H2tALENT – Building the Alentejo “Green” Hydrogen Valley

Clean Hydrogen Partnership

Co-funded by the European Union

The project is supported by the Clean Hydrogen Partnership and its members.

H2tALENT : SUMMARY

H2tALENT launches a flagship Hydrogen Valley in Alentejo to consolidate the strong investment in place and boost the penetration of “green” H_2 by deploying new initiatives across the entire value chain from local production to use, while also connecting with existing and planned infrastructures and initiatives.

SUMMARY

- H2tALENT produces >500 ton/y of "green" H_2 used by several off-takers in industry, mobility (public bus & truck) and building (municipal pool).
- The strategic position of the Sines Port is valorised as a key multi-modal hub for interconnection and import and export, as well the industrial ecosystem surrounding it.

Work Packages

- **WP1** - Project management and coordination (UEVORA)
- **WP2** - Boost of integrated broader energy system and territorial cohesion (UNL)
- **WP3** - Industrial applications at the Sines backbone (WINPOWER)
- **WP4** - Applications in industry, mobility and buildings across Alentejo (HYLAB)
- **WP5** - Optimization, monitoring and assessment of the entire Valley (UALG)
- **WP6** - Upscaling, upskilling, acceptance and replication (PACT)
- **WP7** - Exploitation, dissemination and communication (R2M)

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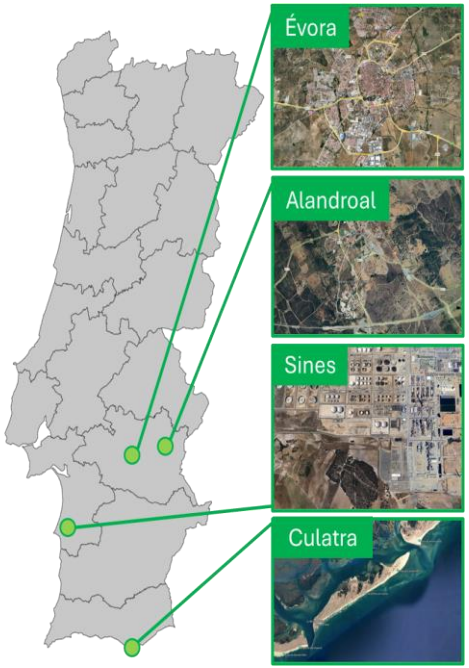
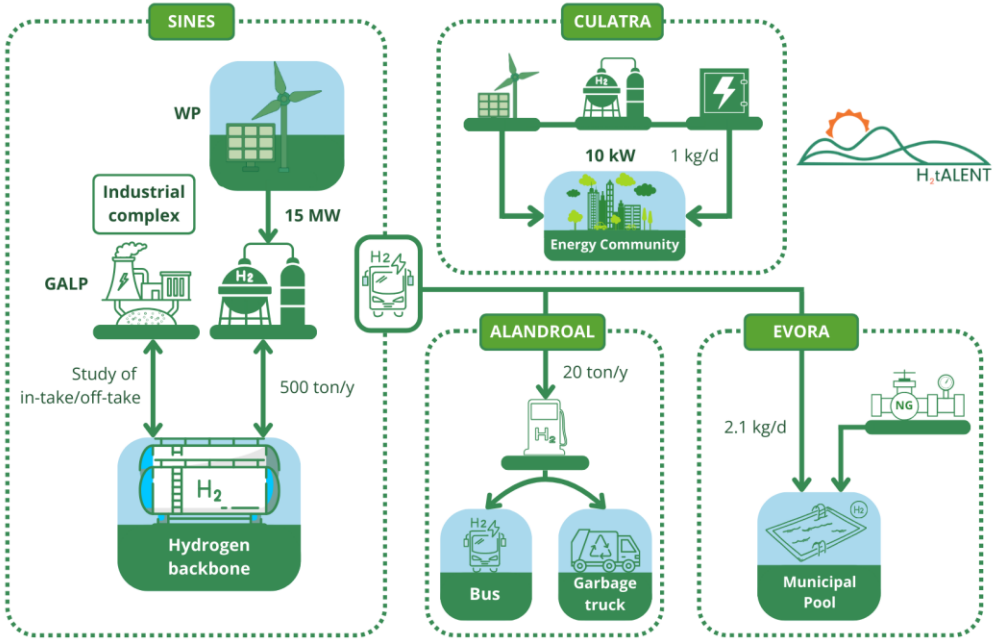
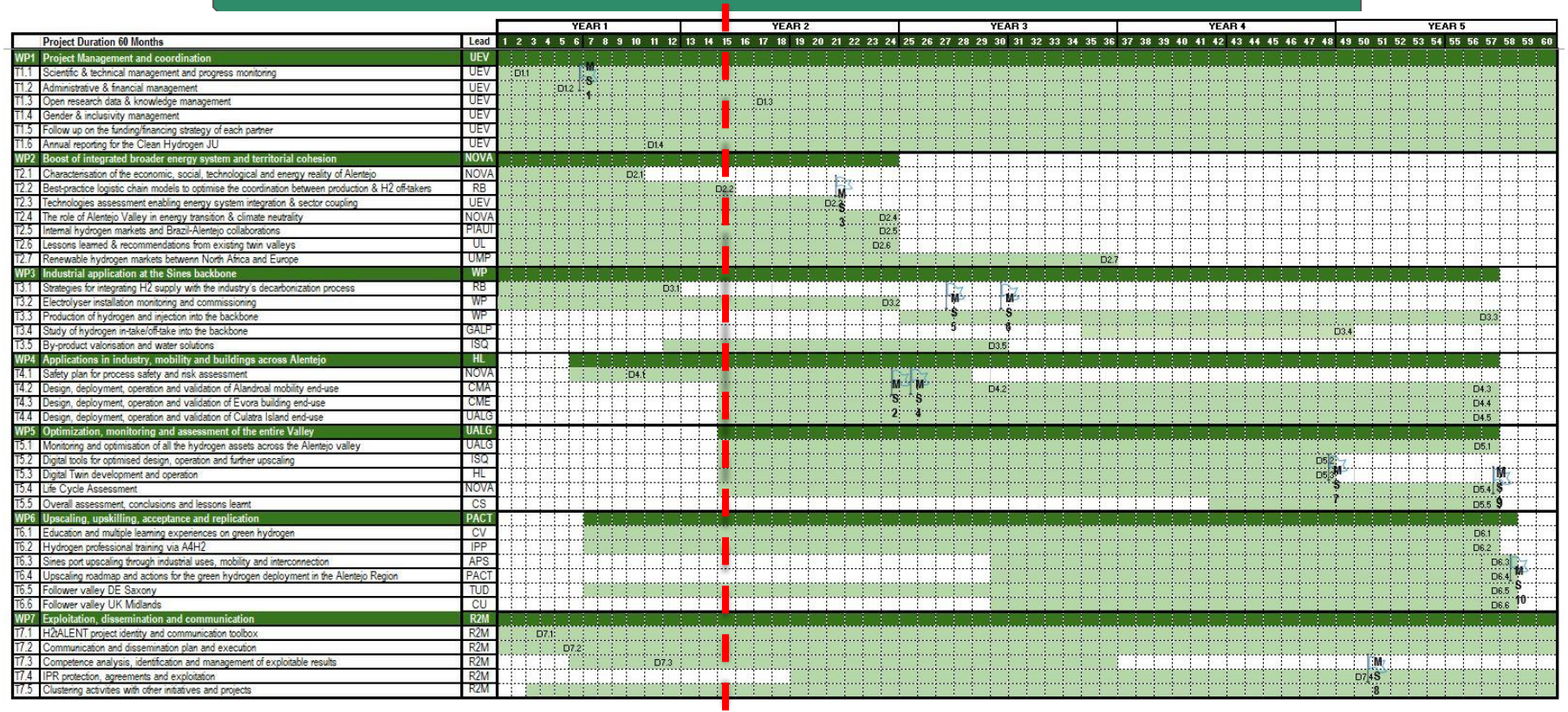




Time Frame


YEAR 1
YEAR 2
YEAR 3
YEAR 4
YEAR 5
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
Project Duration 60 Months
Lead
WP1 Project Management and coordination UEV
T1.1 Scientific & technical management and progress monitoring UEV
T1.2 Administrative & financial management UEV
T1.3 Open research data & knowledge management UEV
T1.4 Gender & inclusivity management UEV
T1.5 Follow up on the funding/financing strategy of each partner UEV
T1.6 Annual reporting for the Clean Hydrogen JU UEV
WP2 Boost of integrated broader energy system and territorial cohesion NOVA
T2.1 Charactersation of the economic, social, technological and energy reality of Alentejo NOVA
T2.2 Best-practice logistic chain models to optimise the coordination between production & H2 off-takers RB
T2.3 Technologies assessment enabling energy system integration & sector coupling UEV
T2.4 The role of Alentejo Valley in energy transition & climate neutrality NOVA
T2.5 Internal hydrogen markets and Brazil-Alentejo collaborations PIAUI
T2.6 Lessons learned & recommendations from existing twin valleys UL
T2.7 Renewable hydrogen markets betwenn North Africa and Europe UMP
WP3 Industrial application at the Sines backbone WP
T3.1 Strategies for integrating H2 supply with the industry's decarbonization process RB
T3.2 Electrolyser installation monitoring and commissioning WP
T3.3 Production of hydrogen and injection into the backbone WP
T3.4 Study of hydrogen in-take/off-take into the backbone GALP
T3.5 By-product valorisation and water solutions ISQ
WP4 Applications in industry, mobility and buildings across Alentejo HL
T4.1 Safety plan for process safety and risk assessment NOVA
T4.2 Design, deployment, operation and validation of Alandroal mobility end-use CMA
T4.3 Design, deployment, operation and validation of Evora building end-use CME
T4.4 Design, deployment, operation and validation of Culatra Island end-use UALG
WP5 Optimization, monitoring and assessment of the entire Valley UALG
T5.1 Monitoring and optimisation of all the hydrogen assets across the Alentejo valley UALG
T5.2 Digital tools for optimised design, operation and further upscaling ISQ
T5.3 Digital Twin development and operation HL
T5.4 Life Cycle Assessment NOVA
T5.5 Overall assessment, conclusions and lessons learnt CS
WP6 Upscaling, upskilling, acceptance and replication PACT
T6.1 Education and multiple learning experiences on green hydrogen CV
T6.2 Hydrogen professional training via A4H2 IPP
T6.3 Sines port upscaling through industrial uses, mobility and interconnection APS
T6.4 Upscaling roadmap and actions for the green hydrogen deployment in the Alentejo Region PACT
T6.5 Follower valley DE Saxony TUD
T6.6 Follower valley UK Midlands CU
WP7 Exploitation, dissemination and communication R2M
T7.1 H2ALENT project identity and communication toolbox R2M
T7.2 Communication and dissemination plan and execution R2M
T7.3 Competence analysis, identification and management of exploitable results R2M
T7.4 IPR protection, agreements and exploitation R2M
T7.5 Clustering activities with other initiatives and projects R2M
D1.1
D1.2
M S 1
D1.3
D1.4
D2.1
D2.2
D2.3
M S 3
D2.4
D2.5
D2.6
D2.7
D3.1
D3.2
M S 5
M S 6
D3.3
D3.4
D3.5
D4.1
M S 2
M S 4
D4.2
D4.3
D4.4
D4.5
D5.1
D5.2
D5.3
M S 7
D5.4
M S 9
D5.5
D6.1
D6.2
D6.3
D6.4
D6.5
M S 10
D6.6
D7.1
D7.2
D7.3
M S 8
D7.4

H2tALENT: Building the Alentejo "Green" Hydrogen Valley

Project Objectives

Overall Goal

- Develop a "green" hydrogen ecosystem in Alentejo, covering the entire value chain.

Specific Objectives (SO)

1. Promote territorial cohesion and economic growth;
2. Demonstrate integration with natural gas and electricity grids;
3. Design, construct, and operate industrial infrastructure for H_2 production and distribution;
4. Enhance social acceptance and upskill stakeholders.

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Methodology and Approach

Highlights:

- Use of tools like Digital Twins and Environmental Impact Assessments;
- Strategic partnerships for replications in other H_2 valleys (Germany and the UK);
- Development of H_2-based mobility and industrial applications.

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Expected Impacts

Key Benefits:

- Production of >500 tons/year of "green" H_2 starting in 2027 and beyhond;
- Positioning the Port of Sines as a strategic import/export hub for "green" H_2;
- Contribution to EU climate and energy targets by fostering renewable energy integration and sector decarbonization.

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Partnership and Collaboration

Consortium:

- 29 partners from 7 countries, including universities, technology companies and public stakeholders;

- Strong collaboration with international initiatives, including Brazil and Marocco, to promote knowledge exchange and technology transfer, connection to global H_2 markets through the Port of Sines.

Political Support:

- Integration with national and European energy and environmental policies. Strong backing from governamental bodies, ensuring long-term viability and scalability.

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Key Deliverables Submitted:

- **WP1 (Coordination and Management):** D1.1, D1.2, D1.3 and D1.4 already submitted.
- **WP2 (Boost of Integrated broader energy system**): D2.1 and D2.2 already submitted.
- **WP3 (Industrial Applications):** D3.1 already submitted.

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Key Deliverables Submitted:

- **WP4 (Applications in industry, mobility and buildings) :** D4.1 already submitted.
- **WP7 (Communication):** D7.1, D7.2 and D7.3 already submitted.

In just over a year of implementation, the H2tALENT project has successfully submitted 11 deliverables, representing aprox. 30% of the total planned. This progress demonstrates that the Consortium remains on track with the established timeline, ensuring solid implementation and alignment with the project's objectives.

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Progress:

- **Milestone 1**: Completion of the Projct Management Handbook and Data Management Plan, ensuring project alignment from the start.

- **Collaborative Achievements:** Establishment of a robust communication framework among 29 partners, ensuring alignment across 7 countries. Initiation of knowledge-sharing activities to foster scalability and replication.

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Next Steps

Priorities for 2025:

- Installation and operation of the electrolysers for the Sines backbone;
- Launch of H_2 applications in mobility and buildings;
- Expansion of the Hydrogen Academy to promote skills and social acceptance;

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Next Steps

Priorities for the following years:

- Implementation of H2tALENT;
- Submission of new projects to consolidate the ecosystem that is being created.

H2tALENT: Closing Remarks

Key Message:

- H2tALENT is more than a project – it is a vision for a more sustainable future, aligned with the global energy transition.

Through collaboration, innovation, and a shared vision, H2tALENT aims to position Alentejo as a leader in the "green" hydrogen economy, setting a benchmark for global transitions

Thank you!

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CONSORTIUM