo@cittametropolitana.torino.it (3509074449)

Registration: <https://shorturl.at/vwEGN>



Wednesday, 11th October 2023

Venue: Metropolitan City of Torino Palace – Corso Inghilterra, 7 – Torino

Sala Comuni – 1st floor

Project meeting

14:00 Registration

14:15 – 14:30

- Greeting and Welcom from **METROPOLITAN CITY OF TORINO** (by CMTO)
- Greeting and welcome from leader Partner **KSSENA** (by Kssena)

14:30 - 15: 30

- Cross-border Team bulding (**by Codognotto Austria**)

Coffe break

15:45 – 16:45

- Cross border - partner practice on H2MA (**by Codognotto Austria**)

16:45 – 17:45

Activity 1.5 Joint development of the ‘H2MA planning

- D.1.5.1 Organisational and thematic guidelines & D.1.5.2 Recommendations on how to improve and finalise (**by Giuseppe Estivo CMTO**)

Activity 1.6 Integrating H2MA knowledge and resources into partnership territories’ H2 and mobility strategies

- D.1.6.1 Guidelines on how to update and develop (**by FLA**)

18:30 - 20:00

Guided Tour of Torino center

Start point: Piazza Castello fronte Teatro Reggio entrance
<https://maps.app.goo.gl/9o9cbcZUVhtEZWjv8>

20:00

Dinner

Venue: L’Osto del Borg Vej - Via Torquato Tasso, 7, 10122 Torino TO
<https://maps.app.goo.gl/KM3aM314rBu7VdeV7>

Thursday, 12th October 2023

Venue: Metropolitan City of Torino Palace – Corso Inghilterra, 7 – Torino

Meeting room 15th floor

Virtual room: <https://cittametropolitanatorino.webex.com/cittametropolitanatorino/j.php?MTID=m988ac9772a6dc9b1b3f4fc350a0d82e8>

09:00 – 10:00 **Morning internal Project meeting**

Activity 1.5 Joint development of the 'H2MA planning

- D.1.5.3 H2MA tool for transnational green H2 mobility planning Tool (by Lombardy Region)

Public Workshop

10:00 -10:15 - *Registration and welcome coffe*

10:15 - 10:30 - *Greeting and Welcom from **METROPOLITAN CITY OF TORINO** (by Deputy Major Jacopo Suppo)*

10:30 - 11:00 - *Presentation video of H2MA project (by Kssena)*

Tematic Sessions - Chairman Guido Piccoli

11:00 -11:45 - session 1st: The Pubblic Transport

- Keynote speech by Agenzia della Mobilità Piemontese
- Round table with experts and stakeholder

11:45 -12:30 session 2nd: The Freight Transport

- Keynote speech by Codognotto Austria Expert (TBD)
- Round table with experts and stakeholder

12:30 -13:15 session 3rd: Hydrogen energy transition

- Keynote speech by Envipark
- Round table with experts and stakeholder

13:15 -13:30 Conclusion by Kssena and CMTO

13:30 – Light Lunch - *hall conference room - first floor*

Afternoon internal Project meeting

14:30 - 17:00

The **H2MA** project is co-funded by the European Union through the Interreg Alpine Space programme

- *wrap-up and take-away from the three sessions*
- *project update and conclusion*

How to get to TORINO:

by plane: Torino airport - <https://www.aeroporto torino.it/it>

transfer From Torino airport to Torino center:

- by taxi (<https://www.aeroporto torino.it/en/tomove/parking-transport/by-taxi>)
- by Bus (<https://www.aeroporto torino.it/en/tomove/parking-transport/by-bus>)
- by Carsharing (<https://www.aeroporto torino.it/en/tomove/parking-transport/car-sharing>)

By plane: Malpensa Airport (<https://www.milanairports.com/it>)

transfer From Torino airport to Torino center:

- by train: <https://www.trenitalia.com/en.html>
- by bus: <https://torino.arriva.it/en/airport-line-torino-malpensa-airport/>

by train: Torino Porta Susa (high-speed train station)

<https://www.trenitalia.com/en.html>

<https://www.italotreno.it/en>

How to get to METROPOLITAN CITY OF TORINO PALACE:

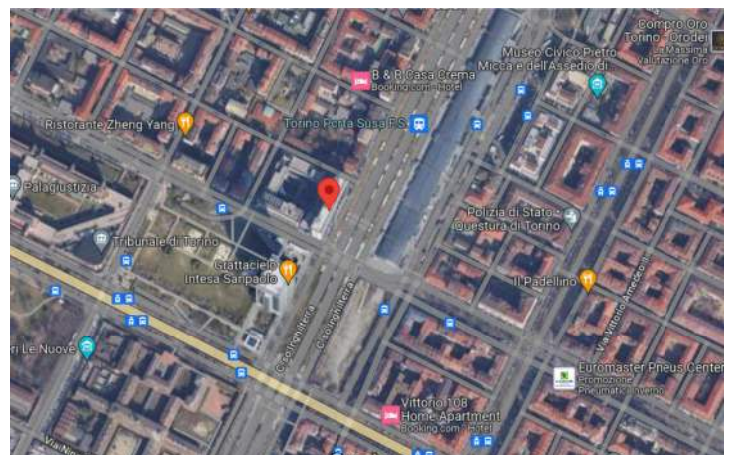
C.so Inghilterra, 7, 10138 Torino TO

<https://goo.gl/maps/v2kH2dq1J1HqYLyF8>

Public transport and sharing mobility:

you can use the webapp:

<https://www.muoversiatorino.it/>



Hotel and Accommodation:

You can use the main web portal to book a room or accommodation.

The Metropolitan city of Torino Palace is easily accessible thanks to the PT service (Metro train, bus)

Touristic Information:

you can visit website: <https://www.turismotorino.org/en>

MOBILITY IN TURIN METROPOLITAN AREA

Project H2MA
Workshop October 2023



REGULATORY FRAMEWORK

National level

Legislative Decree n. 422 November 19, 1997 - Awarding of local public transport functions and tasks to the regions and local authorities



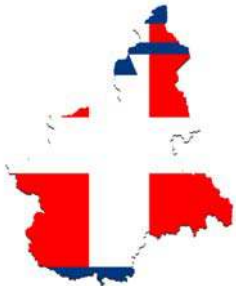
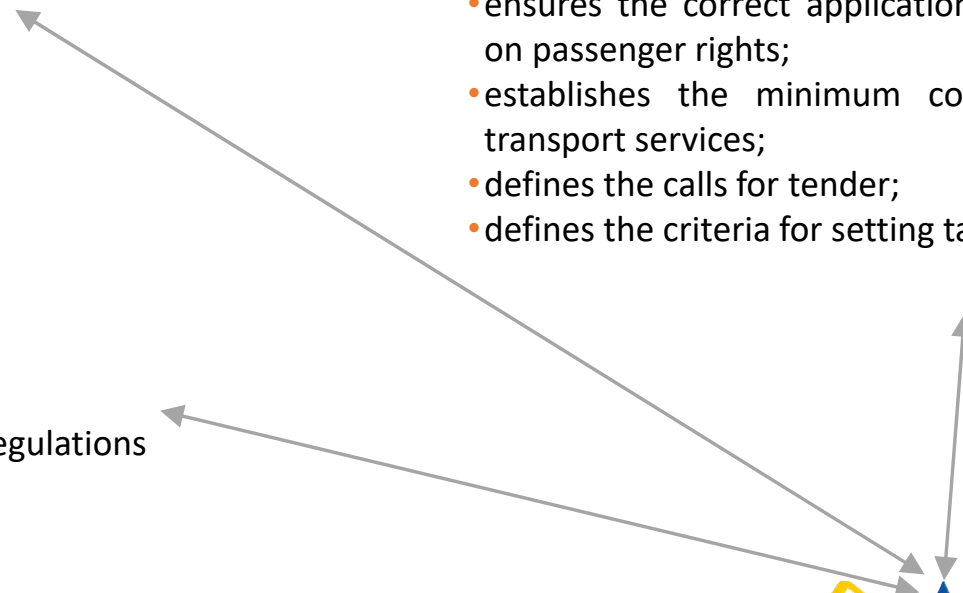
National level

The Transport Regulatory Authority by issuing its regulations:

- ensures the correct application of the European Regulation on passenger rights;
- establishes the minimum conditions for the quality of transport services;
- defines the calls for tender;
- defines the criteria for setting tariffs.

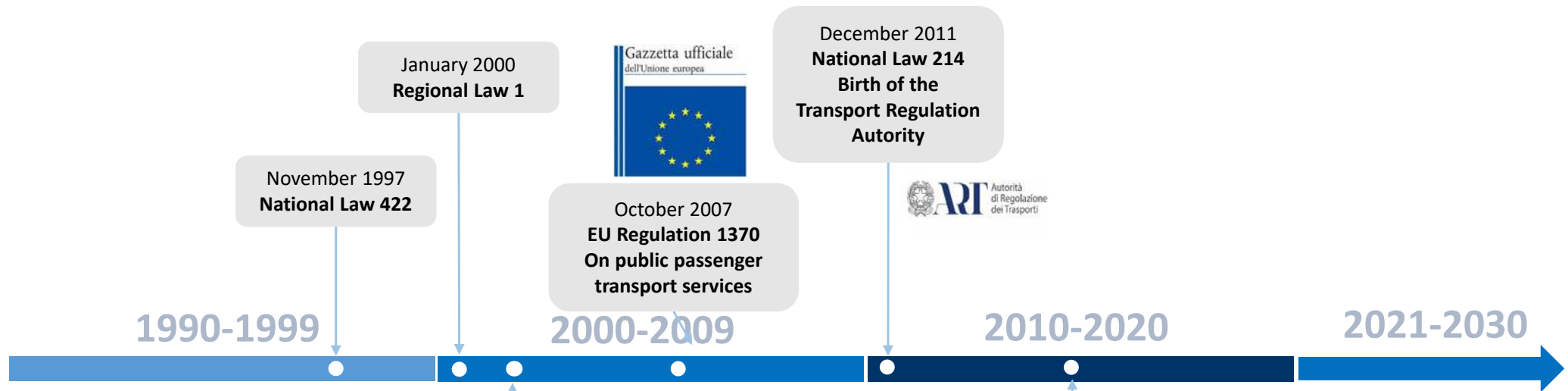
Regional level

L.R. n.1 January 4, 2000
Local public transport regulations



OUR HISTORY

• TIME LINE



The AGENZIA DELLA MOBILITA' PIEMONTESE [AMP] is a public body. It exercises, in the form of consortium, the functions of local authorities on public transport.

It is the only body in Italy organized at a regional level.



what has changed for AMP?

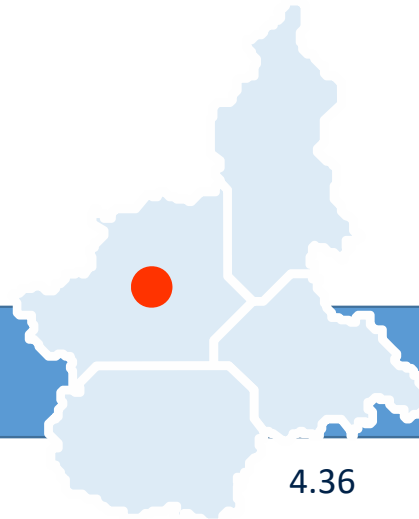
TERRITORIAL COMPETENCE



32
MUNICIPALITIES

Torino Metropolitan Area

1.56 **INHABITANTS**
(millions)
838 **SURFACE**
(km²)
1851 **DENSITY**
(inhabitants/km²)



1181
MUNICIPALITIES

Piemonte Region

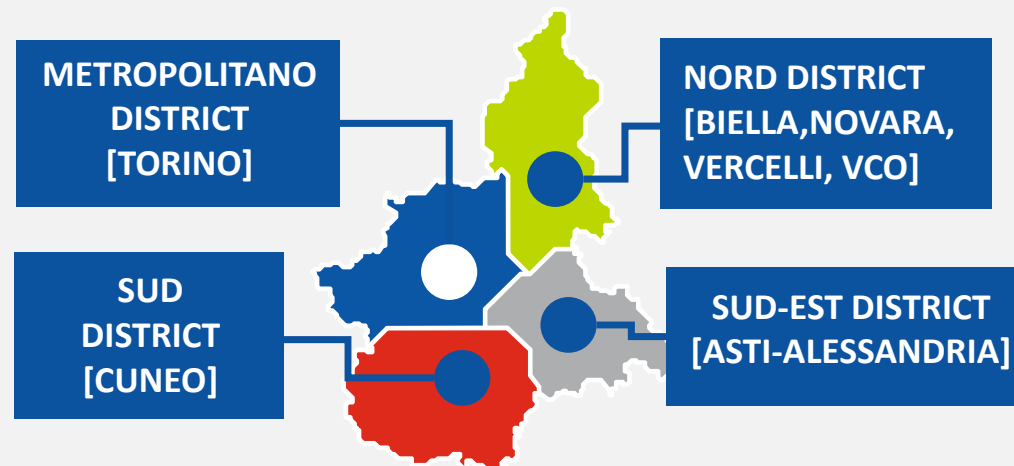
4.36 **INHABITANTS**
(millions)
25.387 **SURFACE**
(km²)
174 **DENSITY**
(inhabitants/km²)
886.837 **Turin inhabitant**
16 **Main cities**

- MISSION & FUNCTIONS

The AMP has the objective to promote the sustainable mobility in **Piemonte**, optimizing public transport system in all its components.

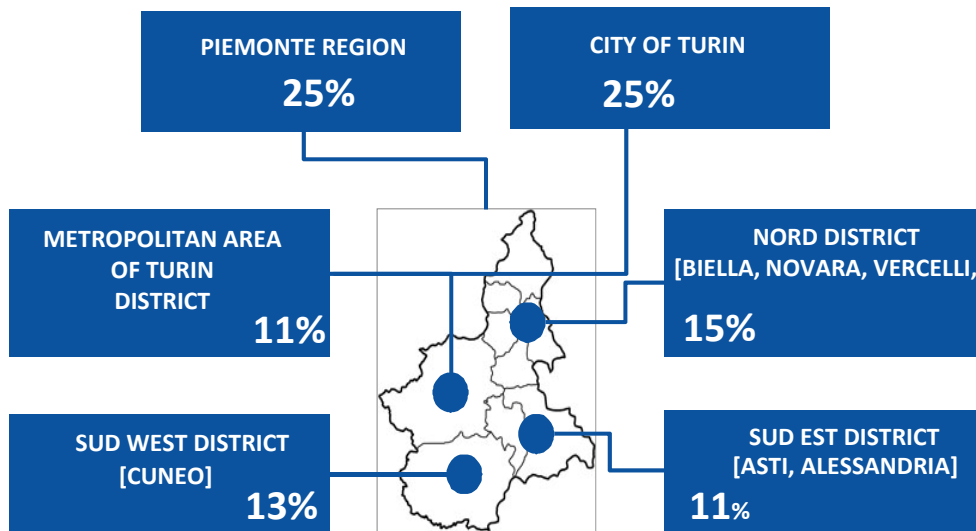
The regional area, from the point of view of contract management and programming of PT services, has been divided in **4 districts**, called "*Bacino*".

Therefore Agency operates by *District* according to the following structure:



- ADMINISTRATIVE ORGANIZATION

ADMINISTRATIVE BODIES SHARES



+ Technical Committee and 4 district technical committee

INTERNAL GOVERNMENT BODIES



GENERAL ASSEMBLY

President
1 member [Mayor or Councilor]
for each Municipality or
authorities of the consortium



BOARD

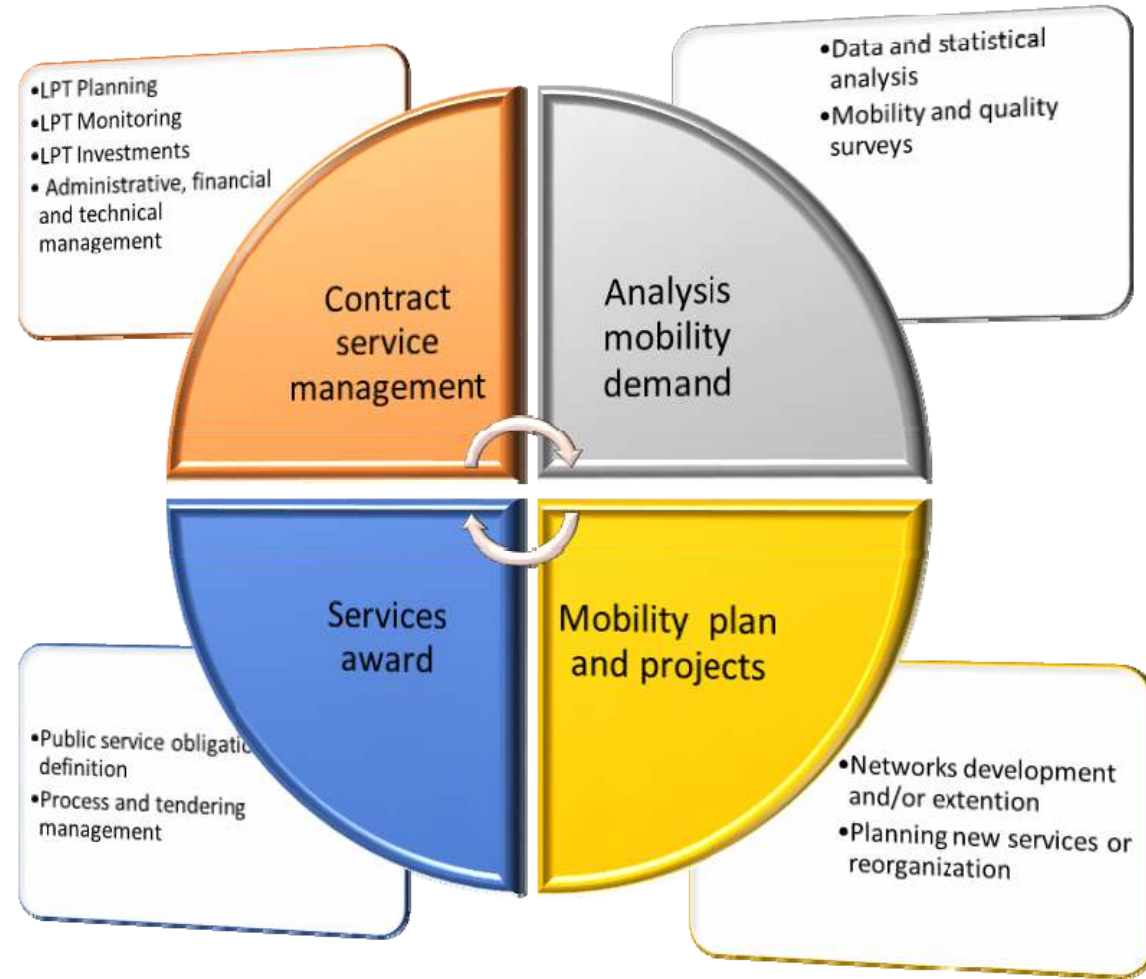
1 President
4 board member [1 for each district]



DICSTRICT ASSEMBLY

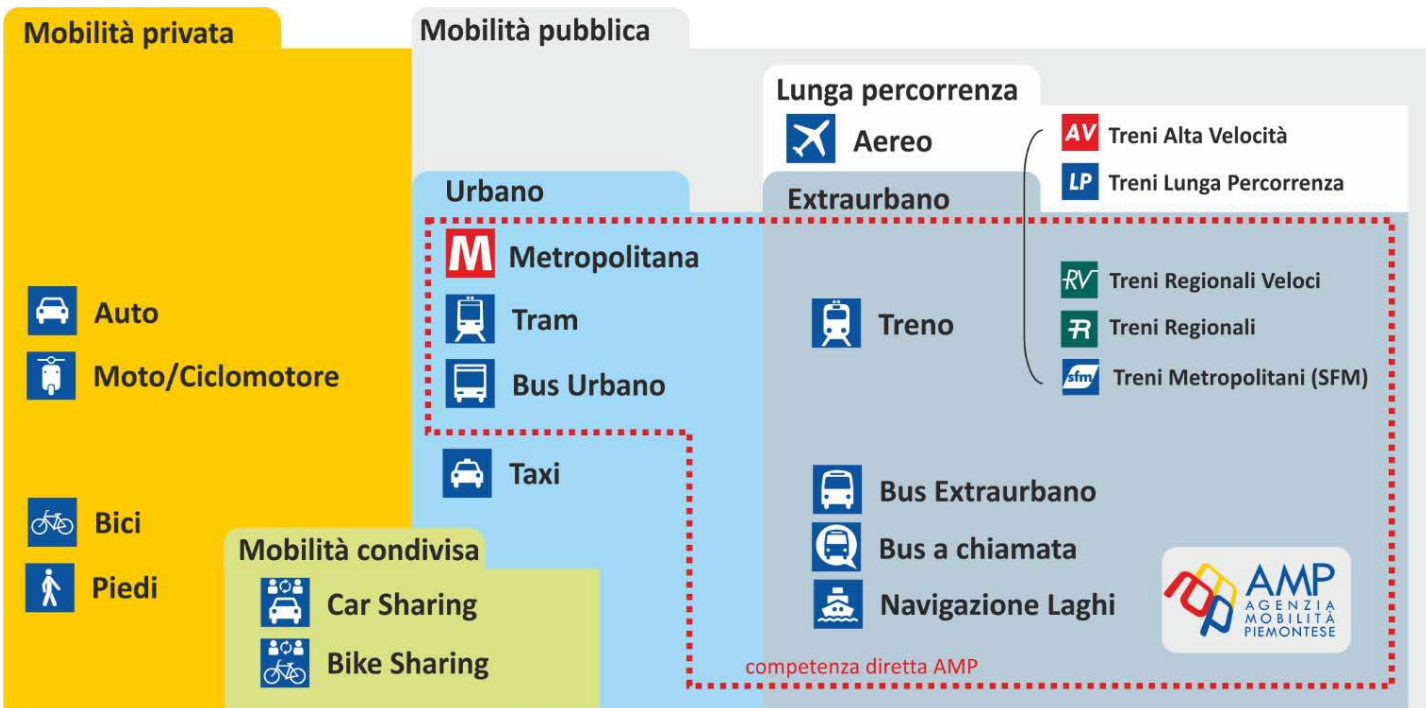
Specific district board member
1 member for each consortium
member belonging to the specific
district

Our core business



Who and what?

PTS COMPETENCE

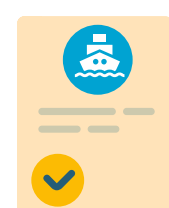
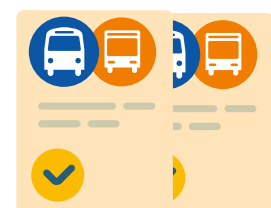
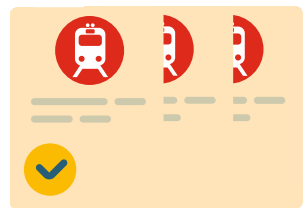
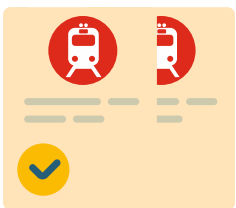
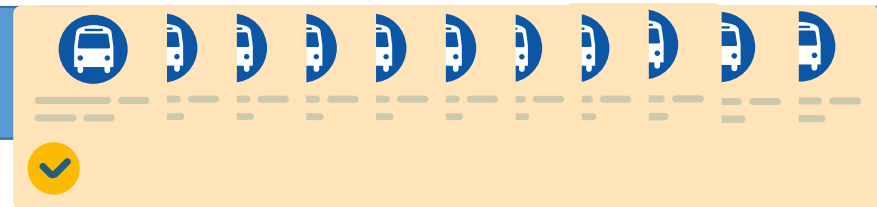
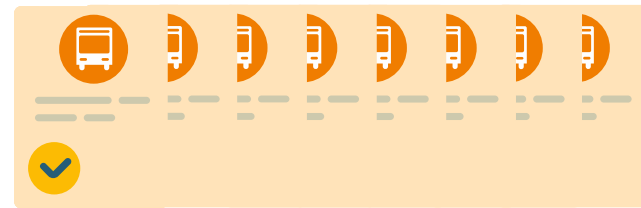
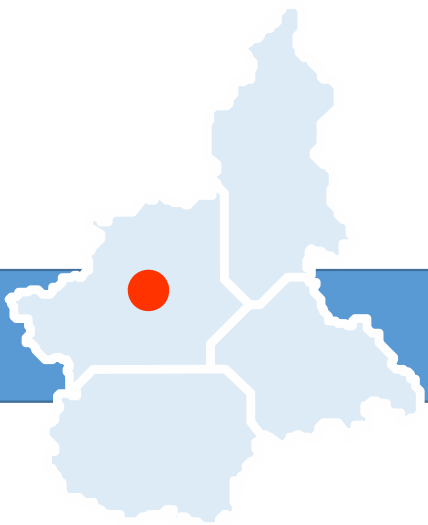


STAFF

25+5

NUMBER OF CONTRACTS

Where and how much?



- Metro Services
- Urban Services
- Interurban Services
- Railway Services
- Lake navigation Services

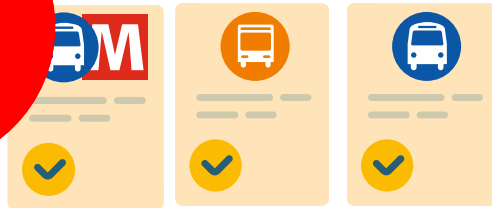
7 SERVICE CONTRACTS

28 SERVICE CONTRACTS + 51 PROGRAM AGREEMENT (Rural & Mountain area)

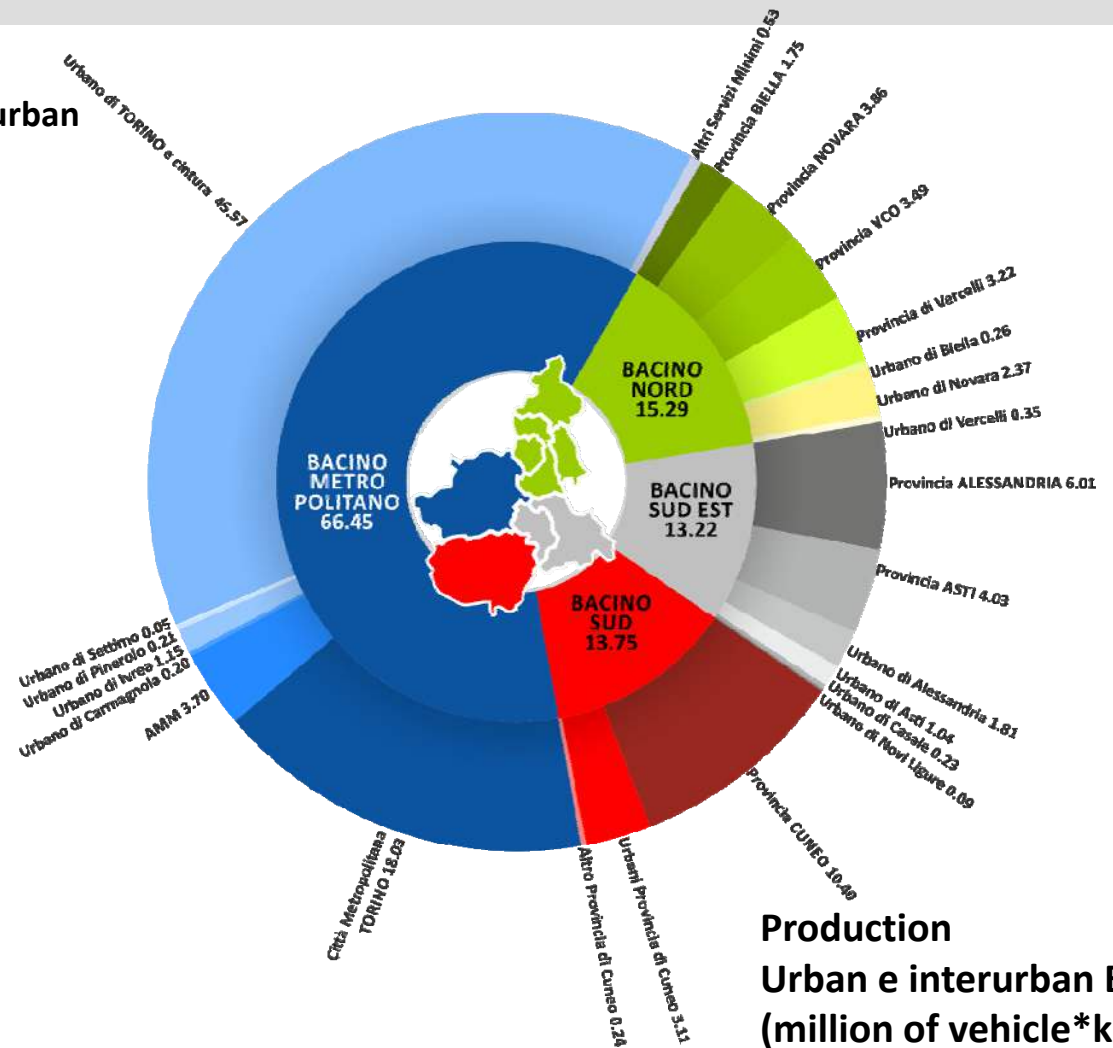
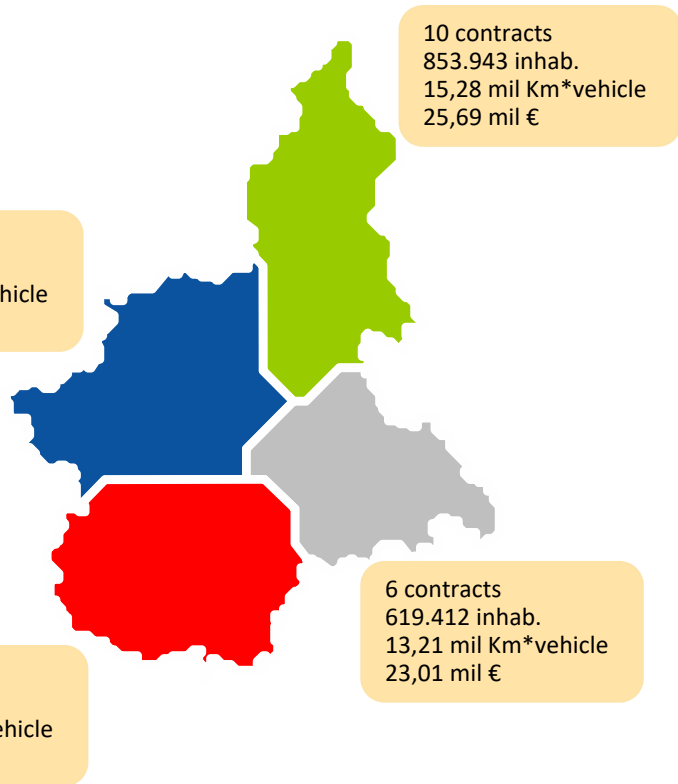
What we do

PRODUCTION

Where and how much?



AMP contracts Urban and interurban Services 2022



Production Urban e interurban Bus (million of vehicle*km)

What we do




How much and for what ?

- DATA ABOUT THE SERVICE 2022



Metropolitan Area of Turin



URBAN SERVICES

METRO	TRAM BUS
 1 linea	  8 Tram lines Torino 78 Bus lines Torino 25 Bus lines other 3 Municipality

INTERURBAN SERVICES

BUS	SFM
 162 lines	 8 lines

Production
Millions of vehicles*km per year

2,6	41,5
-----	------

22,6	6,0
------	-----

Passengers 2021
Millions per year

24,0	151,49
------	--------

13,9	16,2
------	------

Service compensation
€/km

8,18	1,69-3,34
------	-----------

1,32-1,49	10,3
-----------	------

Rest of the Region



BUS
 77 Lines in 13 cities

BUS
 347 lines

SFR
 4+16 RE + R lines

Production
Millions of vehicles*km per year

21,1

29,3

11,6

Passengers 2021
Millions per year

8,7

19,0

11,11

Service compensation
€/km

1,61-3,61

1,41-1,67

10,17

• ECONOMIC DATA

Who is founding the LPT?

Financial sources for services (train, bus, boat)	Annual Amount
National Transport Found	€ 480,00 mln
Regional Found	€ 53,00 mln
VAT recovery from the State	€ 15,00 mln
Other founds from local authorities	€ 11,80 mln

Financial sources for Co-financing the purchase of buses	Amount period 2019-2023
Fund for development and cohesion	€ 24 mln
Fund for the Region of Po plain	€ 36 mln
Specific ministerial fund MD n. 223/2020	€ 4,51 mln
Interministerial fund for National Strategic Plan of sustainable mobility ID n. 81/2020	€ 47,39 mln

Financial sources for investement in rolling stock	Amount
Regional Fund for investement in Regional Railway Service rolling stock	€ 256 mln
Operetor founds for investement in Metropolitan Railway Service rolling stock	€ 181 mln

Financial sources to purchase of boats	Amount
Founds allocated with MD n. 52/2018 and MD n. 387/2019	€ 494.000

H2MA Green Hydrogen Mobility for Alpine Region Transportation

Freight Session

Torino 12th October 2023

Guido Piccoli - CEO & Partner

+39.348.2291977 - guido.piccoli@alot.it - www.alot.it

Via Cipro 16 - 25124 Brescia - Italy

31/10/2023 - 1

Goods Documents Information

Space: collection - delivery

Time: departure Arrival

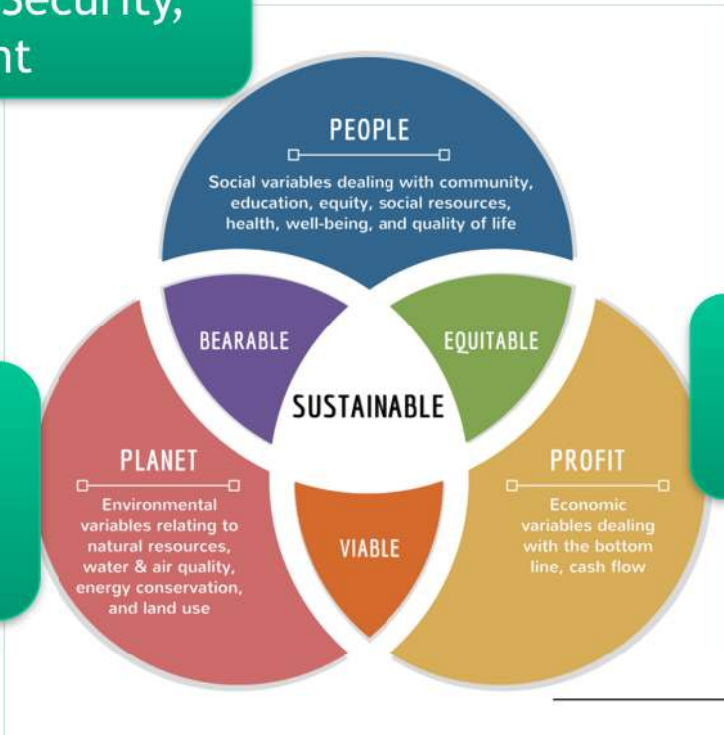
Logistics:

- The right **item**
- To the right **place**
- To the right **moment**

Social Sustainability
Customers, Staff, Security,
Employment



Environmental sustainability
Emissions, Energy,
Traffic, Noise



Economic Sustainability
Budget, Price, Cost,
Financial

Logistics trends



H2MA

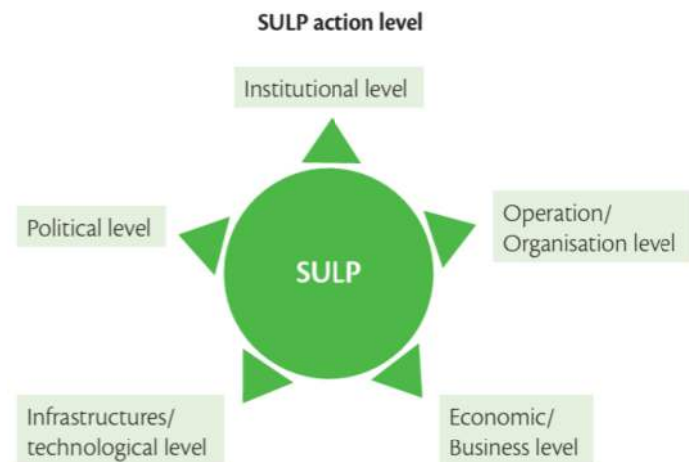
- **Digitalization** to improve operational efficiency, traceability of goods and optimization of routes: Internet of Things (IoT), artificial intelligence (AI), process automation, Blockchain, etc.
- **Environmentally sustainable logistics** to reduce CO2 emissions and environmental impact: optimizing routes, using low or zero emission vehicles (electric, hydrogen) and implementing more sustainable waste and energy management practices.
- **Intelligent warehouses using advanced technologies** (robotics, process automation, data analytics) for greater precision in inventory management, greater speed in operations and an overall improvement in efficiency.
- **E-commerce and Fast Delivery** with the consequent need to invest in more efficient distribution networks and new solutions for the management of increasingly fragmented and widespread last-mile/city-logistics deliveries.
- **Collaboration and partnership** for efficiency and to reduce costs through the use of digital platforms for information sharing and collaboration between the different parties involved in the supply chain (fleet sharing, warehouse/locker sharing, loading factor optimization, etc .).

- **Low or zero emission vehicles** through an acceleration of the adoption of battery electric vehicles (BEVs) and plug-in hybrid vehicles (PHEVs) in Lombardy, also by supporting local administrations and companies through financial incentives, tax breaks or reliefs and the installation of public charging infrastructure, reduction of motorway tolls for eco-friendly vehicles and subsidized financing programs for the purchase of sustainable vehicles.
- **Charging infrastructure** with huge investments for the development of a network throughout Lombardy includes the creation of public charging stations in urban areas, car parks, shopping centers and service stations, in order to increase the convenience and accessibility of charging.
- **Natural gas and biomethane** with investments also in promoting the use of compressed natural gas (CNG), liquefied natural gas (LNG) and biomethane as cleaner alternatives to traditional fuels, also for heavy transport, such as trucks and buses.
- **Hydrogen mobility** with: the diffusion of hydrogen refueling stations (HRS) and Hydrogen Valley (Mantua, Val Camonica, etc.); the incentive to enter the market of H2 vehicles; research and development projects to study the efficiency of fuel cells, improve the production, distribution and storage of hydrogen, as well as test the applicability and scalability of hydrogen technology in mobility; synergies with other sectors in addition to mobility (industrial decarbonisation, urban heating, transformation into other energy vectors)
- **Innovations in urban logistics** to address the challenges of traffic congestion and pollution in urban areas, experimenting with innovative solutions for sustainable urban logistics, including the use of electric and low environmental impact vehicles for the distribution of goods, the introduction of low emission zones (LEZ) and the exploration of new delivery models, such as last-mile delivery via bicycles (cargo-bikes) or other zero-emission and shared systems, or the provision of interchange points between heavy vehicles (for long distance routes) and micro delivery from large consolidation centers to lockers.

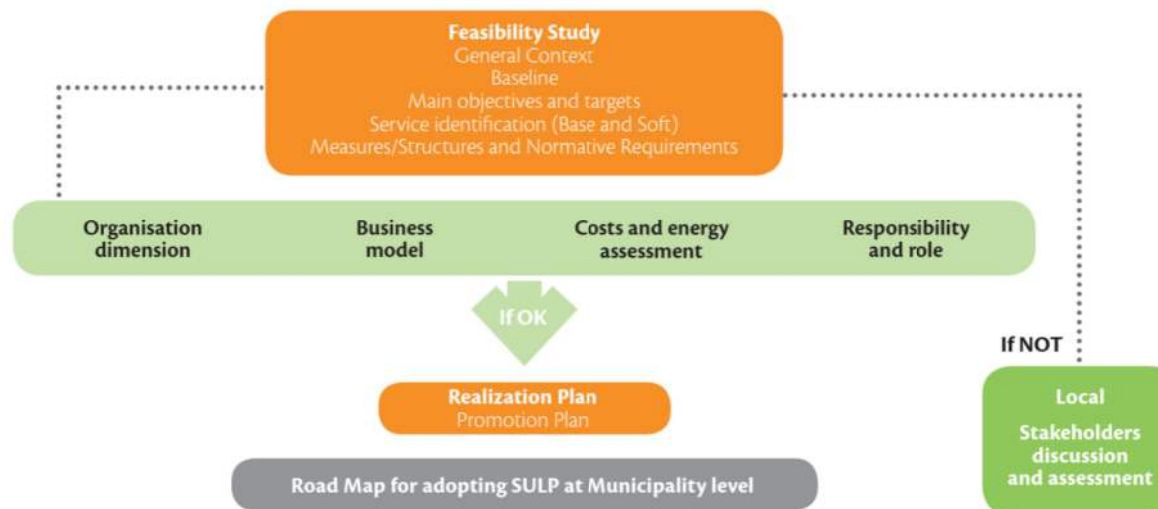
SULP Logics



H2MA



Main aspects of Sustainable Urban Logistic Plans Structure



SULP - Strategical issues

H2MA



Sustainable planning (economic, environmental, energy)



Regulation, harmonization of logistics activities and infrastructure implementation



Decarbonization of means of transport



Freight Quality Partnership collaborative logistics



Data sharing and interfacing

THANK YOU

Guido Piccoli - CEO & Partner

+39.348.2291977 - guido.piccoli@alot.it - www.alot.it

Via Cipro 16 - 25124 Brescia - Italy

31/10/2023 - 8

Interreg



Co-funded by
the European Union

Alpine Space

H2MA

Hydrogen and energy transition

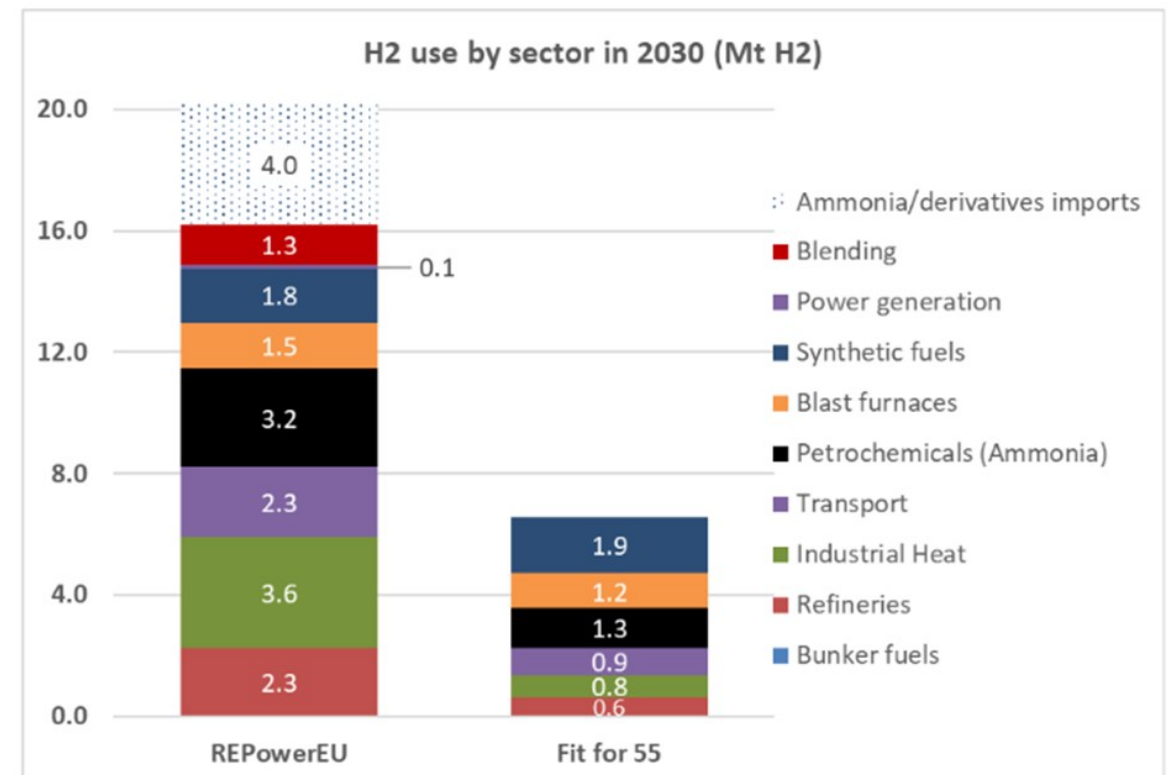
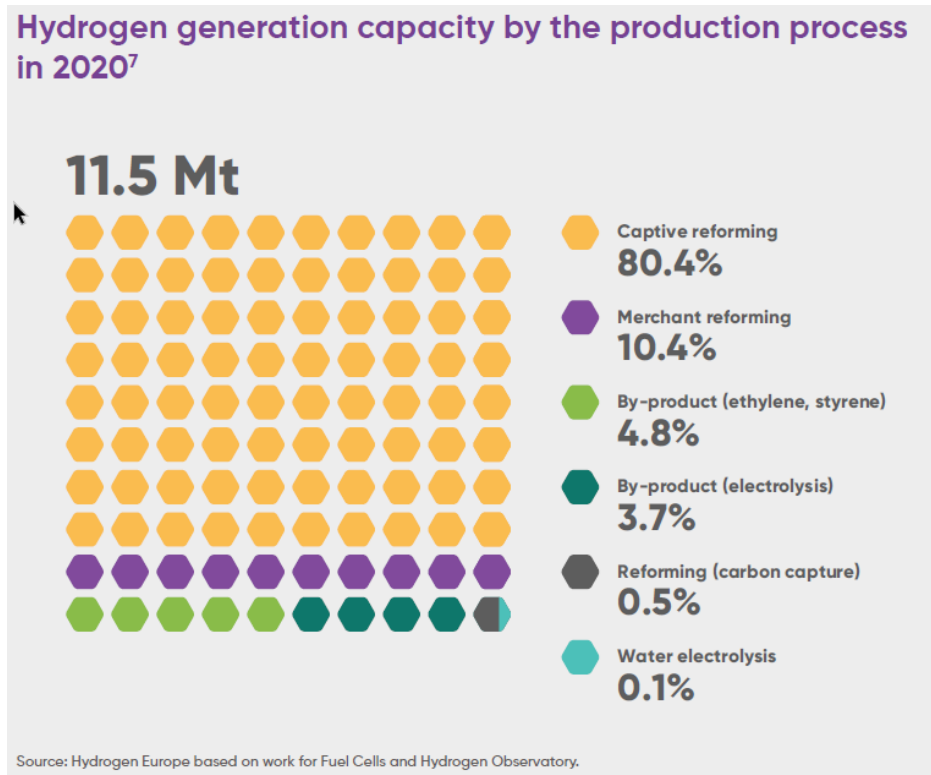
From global strategies to local plans

Massimo da Vià, Environment Park S.p.A.

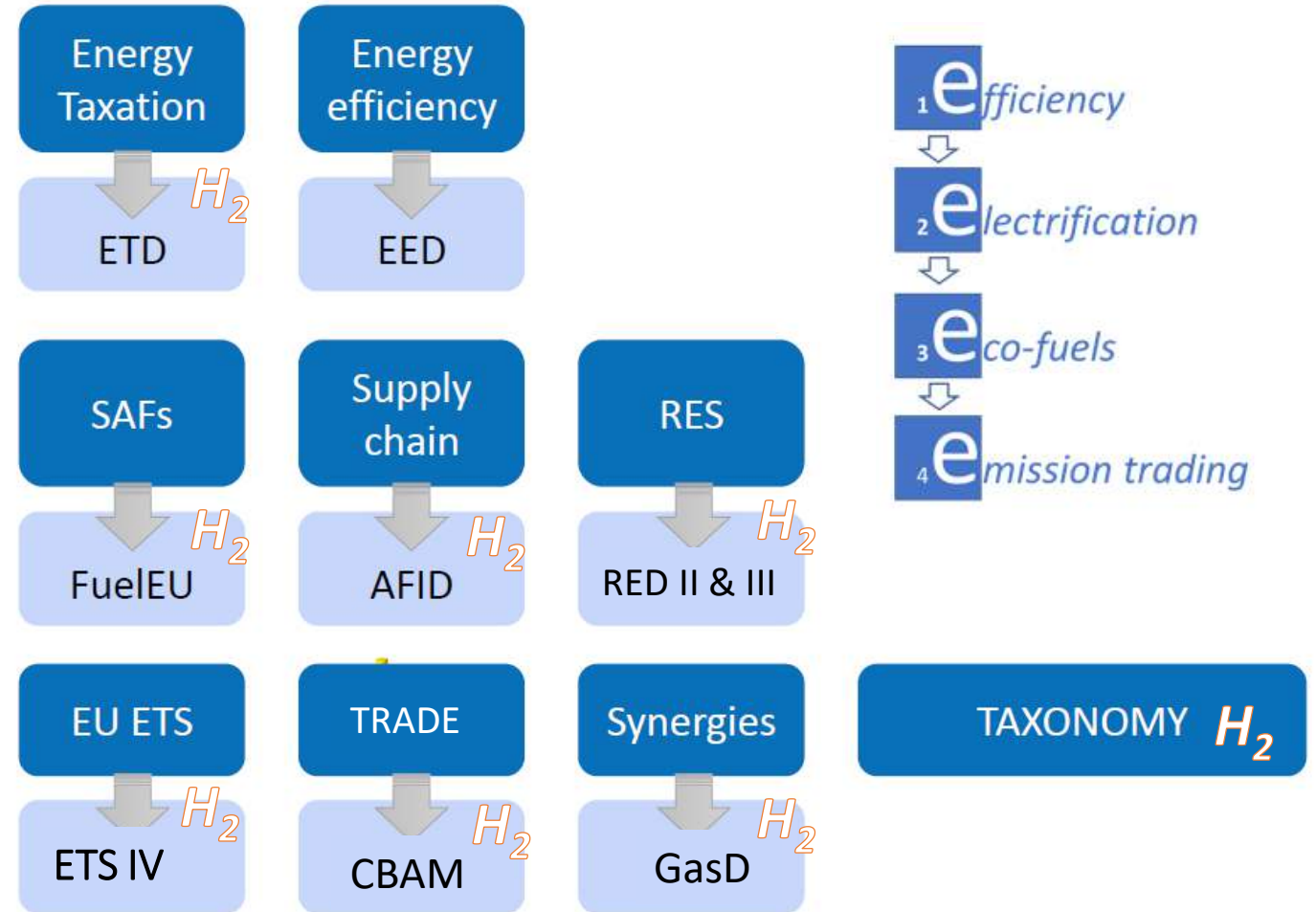
Turin, October 12th 2023



- EU policies forecast a zero emission continent by 2050, moving from non-renewable energy sources towards renewable ones.
- For hydrogen **is not actually a matter of “transition”** today market demand of “merchant H2” as fuel is low and the “green” fraction negligible
- Thus a **strong “pushing” policy effort is mandatory** in order to introduce it amongst our “energy habits”



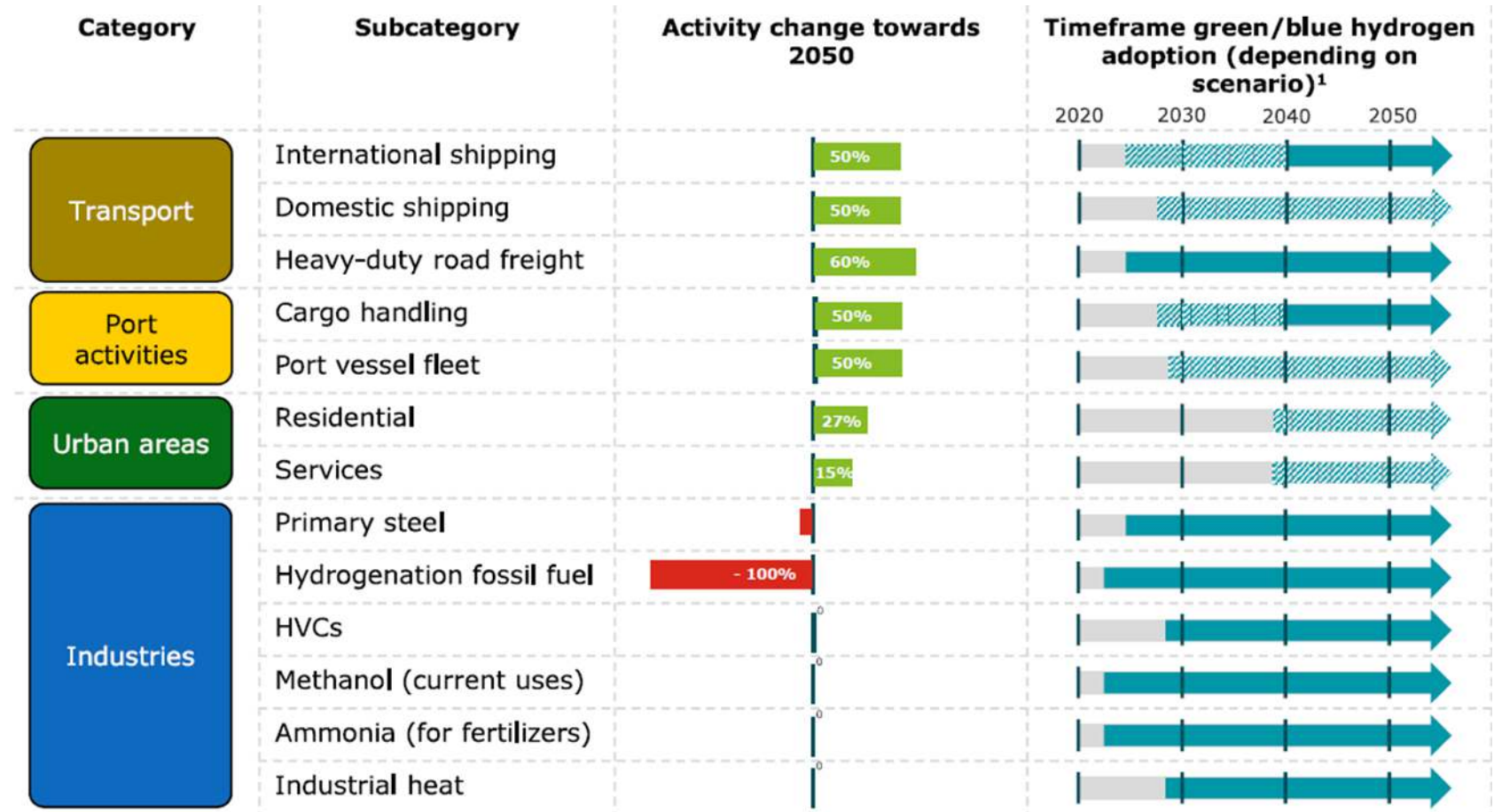
- Within the framework of European policies, the achievement of decarbonization goals can be summarized by "4e_s", based primarily on efficiency and reduction of energy demand.
- Hydrogen should be part of Eco-fuels, as is or in production of RFNBO (i.e. SAF), nevertheless the majority of policy tools have H₂ as a topic



In a short-term scenario of foregoing the import of Russian fossil sources (2025-2030) and, in the long run (2050), of abandoning them, demand for hydrogen (as a molecule or RFNBO) is expected to grow significantly.

Heavy road transport and "hard to abate" industries are the first sectors where hydrogen will impact in the short term.

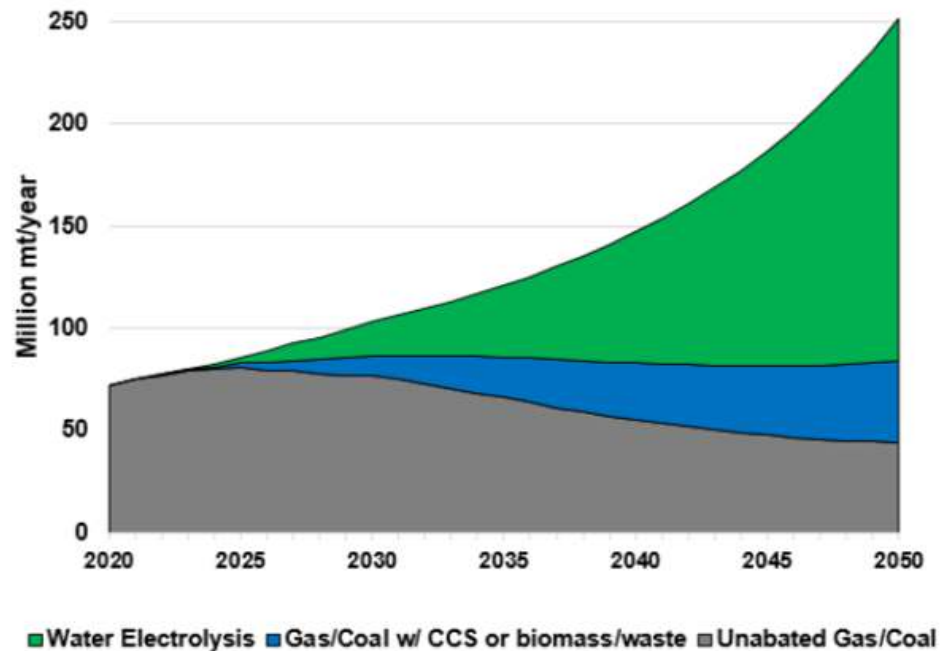
For other uses (civilian and medium-short-haul transport) it will depend on competition from other solutions (electrification, biofuels, and other RFNBOs)



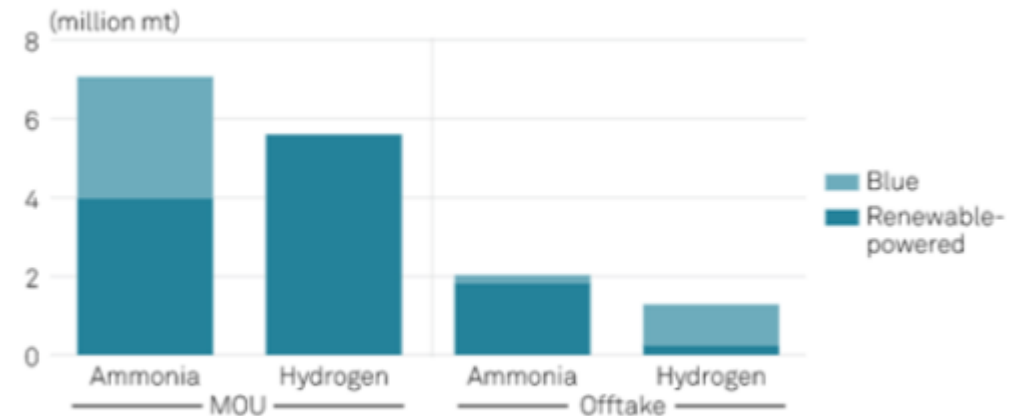
www.clean-hydrogen.europa.eu

Today, European policies provide three categories of hydrogen that are eligible for production/use subsidies, renewable, low carbon and “non fossil”

Renewable H2 is expected to play a relevant role as far as technologies will be more mature , in a short terms investments are on the “blue “ road

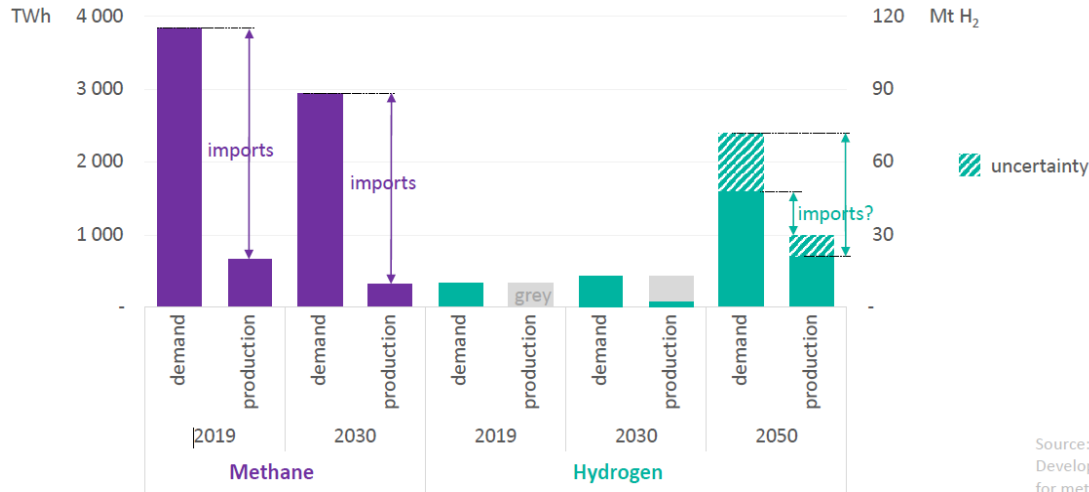


Q1 MOU catalog ahead of binding offtake agreement



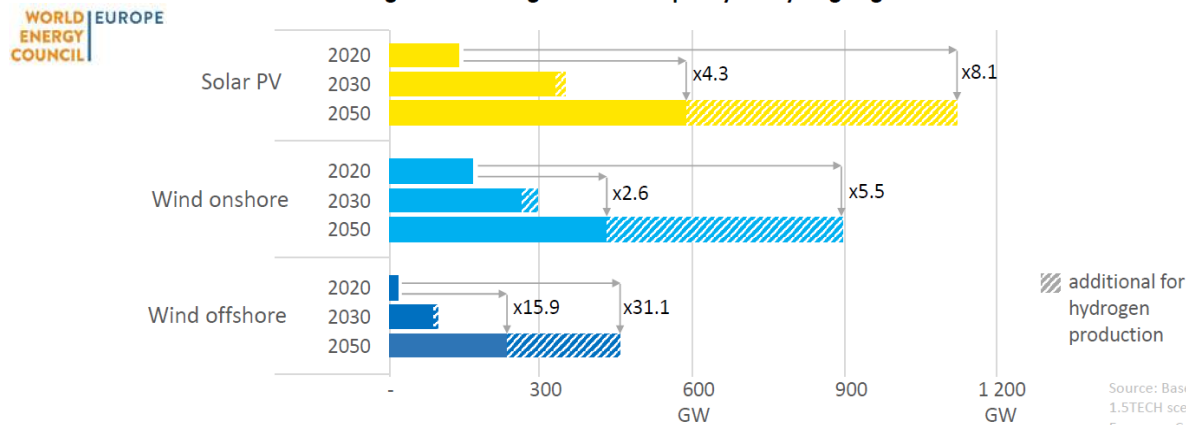
Note: Estimated volumes from announced project volumes
Source: S&P Global Commodity Insights

Methane and hydrogen demand and production in the European Union, 2019-2030-2050



Source: IEA's Sustainable Development Scenario for methane data

Installed capacity for solar PV, wind onshore and wind offshore in deep decarbonisation scenarios in the European Union, including and excluding additional capacity for hydrogen generation



Source: Based on the 1.5TECH scenario of the European Commission

Merchant hydrogen is a commodity, as well as oil.
 A study by the World Energy Council on H2 imports to 2050, highlights a gap at the Union level between supply and demand related in particular to the possibility of installing additional RES
 The European Union plans to regulate the import of extra-EU H2 in order not to have "domino" effects on other policies, such as the CBAM



- Imports**
- Complement domestic production (15mt max by 2030)
 - Support quicker development of functioning EU market
- Cooperation**
- Support global energy transition
 - Enables EU to shape regulatory frameworks and standards
 - Benefits EU industry by being frontrunner, ensuring security of supply, create industrial opportunities

EU REGULATORY POWER
standards, certification scheme, trading hubs in Europe for Euro-denominated transactions

GLOBAL EUROPEAN HYDROGEN FACILITY
Kick-start the global renewable hydrogen market

HYDROGEN PARTNERSHIPS
Cooperation with international partners (e.g. North Africa, the Gulf region, Japan, Ukraine)

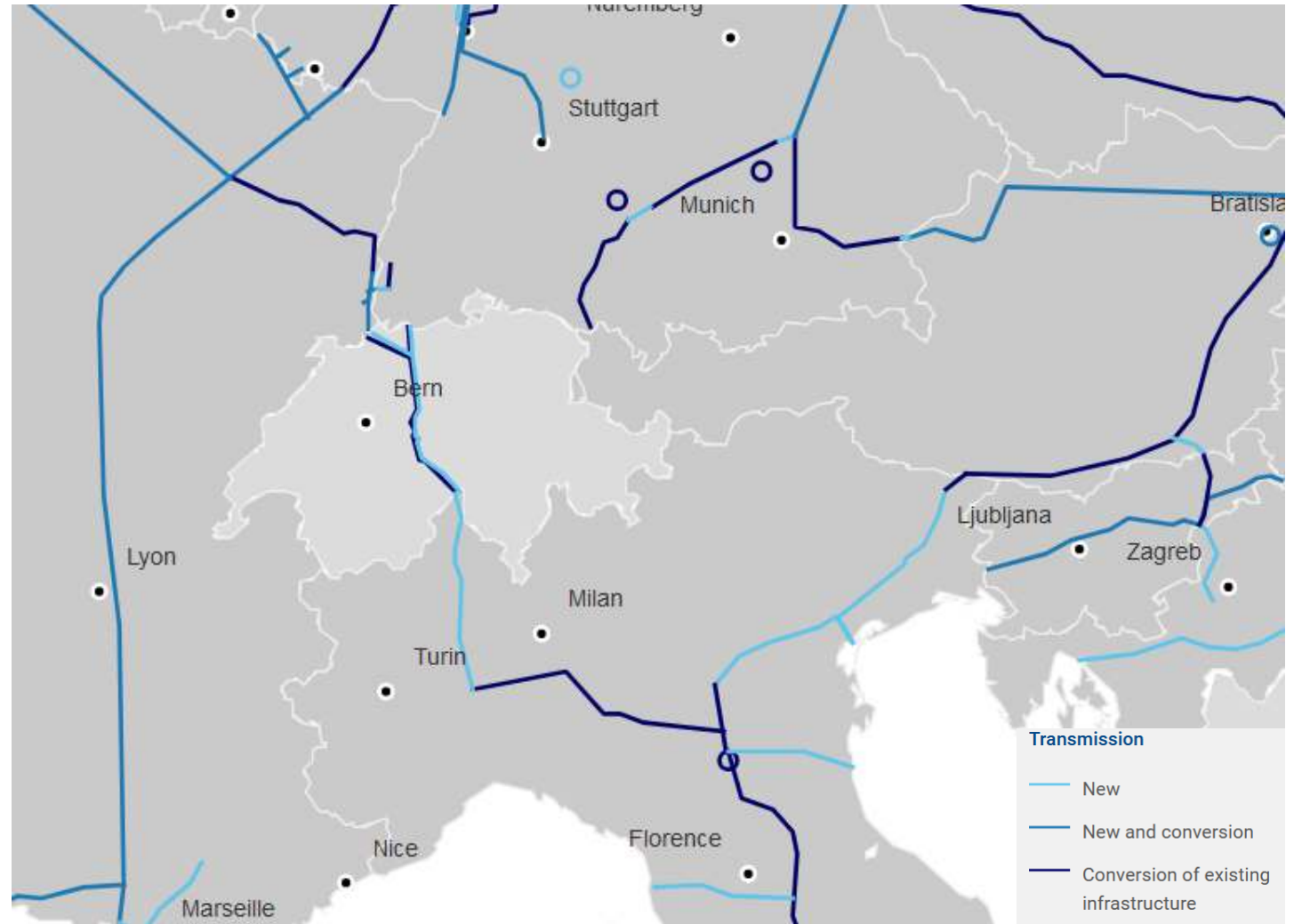
- Energy and fuel taxes are pillars of member states budget.
- No oil could mean less budget for public services
- The H2 transition today is relying on incentives, but harmonized taxation is expected by EU directive proposal and regulation

Table A. — Minimum levels of taxation applicable to motor fuels for the purposes of Article 7 (in EUR/Gigajoule)

DRAFT	Dal	
	1/1/2023 al 2030	dal 2030
Petrol	10,75	10,75
Gasoil	10,75	10,75
Kerosene	10,75	10,75
Non-sustainable biofuels	10,75	10,75
Liquefied Petroleum Gas (LPG)	7,17	10,75
Natural gas	7,17	10,75
Non-sustainable biogas	7,17	10,75
Non renewable fuels of non-biological origin	7,17	10,75
Sustainable food and feed crop biofuels	5,38	10,75
Sustainable food and feed crop biogas	5,38	10,75
Sustainable biofuels	5,38	5,38
Sustainable biogas	5,38	5,38
Low-carbon fuels	0,15	5,38
Renewable fuels of non-biological origin	0,15	0,15
Advanced sustainable biofuels and biogas	0,15	0,15

The Commission within the framework of the Gas Package directive elaboration and RE POWER EU , is identifying, in cooperation with companies, potential routes

The plan is expected to be adopted at the end of 2023 with the selection of routes and the start of design



source: *ENTSOG & European Clean Hydrogen Alliance: Transmission & Distribution - Learnbook on Hydrogen Supply Corridors, scenario 2030*

Hydrogen economy is getting a real thing, and it's not just a matter of budget and infrastructures.

In order to be not “**passively concerned**” by global trends, a major effort is required at local level to drive and support the deployment of H₂ policies scenarios.

Local plans and strategy are needed as well as their coordination at trans regional and transnational level.

To identify “**actual policy and regulatory local action powers and tools**” is a priority, not to overlap with EU and National ones or making an uncoordinated often unfeasible “special provisions” policy framework.

Hydrogen action plan of Piemonte Region (2021)

1) Hydrogen and industrial transition

- a. H₂ manufacturing value chains,
- b. H₂ for/from manufacturing,
- c. Innovation and research

2) Hydrogen and mobility

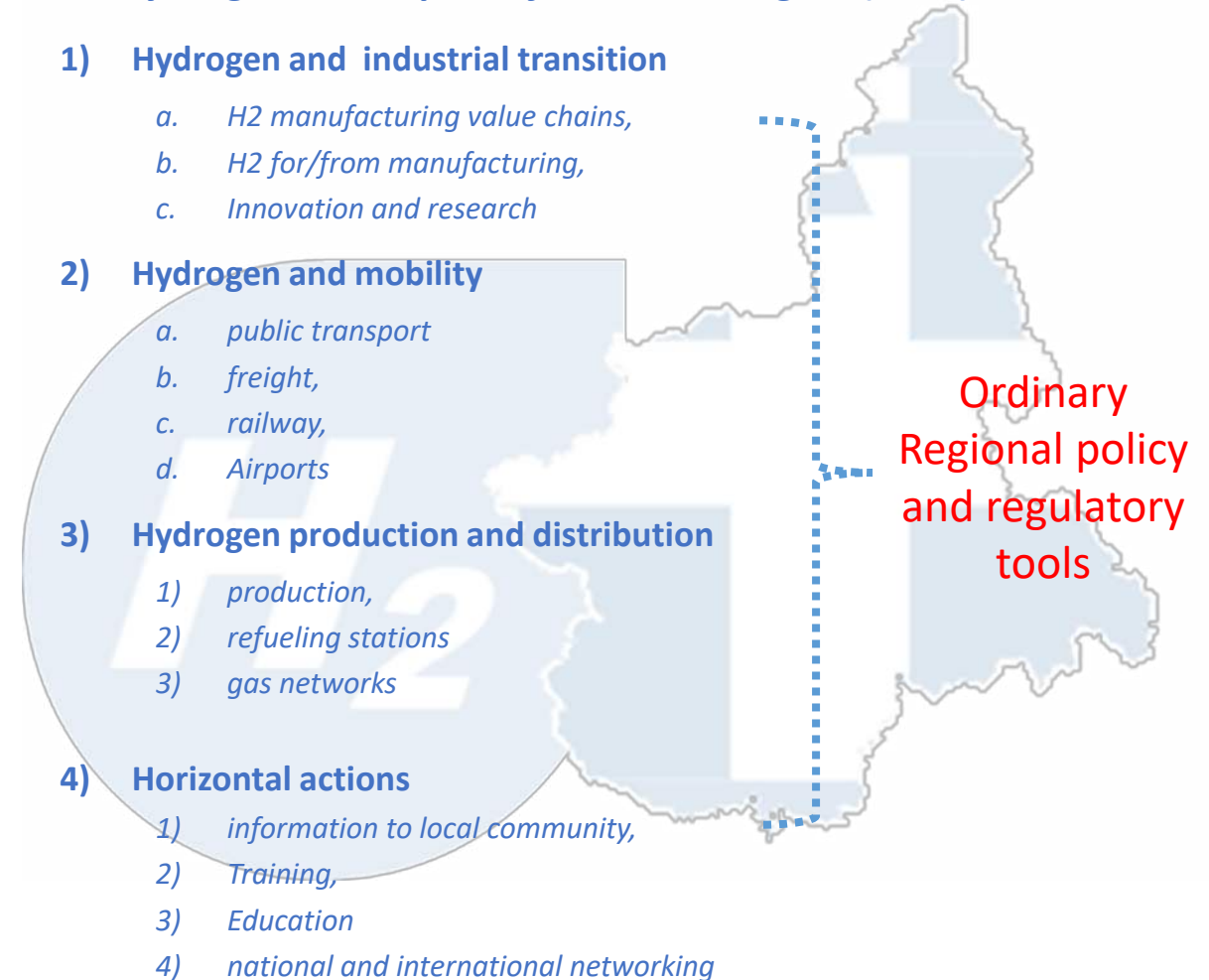
- a. public transport
- b. freight,
- c. railway,
- d. Airports

3) Hydrogen production and distribution

- 1) production,
- 2) refueling stations
- 3) gas networks

4) Horizontal actions

- 1) information to local community,
- 2) Training,
- 3) Education
- 4) national and international networking



Hydrogen is a new topic for large audience and has a “scientific” allure, thus it can be easily the subject of misleading information campaign

At the same time, hype on its potential is as dangerous as H2 “fearing”

A fair information must be given to communities, administrations and market stakeholders over **what H2 can and cannot do** in the energy transition route.



HYPOP will deliver guidelines and tools for public awareness on H2, and deploy campaigns at EU and local level.

Would you participate?

<https://www.hypop-project.eu/>

https://www.clean-hydrogen.europa.eu/projects-repository/hypop_en

@ ilaria.schiavi@envipark.com

Thanks



*Mr. Massimo da Vià,
Environment Park S.p.A.
massimo.davia@envipark.com*

ANNEX 6

Panel 1: Public Transport

Mrs Elisa Bracco

Agenzia della Mobilità Piemontese

Promotion and development of sustainable mobility

Mr. Gian Luigi Berrone

Piedmont Region

Civil servant, Mobility and Infrastructure Office, ITS expert

Mr. Giuseppe Estivo

Metroplitan City of Torino

Civil servant, Transport and Sustainable Mobility Office, Mobility policy expert

Panel 2: Freight and logistic

Mr. Guido Piccoli

Alot S.r.l.

Company Director and Founder. Vast experience in the world of transport and logistics, shipping and ports in particular, but also mobility combined with energy efficiency. Consultancy to Public Administrations and high professionalism in the search for European and National funding.

Mr. Matteo Benvenuti

CODOGNOTTO

Public Finance Specialist

Mr. Nicola Bassi

FITCONSULTING

Consultant in logistics business processes and technologies

Mr. Oliver Jochum

STRATEGISCHE PARTNER – KLIMASCHUTZ AM OBERRHEIN e. V.

Let's shape the energy system of our future ourselves. With hydrogen. With 3H2.

Mr. Gerald Miklin

EV Union

Project manager at the Carinthian state government office

Panel 3: Hydrogen and energy transition

Mr. Massimo da Via'

ENVIROMENT PARK Spa, SCIENCE AND TECHNOLOGY PARK OF TORINO

He represents the company inside the Hydrogen Italian Association H2IT in WG "permitting and regulation", the National Energy cluster CTNE in WG "Hydrogen strategies", and EUSALP AGs#2 "economic development" and AG#9 "energy" as technical expert in support of Regione Piemonte

Mrs Miriam Pirra

PIEMONTE INNOVA FOUNDATION

Senior Business Analyst

Prof. Fabrizio FATTORI

POLITECNICO DI MILANO

Research and technology transfer officer – Polytechnic Foundation of Milan

Research area: models and analysis of energy systems for optimal planning of investments and for the optimal management of resources

Matevž Šilc

KESSNA

EU project manager and H2MA Project Manager

Mr. Matteo Gianpaolo

SEA – Airport Milano Malpensa

Senior Infrastructure Project Manager