PART I – GENERAL INFORMATION

Project: SMART HY AWARE - Smart solutions for HYdrogen potential AWAReness Enhancing

Partner organisation(s) concerned: Lazio Region

Country: Italy

NUTS2 region: Lazio Region

Contact person: Ferdinando Rossi

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Phone number: +39 334 1106803
The Action Plan aims to impact: □ Investment for Growth and Jobs programme  
□ European Territorial Cooperation programme  
X Other regional development policy instrument

NAME OF THE POLICY INSTRUMENT(S) ADDRESSED: LAZIO REGIONAL ENERGY PLAN

FURTHER DETAILS ON THE POLICY CONTEXT AND THE WAY THE ACTION PLAN SHOULD CONTRIBUTE TO IMPROVE THE POLICY INSTRUMENTS:

Lazio Region has inserted in the Application Form as Policy Instrument the ERDF Regional Operational Programme Lazio 2014-2020-Action 4.6.2 "Interventions for urban sustainable mobility, also encouraging the use of low-impact transport systems" which foresaw the purchase of buses with high environmental efficiency, either electric or powered by natural gas, to be used only in the urban and metropolitan area of Rome and within the framework of integrated urban sustainable mobility actions. The policy instrument was not sufficiently detailed as regards alternative fuels for mobility, therefore the project could help completing it by integrating measures able to stimulate the hydrogen electric mobility in the region.

This specific goal has been set when Lazio Region was partner of Fuel Cells and Hydrogen Joint Undertaking (FCH JU) Project 3Emotion.
3Emotion stands for Environmentally friendly Efficient Electric Motion.
The project aimed at bridging the gap between fuel cell bus demonstration projects and larger scale deployment.
It presented the deployment of 21 new and the further use of 8 existing fuel cell buses with the required refueling infrastructures.
These buses have been deployed in 5 sites and operated by 7 public transport operators located all over Europe.
Each of these sites had its own constrains for the buses, what made them all unique and covered the entire range in which fuel cell buses could be a valuable replacement for fossil fueled buses.

At the beginning of the Project Lazio Region was one of the 5 sites selected for the bus testing. Lazio Region had to purchase through a public bid N.5 fuel cell buses and test them for 42 months. Lazio Region had also to set up and manage an Hydrogen Refuelling Station.
Due to bureaucratic and administrative difficulties it was not possible to proceed with the purchase of the 5 buses. For this reason the European Commission decided to reject Lazio Region from the project and to transfer its financial resources to other partners.

This situation has severely slowed down the growth and the development of hydrogen electric mobility in the region.
Lazio Region attaches great importance to green hydrogen electric mobility but, also due to the very high green hydrogen costs, considers these technologies concretely applicable only in a long-term period which means not earlier than 10 years.
Therefore it is not possible to improve through Project Best Practics a concrete and short-period Policy Instrument like ERDF Regional Operational Programme Lazio 2014-2020-Action 4.6.2 "Interventions for urban sustainable mobility, also encouraging the use of low-impact transport systems".
Given the non-participation of Lazio Region in the 3Emotions Project, the only possibility is trying to insert the Lesson Learnt from the Project in a very long-term Policy Instrument like Lazio Regional Energy Plan that contains strategic goals, guidelines and general suggestions to be concretely implemented within 2050 through more operative and short-term European Programs and regional laws.
With the Paris Agreement, countries around the world have pledged to limit global warming to 2°C, doing everything possible to limit it to 1.5 °C, compared to pre-industrial levels. To achieve this goal, the European Union through the European Green Deal (COM / 2019/640 final) has defined new extremely ambitious energy and climate objectives that will require, compared to 1990, a 55% reduction in climate-changing gases (Green House Gases, GHG) in 2030 and climate neutrality in 2050.

As is well known, these objectives have been incorporated into the “Fit for 55” legislative reform package and, with the aim of accelerating the pace of decarbonisation, are the fundamental pillar of the New Green Deal.

These goals have also been assumed by Italy through the National Recovery and Resilience Plan (NRRP). The NRRP therefore outlines a future update of both the Integrated National Energy and Climate Plan (INECP) approved in 2019 and of the Long-Term Strategy for the Reduction of Greenhouse Gas Emissions, to reflect the changes that have occurred in the meantime in European headquarters.

Pending this update, which will also be conditioned by the definitive approval of the European legislative package "Fit for 55", the Ministry of Ecological Transition has proposed the Plan for Ecological Transition (ETP), which provides a framework for environmental and energy policies integrated with the goals already outlined in the National Recovery and Resilience Plan. The starting point is the growth known by RES in the last fifteen years, both from the production and consumption side, an increase that allowed the country to position itself well among the major European economies. The NRRP has assumed the centrality of the ecological transition, of the increase in energy efficiency and of the development of renewable energies functional to the pursuit of decarbonization objectives.

In line with the contextual evolutions of European and national strategies, Lazio Region has two ambitious aims:

- support Lazio's transition towards a climate neutral economy in 2050 and combat climate change through the spread of the green economy
- promote adaptation to climate change and risk prevention and management.

The Regional Energy Plan (REP) is the tool with which the regional competences in energy planning are implemented, as regards the rational use of energy, energy saving and the use of renewable sources. It contains the study of the current regional energy system, trend scenarios, target scenarios for increasing energy efficiency and for developing renewable sources and the actions necessary to achieve them within the time limits established by national and European legislation.

The first version of the Regional Energy Plan was approved by Lazio Regional Council with Resolution N. 45 of 14 February 2001, in an international context that is profoundly different from the current one.

That's way Lazio Region started the construction process of a new Regional Energy Plan (REP) adopted with Regional Government Resolution N. 98 of 10 March 2020.

With reference to the aforementioned 2020 REP, a NEW UPDATE strongly desired by the Department of Ecological Transition and Digital Transformation is underway in order to align the Plan with the recent and ambitious European decarbonisation policies, where Europe has assumed a leadership role, setting itself the goal of becoming the first "carbon neutral" continent by 2050.

In fact, decarbonisation is the fundamental pillar of the New Green Deal and this update of the Plan incorporates these objectives in a synergistic way, including the new goals announced by the European Commission with the so-called "Fit for 55" reform package, with the aim of accelerating the decarbonization step as early as 2030.
With this new version of the Regional Energy Plan, therefore, Lazio joins the European Union and Italy in assuming a precursor role in accelerating the decarbonisation of the territory and, at the same time, in considering the social consequences, such as employment development induced by repositioning of supply chains towards the sectors of ecological transition and the fight against energy poverty.

The new version of the Plan is organized in five Parts according to the following conceptual and methodological scheme.

- The first Part “Context of Reference” analyzes the Regional Energy Balance, the state of the art of electricity and gas infrastructures existing in Lazio and the development potential in energy production from renewable sources and in increasing energy efficiency in end uses.

- The second Part “Strategic Objectives and Scenarios” is dedicated to the description of the general strategic goals of Lazio Region in energy field and to the identification of 2030/50 scenarios for increasing energy efficiency and renewable sources.

- The third Part “Policies and Programming” illustrates the intervention policies that, for the pursuit of strategic objectives, will be introduced for the development of renewable energy sources (RES) and for the improvement of energy efficiency in each area of final use.

- The fourth part “Monitoring and Periodic Updating of REP” describes the mechanisms and tools identified for monitoring and periodic and systematic updating of REP

- The fifth part “Technical Implementation Rules” sets out a summary of the national and regional regulations for obtaining authorizations for the construction and operation of plants from renewable sources and of interference with the main environmental protection sector plans

PART 3 - POLICIES AND PROGRAMMING in coherence with the regional strategic guidelines provides the framework of the intervention policies that will address the regional programming actions in the short, medium and long term in order to achieve the Scenario Objectives set out in PART II.

It must be considered that the interventions that the Regional Administration will promote are not to be understood as limited to those indicated in the Document. Regional Energy Plan, in fact, is a tool constantly updated that will have specific moments of recalibration as a function of the periodic monitoring of the implementation of the regional decarbonization process.

In other words, Chapter 3 outlines the priority guidelines of the intervention policies which will be implemented by multiple regional actions, mainly institutional and implementation, to effectively make the regional energy system evolve towards the Scenarios set out in Part II.

In Chapter 3 - POLICIES AND PROGRAMMING of the previous Regional Energy Plan adopted with Regional Government Resolution N. 98 of 10 March 2020 no political guidelines and no strategic goal referring to hydrogen sector was present.

Therefore Lazio Region Action Plan aims at improving Chapter 3 - POLICIES AND PROGRAMMING of the NEW VERSION of the Regional Energy Plan through insertion of priority guidelines, political goals and interventions addressing hydrogen that are in some way influenced by the most interesting results and Best Practices of Smart Hy Aware Project.
ACTION 1:
Name of the action: UPDATE OF LAZIO REGIONAL ENERGY PLAN CHAPTER 3

1. Relevance to the project

Lazio Region learning process was based on the following steps:

- PARTICIPATION IN STUDY VISITS AND INTERREGional STAKEHOLDER WORKSHOPS
- PARTICIPATION IN PEER REVIEW MEETINGS
- ORGANIZATION OF LOCAL STAKEHOLDER MEETINGS
Lazio Region attended all the Study Visits organized by the Project:

26TH SEPTEMBER 2019–INTER-REGIONAL WORKSHOP & SITE-VISIT
VENUE: INSTITUTO ARAGÓNÉS DE FOMENTO – VALENZUELA 9, ZARAGOZA

18 JUNE 2020-ONLINE INTER-REGIONAL WORKSHOP

14 JUNE 2021-ONLINE WORKSHOP PROVINCE OF SOUTH HOLLAND
“PROCUREMENT OF HYDROGEN BUSES AND HRS”

16 JUNE 2021 VIRTUAL INTER REGIONAL WORKSHOP: ABERDEEN CITY COUNCIL

BUDAPEST 9-10 NOVEMBER 2021-INTERREGIONAL STAKEHOLDER WORKSHOP+ SITE VISIT
Lazio Region attended as knowledge seeker the following Peer Reviews Meetings:

**Peer Review #1 – Experience on Implementing Hydrogen Buses**
- Knowledge Holder: PSH & ACC
- Knowledge Seeker: Aragon, Lazio, Hungary, Delphi

**Peer Review #2 – Policy Makers Engagement**
- Knowledge Holder: PBN & ACC
- Knowledge Seeker: Aragon, Lazio
On 19 January 2022 Lazio Region organized a Local Stakeholder Meeting. Part of the Workshop has been dedicated to provide to participants an overview of all Partners Best Practice. Every single BP has been analyzed. It was also presented to stakeholders the following Best Practices distribution per hydrogen sector topics.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>HYDROGEN MASTER PLAN-REGIONAL GOVERNMENT OF ARAGON</td>
<td>NE SCOTLAND AMBITION GROUP</td>
<td>GETHYGA – PAVING AN ENERGY AND TECHNOLOGY WAY ON HYDROGEN ALONG ARAGON</td>
<td>ABERDEEN HYDROGEN HUB</td>
<td>NORTH EAST SCOTLAND FLEET REVIEW (HYDROGEN DEMAND)</td>
<td>DISSEMINATING THE VALUE OF HYDROGEN TECHNOLOGIES-REGIONAL GOVERNMENT OF ARAGON</td>
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<td>ABERDEEN CITY REGION HYDROGEN STRATEGY&amp;ACTION PLAN</td>
<td>NATIONAL HYDROGEN TECHNOLOGY PLATFORM</td>
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<td>HYDROGEN MOBILITY MEASURES IN LOCAL STRATEGIC DOCUMENT (SZOMBATHELY2030)</td>
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<td>PUBLIC POLICIES: THE NATIONAL AGREEMENT FOR ZERO EMISSION BUS (BAZEB)-PSH</td>
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<td><strong>HYDROGEN BUS GOVERNANCE</strong></td>
<td><strong>REFUELLING STATION</strong></td>
<td><strong>MARKET CONSULTATION</strong></td>
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<td>Lazio Region Action Plan aims at improving Chapter 3 - POLICIES AND PROGRAMMING of the NEW VERSION of the Regional Energy Plan. As previously underlined, this Policy Instrument is a very long-term Tool that contains strategic goals, guidelines and general suggestions that will be implemented and realized within 2050 through more operative and short-term European Programs and regional laws.</td>
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<td>GOVERNANCE MODELS PTA-PTO FOR HYDROGEN BUSES-PSH</td>
<td>PROJECT &quot;HYDROGEN CORRIDOR FOR THE PYRENEES REGION (H2PIYR)&quot;-ARAGONA</td>
<td>MARKET CONSULTATION ON HYDROGEN BUSES AND REFUELING INFRASTRUCTURE-PSH</td>
<td>LESSONS LEARNT FROM HYDROGEN BUS OPERATION-PSH</td>
<td>HYDROGEN FUEL CELL BOAT ON PROTECTED AREA OF LAKE BALATON-PANNON BUSINESS NETWORK ASSOCIATION</td>
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<td>HYTRANSLT ABERDEEN</td>
<td>FUND RAISING FOR HYDROGEN BUS PROJECTS-PSH</td>
<td>REFUELLING INFRASTRUCTURES-ABERDEEN</td>
<td></td>
<td>LESSONS LEARNT FROM HRS OPERATIONS-PSH</td>
<td>HYDROGEN FUEL CELL Garbage TRUCK DEVELOPMENT-PANNON BUSINESS NETWORK ASSOCIATION</td>
</tr>
<tr>
<td>JIVE ABERDEEN</td>
<td>FINANCIAL FEASIBILITY OF HYDROGEN BUS DEPLOYMENT (TCO COMPARISON)-PSH</td>
<td>MULTI-MODAL HYDROGEN REFUELLING STATION IN CSEPEL PORT (BUDAPEST)</td>
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<td>3EMOTION PSH</td>
<td>SATEFY ISSUES: INNOVATIVE BUS CONCEPTS AND TUNNEL PASSAGES-PSH</td>
<td>TENDERING PROCESS OF AN HRS FOR HYDROGEN BUSES-PSH</td>
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<td>JIVE 2 PSH</td>
<td>JOINT PROCUREMENT OF HYDROGEN BUSES: SPV MODEL-PSH</td>
<td>COLLABORATION BETWEEN TENDERING BODIES IN A JOINT PROCUREMENT-PSH</td>
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Smart-Hy-Aware Best Practices can not be concretely applied in Lazio Region through Regional Energy Plan but can be simply taken as a general reference and inspiration for the elaboration of the strategic goals, guidelines and suggestions contained in Chapter 3. All these BPs could be considered in the next years by other short-term European Programs and regional laws addressing hydrogen-electric mobility. That’s why it is very relevant inserting in the Chapter 3 of the Regional Energy Plan the full list of Smart Hy Aware Best Practices.

Anyway, these are the most inspiring Project Best Practices for the definition of strategic goals, guidelines and general suggestions that in Phase 2 will be added in Chapter 3:

- Aberdeen Hydrogen Hub
- Project “Hydrogen Corridor For The Pyrenees Region (H2piyr)”-Regional Government of Aragona
- Refuelling Infrastructures-Aberdeen City Council
- Tendering Process of an HRS for Hydrogen Buses-Province of South Holland
- Lessons learnt from hrs operations-Province of South Holland
- North East Scotland Fleet Review (Hydrogen Demand)- Aberdeen City Council
- FCH JU Bus Projects: Highvlocity (Aberdeen City Council)-Hytransit (Aberdeen City Council)-Jive (Aberdeen City Council)-3Emotion (Province of South Holland)-Jive 2 (Province of South Holland)
- Governance models pta-pto for hydrogen buses - Province of South Holland
- Financial feasibility of hydrogen bus deployment (tco comparison) - Province of South Holland
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- Collaboration between tendering bodies in a joint procurement- Province of South Holland
- Lessons learnt from hydrogen bus operation-Province of South Holland

2. Nature of the action *(please describe precisely the content of action 1. What are the specific activities to be implemented?)*

Lazio Region Action Plan aims at improving through Smart-Hy-Aware Chapter 3 - POLICIES AND PROGRAMMING of the new version of the Regional Energy Plan through insertion of priority guidelines and interventions addressing hydrogen in some way influenced by the most interesting results and Best Practices of the Project.

As previously underlined, the first version of the Regional Energy Plan was approved by Lazio Regional Council with Resolution N. 45 of 14 February 2001, in an international context that is profoundly different from the current one. That’s way Lazio Region started the construction process of a new Regional Energy Plan (REP) adopted with Regional Government Resolution N. 98 of 10 March 2020.

Regional legislation provides for the involvement of the Council in the procedures for the final and official adoption of the Document. On 2 April 2020 the new Regional Energy Plan has been transmitted to the Regional Council for its evaluation. The Document has been formally and officially presented in the Regional Council Energy Commission on 15 May 2020. After this formal passage the phase of presentation of the amendments to the Document began, a phase that is still in progress.
Here below is briefly described the content of some paragraphs/amendments addressing hydrogen topics that during Phase 2 Lazio Region Smart Hy Aware Working Group will add into Chapter 3 - POLICIES AND PROGRAMMING of the NEW VERSION of the Regional Energy Plan. The content of these paragraphs/amendments has been influenced by some of the most interesting Smart-Hy-Aware Best Practices.

SCENARIOS AND INTERVENTION POLICIES FOR THE DEVELOPMENT OF ENERGY PRODUCTION FROM RENEWABLE SOURCES

POLICIES RELATING TO ENERGY SOURCES (PRODUCTION)
Lazio Regional Energy Plan aims at reducing the use of fossil fuels and at achieving climate neutrality in terms of CO2 emissions by 2050, in particular 100% in the civil sector, 96% in the production of electricity, 95% in the transport sector and 89% in the industrial sector.

As regards the development strategy of RES-Electricity (RES-E), consistent growth at regional level is expected in the short, medium and long term of:

- photovoltaic also through support for the creation of energy communities, self-consumption of self-produced energy, agro-voltaic;
- offshore wind
- other RES and green hydrogen. In particular, it is expected that green hydrogen will play an important role in decarbonising the "hard-to-abate" sectors which in Lazio concern port areas, heavy transport and specific industrial sectors such as paper mills, glass production, ceramics and concrete

Regarding this paragraph addressing the themes of production and use of green hydrogen, the inspiring Project Best Practice has been ABERDEEN HYDROGEN HUB.

ROLE OF GREEN HYDROGEN IN THE REGIONAL ENERGY PLAN
The Regional Energy Plan considers hydrogen a central resource to make the decarbonization process more efficient and cheaper and reach regional objectives to 2030.

The Region therefore intends to promote the production of green hydrogen by creating opportunities to encourage the birth of new businesses and the development of new production activities in a rapidly growing sector with a high level of technological innovation.

Regarding this paragraph addressing the themes of production and use of green hydrogen, the inspiring Project Best Practice has been ABERDEEN HYDROGEN HUB.

WHERE ELECTRIFICATION IS NOT POSSIBLE, PROMOTE THE USE OF HYDROGEN TO REPLACE FOSSIL FUELS IN HEAVY TRANSPORT SYSTEMS
As regards the transport sector it is appropriate to provide for the possibility of creating hydrogen production plants from renewable sources dedicated to heavy transport, both by road and rail.

Regarding this paragraph addressing the themes of production and use of green hydrogen, the inspiring Project Best Practice has been ABERDEEN HYDROGEN HUB.

**SCENARIOS AND INTERVENTION POLICIES ON ENERGY EFFICIENCY IN NETWORKS AND IN THE END-USE SECTORS**

**TRANSPORT SECTOR**

**GREEN HYDROGEN AND BIOMETHANE MOBILITY**

The use of green hydrogen and biomethane to replace fossil fuels requires upgrading and conversion of the storage and distribution network, with related terminals for supply by end users. For biomethane, since the chemical composition is the same as that of methane, the interventions are minimal, while more relevant interventions are required for hydrogen.

**Main Proposals for Action and Recommendations**

It is believed that the objectives of the Scenario for the reduction of final consumption in road transport indicated in Part 2 can also be achieved thanks to the development of a refueling infrastructure that supports the circulation of biomethane and green hydrogen vehicles through the continuation of the following policies:

- Urban planning simplification for road distribution systems that install electricity, biomethane or green hydrogen refueling points
- Support for Research and Innovation for the green economy

Regarding the theme of the development of a refueling infrastructure network, the inspiring Project Best Practice are listed below:

- Project “Hydrogen Corridor For The Pyrenees Region (H2piyr)”-Regional Government of Aragona
- Refuelling Infrastructures-Aberdeen City Council
- Tendering Process of an HRS for Hydrogen Buses-Province of South Holland
- Lessons learnt from hrs operations-Province of South Holland
USE OF GREEN HYDROGEN IN HEAVY ROAD TRANSPORT AND IN PORT AREAS

In the context of Directive 2014/94 / EU (DAFI) 129 and of the National Strategic Framework there is also green hydrogen, as this energy vector can constitute a sustainable technology to allow heavy vehicles to comply with the strict limits on polluting emissions in line with what is indicated in the Next Generation EU and in the NRRP. In this sense, the NRRP provides for the construction of at least 100 experimental hydrogen charging stations for cars and trucks by 2026. In line with the NRRP, the National Ecological Transition Plan established to make hydrogen from renewable sources available on a large scale for industrial and transport uses since 2030. However, the spread of the end uses of green hydrogen in Italy requires overcoming the infrastructural gap in the first ring of the distribution chain, with possible interventions at existing terminals and the construction of a network of intermediate coastal storage. The achievement of these objectives implies the development of adequate infrastructural equipment linked to the methods of transport, distribution and final use of green hydrogen. With this in mind, maritime transport and the port sector also play an important role in the reduction of greenhouse gases and pollutant loads. The ports represent in particular an important case study to accelerate the adoption of alternative fuels to decarbonise the "hard-to-abate" sectors and trigger the "scale-up" in the use of green hydrogen, for example produced by wind "offshore", but also to demonstrate the use of hydrogen to replace fossil fuels in port activities such as heavy transport and logistics machinery.

Main proposals for action and recommendations

It is believed that the Scenario objectives for the reduction of final consumption in road and sea transport and in port sector indicated in Part II, can also be reached thanks to the development of a refueling infrastructure that supports the circulation of heavy vehicles powered by green hydrogen and in particular on the basis of the implementation of the specific actions illustrated below:

Promote and encourage the creation of refueling points for green hydrogen

To ensure the circulation of heavy vehicles powered by green hydrogen, by 2026 an adequate number of refueling points accessible to the public will be created in port areas and in municipalities belonging to Class 1 and located along Lazio sections of the "Scandinavian - Mediterranean Corridor" of the TEN-T core network.

- Project “Hydrogen Corridor For The Pyrenees Region (H2piyr)”-Regional Government of Aragona
- Refuelling Infrastructures-Aberdeen City Council
- Tendering Process of an HRS for Hydrogen Buses-Province of South Holland
- Lessons learnt from hrs operations-Province of South Holland
Renewal of the vehicle fleet of the PA

Regional administration, local authorities and the institutions controlled by them must respect art. 10 of the DAFI Decree which provides for the obligation, when replacing the respective fleet of cars, buses and public utility vehicles, including those for the collection of urban waste, to purchase at least 25% of green hydrogen or electric motor vehicles.

- North East Scotland Fleet Review (Hydrogen Demand) - Aberdeen City Council
- Fch Ju Bus Projects: Highvlocity (Aberdeen City Council)-Hytransit (Aberdeen City Council)-Jive (Aberdeen City Council)-3Emotion (Province of South Holland)-Jive 2 (Province of South Holland)
- Governance modelspta-pto for hydrogen buses - Province of South Holland
- Financial feasibility of hydrogen bus deployment (tco comparison) - Province of South Holland
- Joint procurement of hydrogen buses: spv model - Province of South Holland
- Collaboration between tendering bodies in a joint procurement - Province of South Holland

Lessons learnt from hydrogen bus operation - Province of South Holland

The SMART HY AWARE Project - Smart solutions for HYdrogen potential AWAReness Enhancing funded by the Interreg Europe Program and of which the Regional Directorate for Housing Policies and Territorial, Landscape and Urban Planning is partner, aims to strengthen and improve the regional policy tools of the public and private hydrogen-electric mobility sector through the circulation and adoption of one or more European Good Practices.

During the Project, more than 30 Good Practices were presented (https://www.interregeurope.eu/smarthyaware/good-practices/) about to the following specific issues relating to the hydrogen-electric mobility sector.

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These Good Practices inspired the previously listed intervention proposals and could also represent a useful reference for their concrete future implementation.
3. **Stakeholders involved** (please indicate the organisations in the region who are involved in the implementation of the action 1 and explain their role)

- Regional Council Energy Commission for the presentation and approval of amendments
- Lazio Region Smart Hy Aware Working Group for the elaboration and inclusion of the approved amendments in the new version of the Plan
- Regional Council for the approval of the amended Plan

4. **Timeframe** (please specify the timing envisaged for action 1)
PROCEDURAL ACTIVITIES TO ADOPT REGIONAL ENERGY PLAN

APPROVAL OF THE AMENDMENTS IN THE ENERGY COMMISSION

INCLUSION OF THE APPROVED AMENDMENTS IN THE NEW VERSION OF THE PLAN

POSSIBLE START OF A NEW STRATEGIC ENVIRONMENTAL ASSESSMENT PROCEDURE RELATING TO THE NEW AMENDED PLAN

APPROVAL OF AMENDED PLAN BY REGIONAL COUNCIL
The Regional Energy Plan formal adoption procedure focuses on the following administrative steps:

- the amendments are discussed and officially approved by the Energy Commission of Lazio Region Regional Council
- the approved amendments are included in the draft of the new Regional Energy Plan (in our case in the Chapter 3 “Policies and Programming”)
- the eventual start of a new Strategic Environmental Assessment Procedure in order to evaluate the environmental impact of the approved amendments inserted in the Regional Energy Plan
- the final approval after the conclusion of the new Strategic Environmental Assessment Procedure of the amended Regional Energy Plan by Lazio Region Council

The steps that can realistically be accomplished by the end of Phase 2 (31 July 2023) are the approval of the amendments in the Energy Commission of the Council and the inclusion of the approved amendments in the draft of the New Version of Chapter 3 “Policies and programming” of the Plan. After the elaboration of the new Regional Energy Plan draft a new Strategic Environmental Assessment Procedure could start in order to evaluate the environmental impacts of the new version of the Plan. The whole Procedure could last at least 6 months.

The final approval of the new Energy Plan by Lazio Region Council can be carried out only after the new Strategic Environmental Assessment Procedure will be concluded.

Therefore Lazio Region Council final approval is UNLIKELY to take place by the end of the Project because as previously explained the Plan could be subjected to a new Strategic Environmental Assessment. Furthermore, regional elections will be held in May 2023. This means that all the administrative procedures will have to be closed a couple of months before.

5. **Costs**

Staff costs for Regional Council Energy Commission and Regional Council members and Lazio Region Smart Hy Aware Working Group that have to elaborate and approve amendments and insert them into the new version of the Energy Regional Plan

6. **Funding sources**

Lazio Region budget for human resources