

# "SUSTAINABLE MOBILITY CENTER (CENTRO NAZIONALE PER LA MOBILITÀ SOSTENIBILE – CNMS)"

SUSTAINABLE MOBILITY



## TARGET: ANNEX 1 SECTION A

In the next decades the main challenge for future mobility is to drastically reduce its emissions by reaching the highest level of sustainability possible at the global level. The CNMSS will be totally interconnected with the NextgenerationEu and in the specific with the Italian action of PNRR that will boost the uptake of low- and zero emission vehicles as well as renewable and low-carbon fuels for road, waterborne, air and rail transport with specific measures on several levels: investing in environmentally friendly technologies, rolling out greener vehicles and public transport and fostering equal opportunities throughout the country, since the strong territorial gaps existing in Italy.

Therefore, there will be a strengthening of R&S chain in research and the economy with an enhancement of technology transfer mechanisms allowing a sound and effective: a) Green transition aiming at carbon neutrality by 2050; b) Digital transformation for efficient and inclusive mobility service.

Within this framework the CNMSS will act as an innovative excellence ecosystem able to encourage innovation through the systemic use of research results by the whole productive system. The CNMSS has the primary mission to build a competent Italian leadership, consistent with territory needs and companies' excellence and capable of supporting future development towards inclusive and sustainable mobility.

Setting ambitious goals CNMSS has the vision of providing long-term innovation benefits and guaranteeing a leverage effect on the country's overall capability to strengthen innovation propensity in the mobility sector, to this end its actions will be fully complementary to PNRR Italian actions on other missions, this will be reached setting specific objectives that meet effective mobility needs.

CNMSS objectives, reachable through specific research and innovation programs and activities range from technical, economical to social ones:

- Make mobility system greener promoting innovative and "sustainable mobility" providing new lightweight solutions, new propulsion systems, H2 fuels and electric.
- Make mobility system safer: promoting digital products and processes to foster smart management, monitoring and predictive maintenance, reducing fatalities reducing operating cost and increasing the safety level of the whole mobility system

Increase resilience and efficiency of mobility fostering a digital transformation of mobility service system both for public and private transport. Create customized and accessible mobility allowing for technological integration for implementation in real contexts and new social inclusion through digital innovation for all type of users. Strengthening the supply chain and national competitiveness and international visibility boosting synergies between companies and research institutions in the transportation sector in order to increase transition in the mobility sector

- Strengthening skills in the industrial field and national/regional policies supporting institutions identifying priorities and strategies for a parallel and osmotic development of research and industrial application.

With the above strategic objectives CNMS targets a real need of the European society, including citizens, industrial business sectors and policy makers, striving with the identification of a path to accelerate the change in paradigm in the mobility sector. An effective pathway to impact the major challenges of future mobility in Italy is created: (a) Develop sustainable and safe transport

for people and freight. (b) Decongest transport networks. (c) Strengthen the competitiveness of the Italian mobility sector. (d) Development of high-level skills (e) Reduce the current territorial inequalities, especially between and inside the macro-regions (e.g., North-Centre-South) and urban, periurban, rural areas..

CNMS members have elaborated a structured and effective concept for unlocking the innovation based on 5 Mobility Vectors and 9 Technologies, strongly interconnected. This is paired with a successful research program where innovation will be grounded through Private-Public cooperation and backed up by a significant investment in Infrastructure to increase TRL and make solution scalable

This structure eases the achievement of the targeted objectives:

- Contribution to Greener Mobility is guaranteed by industrial research and development programmes on hydrogen, electric traction, smart infrastructure, new/sustainable fuels and innovative material.
- Digital paradigms are tackled and developed when dealing with MaaS and Smart Roads challenges.

Safer and high-capacity mobility solutions will be developed considering logistics, autonomous and urban perspectives. Targets will be investigated from an Industrial Ecology (IE) point of view, even according to the Italian Research National Plan 2021-2027. IE is the systematic and integrated study of established relationships between Society, Economy and Natural Environment. IE focuses on the use of technology to reduce the environmental impacts of products, processes and services, mainly through the investigation of the local, regional and global uses and flows of materials and energy in industrial and economic sectors. It identifies the "environmental loads" associated with a product/process/service throughout its life cycle, including waste management and its re-entry into production/use cycles. Such interdisciplinary approach is recognized as the basic requirement for a correct definition of economic and social development trajectories and technology trends compliant with sustainability constraints by single operators and society.

All the research developed in the CNMS program will be assessed with an IE approach, in order to evaluate global costs / benefits and risks of new products, new processes and related services by integrating the LCSA (Life Cycle Sustainability Assessment) methodology with coded LCA (Life Cycle Assessment) tools and with more recent development tools as the Life Cycle Costing (LCC) and the S-LCA (Social Life Cycle Assessment).

## SECTION PARTNERS

TOTAL NO. OF PARTNERS: 49

Proposer: Politecnico di Milano

Participants

PUBLIC SUBJECTS

Universities

Politecnico di Milano

Alma Mater Studiorum Università di Bologna

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Politecnico di Bari  
Politecnico di Torino  
Università degli Studi di Bergamo  
Università degli Studi di Modena e Reggio Emilia  
Università degli Studi di Napoli Federico II  
Sapienza Università di Roma  
Università degli Studi di Brescia  
Università degli Studi di Cagliari  
Università degli Studi di Cassino e del Lazio meridionale  
Università di Firenze  
Università degli Studi di Milano - Bicocca  
Università degli Studi di Napoli "Parthenope"  
Università di Padova  
Università degli Studi di Palermo  
Università di Parma  
Università di Salerno  
Università degli Studi di Torino  
Università degli Studi Mediterranea di Reggio Calabria  
Università del Salento  
Università degli Studi di Genova  
Università Politecnica delle Marche  
Università di Pisa

Research Institutes

Consiglio Nazionale delle Ricerche

PRIVATE ACTORS:

Companies

Almaviva S.p.A.

A2A S.p.A.

Accenture S.p.A.

Angel Holding S.r.l.

Atos Italia S.p.A.

Autostrade per l'Italia S.p.A.

Brembo S.p.A.

C.R.F. S.C.p.A.

ENI S.p.A.

Ferrari S.p.A.

Ferrovie dello Stato Italiane S.p.A.

Fincantieri S.p.A.

FNM S.p.A.

GE Avio Aero s.r.l.

Hitachi Rail STS S.p.A.

Intesa Sanpaolo S.p.A.

Iveco Group N.V.

Leonardo S.p.A.

Pirelli Tire S.p.A.

Poste Italiane S.p.A.

SNAM S.p.A.

Teoresi S.p.A.

Thales Alenia Space Italia S.p.A.

UnipolSai Assicurazioni S.p.A.

## **SPOKE**

### **Spoke n. 1 - Air mobility**

Spoke Leader: Politecnico di Torino

Spoke members

Alma Mater Studiorum Università di Bologna

Università di Napoli Federico II;

Università di Bergamo;

Politecnico di Milano;

Sapienza Università di Roma

### **Spoke n. 2 - Sustainable road vehicle**

Spoke Leader: Politecnico di Torino

Spoke members

Alma Mater Studiorum Università di Bologna

Università degli Studi di Palermo;

Università degli Studi di Cassino;

Università degli Studi di Salerno;

### **Spoke n. 3 - Waterways**

Leader spoke: Consiglio Nazionale delle Ricerche

Spoke members

Università degli Studi di Napoli Federico II;

Università degli Studi di Palermo;

Università Partenope;

Università di Genova;

### **Spoke n. 4 – Rail transport ation**

Leader spoke: Politecnico di Milano

Spoke members

Università degli Studi di Napoli Federico II;

Consiglio Nazionale delle Ricerche

Sapienza Università di Roma

Università degli Studi di Firenze;

Università degli Studi di Reggio Calabria;

Università degli Studi di Parma;

### **Spoke n. 5 - Light vehicle and active mobility**

Leader spoke: Alma Mater Studiorum Università di Bologna

Spoke members

Politecnico di Milano;

Università di Firenze;

Università degli Studi di Brescia;

### **Spoke n. 6 – Connected and Autonomous vehicle (CAV)**

Leader spoke: Università degli Studi Modena e Reggio Emilia

Spoke members

Alma Mater Studiorum Università di Bologna

Consiglio Nazionale delle Ricerche

Politecnico di Torino;

Politecnico di Milano;

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Università di Salerno;

Università di Reggio Calabria;

#### **Spoke n. 7- CCAM: connected networks and smart infra**

Leader spoke: Università degli Studi di Napoli Federico II

Spoke members

Alma Mater Studiorum Università di Bologna

Politecnico di Bari;

Consiglio Nazionale delle Ricerche

Politecnico di Torino;

Sapienza Università di Roma

Università degli Studi di Brescia;

Università di Pisa;

Università Partenopea;

Università di Salerno;

Università Politecnica delle Marche

Università del Salento

#### **Spoke n. 8 – MaaS and innovative services**

Leader spoke: Politecnico di Bari

Spoke members

Università degli Studi di Napoli Federico II;

Università di Padova;

Università di Cagliari;

Università degli Studi di Milano - Bicocca

#### **Spoke n. 9 Urban mobility**

Leader spoke

Sapienza Università di Roma

Spoke members

Politecnico di Milano;

Università di Firenze;

Università di Cagliari;

Università di Cassino;

Università Politecnica delle Marche

#### **Spoke n. 10 – Logistics and freight**

Leader spoke: Università degli Studi di Napoli Federico II;

Spoke members

Politecnico di Milano;

Università di Cagliari;

Università di Pisa;

Università Partenope;

Università di Genova;

#### **Spoke n. 11– Innovative materials and light weighting**

Leader spoke: Alma Mater Studiorum Università di Bologna

Spoke members

Politecnico di Bari;

Consiglio Nazionale delle Ricerche

Politecnico di Torino;

Sapienza Università di Roma

Università di Padova;

Università di Brescia;

Università di Pisa;

Università Politecnica delle Marche;

#### **Spoke n. 12– Innovative propulsion**

Leader spoke: Consiglio Nazionale delle Ricerche

Spoke members

Università degli Studi di Modena e Reggio Emilia

Università di Palermo;

#### **Spoke n. 13– Electric traction system and batteries**

Leader spoke: Politecnico di Milano

Spoke members

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Università degli Studi di Modena e Reggio Emilia

Alma Mater Studiorum Università di Bologna

Politecnico di Torino;

Sapienza Università di Roma

Università di Padova;

Università degli Studi di Milano - Bicocca

Università di Cassino;

Università di Pisa

### **Spoke n. 14– Hydrogen and new fuels**

Leader spoke: Politecnico di Bari

Spoke members

Consiglio Nazionale delle Ricerche

Università di Padova;

Università di Torino;

Università del Salento;

Others Spoke members

Almaviva S.p.A.

A2A S.p.A.

Accenture S.p.A.

Angel Holding S.r.l.

Atos Italia S.p.A.

Autostrade per l'Italia S.p.A.

Brembo S.p.A.

C.R.F. S.C.p.A.

ENI S.p.A.

Ferrari S.p.A.

Ferrovie dello Stato Italiane S.p.A.

Fincantieri S.p.A.

FNM S.p.A.

GE Avio Aero s.r.l.

Hitachi Rail STS S.p.A.

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Intesa Sanpaolo S.p.A.

Iveco Group N.V.

Leonardo S.p.A.

Pirelli Tire S.p.A.

Poste Italiane S.p.A.

SNAM S.p.A.

Teoresi S.p.A.

Thales Alenia Space Italia S.p.A.

UnipolSai Assicurazioni S.p.A.

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MUR grant: € 319.922.088,03

Project calls: 11% of project amount

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