



Study on the potential for harmonisation and alignment of health & safety standards for wind-power plants at onshore as well as offshore sites

FINAL REPORT

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Project coordinator:

eclareon GmbH
Johann Blain

Albrechtstraße 22
10117 Berlin
Tel. +49 30 88 66 740 21
jbl@eclareon.com
www.eclareon.com

Supported by



Project website: www.windharmony.eu

Introduction.....	3
1 Task 1 – Mapping Legislation	3
1.1 Task focus as per consortium offer	3
1.2 Adaptations during the project.....	4
1.3 Performed activities, incl. faced challenges & identified solutions.....	4
1.4 Deliverables.....	4
2 Task 2 – Mapping Standardisation and Certification	4
2.1 Task Focus as per Consortium Offer.....	4
2.2 Adaptations during the project.....	5
2.3 Performed activities, incl. faced challenges & identified solutions.....	5
2.4 Deliverables.....	5
3 Task 3 – Stakeholder Interaction and Communication.....	6
3.1 Task Focus as per Consortium Offer.....	6
3.2 Adaptations during the project.....	7
3.3 Performed Activities, incl. faced Challenges & identified Solutions.....	7
3.3.1 Stakeholder mapping and Steering Group forming.....	7
3.3.2 Challenges experimented.....	8
3.3.3 Stakeholder Engagement Plan and Workshops.....	9
3.4 Deliverables.....	10
3.5 Remaining Activities.....	10
4 Task 4 – Methodologies for Qualification, Assessment and Prioritisation of Potential Harmonisation and Alignment at European Level	10
5 Task 5 – Applying Methodologies and Presenting Results.....	11
6 Task 6 – Developing a roadmap for trainings and Exchange of Best Practice Events.....	12
6.1 Task Focus as per Consortium Offer.....	12
6.2 Adaptations during the project.....	13
6.3 Performed Activities.....	13
6.3.1 Development of a roadmap	13
6.3.2 Best practice sharing events	14
6.4 Deliverables.....	15
7 Further work.....	16

Introduction

The final report of the Wind Harmony Project covers the whole project period.

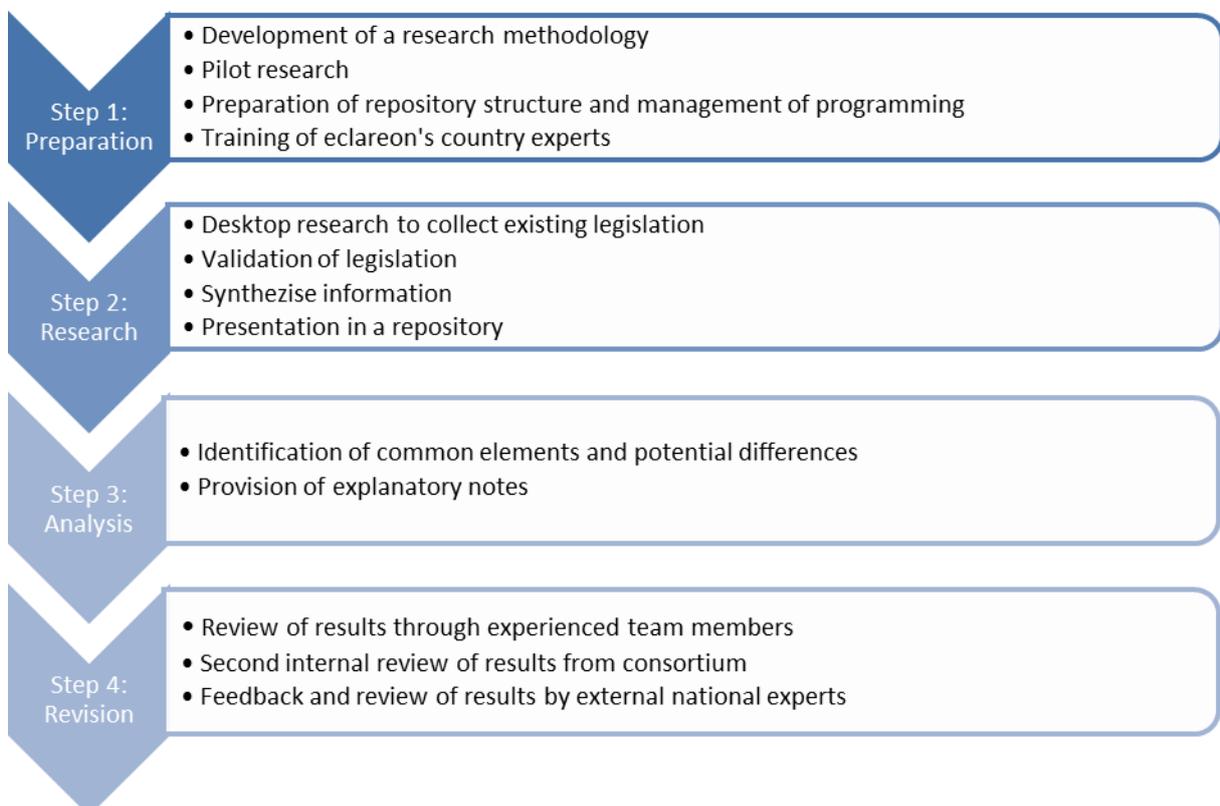
The report shall provide an overview on the performed activities, faced challenges and identified solutions as well as the deliverables of all project activities.

To allow for a quick overview, a common reporting structure was chosen for all project tasks: first the foreseen task activities as defined in the consortium offer are presented to recall the offered activities. In a second sub-point, potential adaptations to the originally envisaged activities during the project are highlighted to clearly show agreed deviancies from the original proposal. In a third sub-point, the consortium is presenting the performed activities for each task, or referring to the appropriate reports in annex. The activity overviews will list the individual activities, outline on occurred challenges and the taken measures to ensure an optimal result of activity.

1 Task 1 – Mapping Legislation

1.1 Task focus as per consortium offer

In Task 1 of the Wind Harmony Project, the mapping of Health & Safety (H&S) legislation in the 31 countries (28 EU-MS, Iceland, Liechtenstein, Norway) is performed. Based on the consortium proposal, the task is implemented in 4 steps, containing different activities.



Graph 1 - Overview of Task 1 Activities

1.2 Adaptations during the project

In the kick-off meeting with Unit C1 of the European Commission, no adaptation of the foreseen activities and implementation steps of task 1 were taken.

1.3 Performed activities, incl. faced challenges & identified solutions

In the course of the implementation of task 1, following activities have been performed:

- Development of a research methodology
- Pilot research & adaptations of research methodology based on made experiences
- Legislation repository
- Project website
- Training of country experts & legislation research
- Internal review process of research results
- External review process of task results

All activities are separately described in the first progress report to allow for an optimal and detailed assessment of performance.

1.4 Deliverables

In Task 1 of the project, two deliverables had to be produced:

- The project website (www.windharmony.eu), as well as
- An overview on the H&S legislation in all 31 countries under concern, presented in a publicly accessible repository.

As outlined in the Progress report 10-2019, both deliverables have successfully been performed.

2 Task 2 – Mapping Standardisation and Certification

2.1 Task Focus as per Consortium Offer

In Task 2 of the Wind Harmony Project, the mapping of administrative procedures in terms of standardisation and certification in the 31 countries is performed.

Based on the consortium proposal, the task is implemented in 4 steps, containing different activities. The below graph visualises the originally foreseen steps and activities to be performed under task 2:



Graph 2 - Overview of Task 2 Activities

2.2 Adaptations during the project

In the kick-off meeting with Unit C1 of the European Commission, no adaptation of the foreseen activities and implementation steps of task 1 were taken.

2.3 Performed activities, incl. faced challenges & identified solutions

In the course of the implementation of task 2, following activities have been performed:

- Development of a research methodology
- Pilot research
- Training of country experts & procedures & standard research
- Stakeholder interview
- Website and repository
- Barrier research and analysis

All activities are separately described in the first progress report to allow for an optimal and detailed assessment of performance.

2.4 Deliverables

In Task 2 of the project, two deliverables have to be produced

- an overview of standardisation and certification procedure on the Wind Harmony website, as well as
- an overview report on the standardisation and certification procedure

In accordance with the granted extension of task 2 deadline, both deliverables were made available for the second Stakeholder Workshop of the project in November 2019.

3 Task 3 – Stakeholder Interaction and Communication

3.1 Task Focus as per Consortium Offer

The objective of this Task is to set up a well-balanced stakeholder engagement process covering stakeholders from the wind industry and related supply chain as well as authorities and bodies in charge of testing and certification. In this regard, the activities of Task 3 go beyond the communication and dissemination of project results and actually promote a proper involvement of various stakeholders in the study assessment. As an integral part of the project, the deliverables of Task 3 are meant to:

- Support the partners to collect and particularly validate the information gathered in the Tasks 1 and 2;
- Allow for a well-balanced assessment and prioritization of potential harmonisation in the Tasks 4 and 5;
- Ensure the dissemination and political communication of the standardisation roadmap in Task 6.

In terms of methodology, the objectives mentioned above are supported by a number of sub-tasks, which consist of:

- Mapping of key stakeholders for the sector and setting up a (stakeholder) engagement plan which details the main steps in stakeholder interaction and communication,
- Setting up a Steering Group that will lead and support the effective implementation of the study and provide guidance on prioritisation aspects,
- Organising 4 stakeholder engagement workshops including communication activities,
- Ad-hoc communication with stakeholders at European and national level.

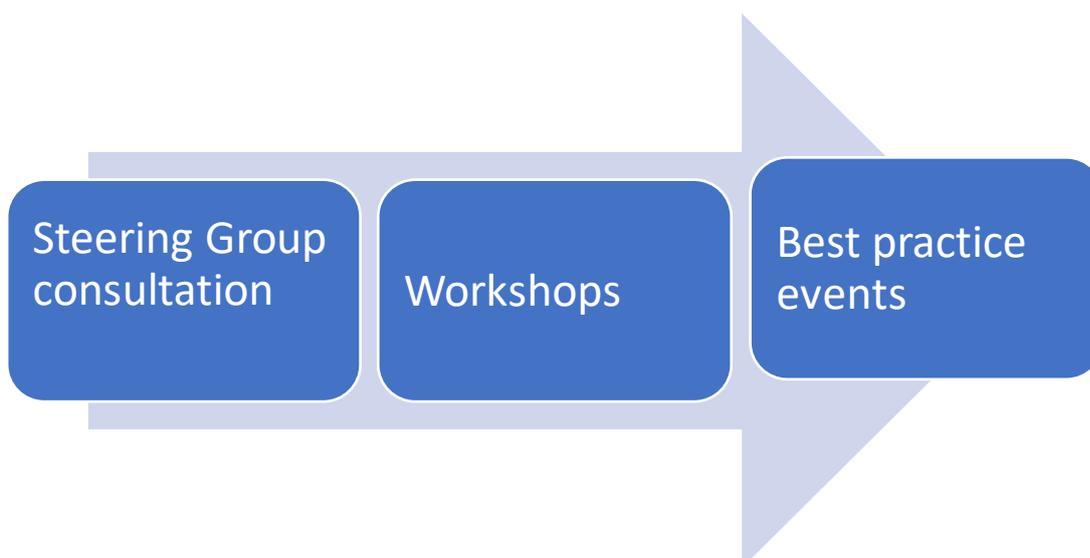


Figure 1 Key steps for stakeholder engagement WindHarmony

3.2 Adaptations during the project

During the kick-off meetings on 3 May a few suggestions were made and agreed. Due to a change in the initial timeline of the project (grant agreement signed later) which delayed the initial project schedule. For the workshops, new locations and timing were proposed as the delayed start of the project has made some originally envisaged locations impossible. These changes were also based to support the combination of workshops with local events of the national associations to raise target audience (particularly for workshop 3 and 4).

Due to COVID 2019, only two workshops took place physically. The rest of the events were organised online, and in addition, we had several additional online meetings with most of the industry in May 2020. All this has been agreed with the project officer in advance and the project coordinator eclareon.

3.3 Performed Activities, incl. faced Challenges & identified Solutions

3.3.1 Stakeholder mapping and Steering Group forming

Regarding the stakeholder interaction and communication, the consortium identified jointly a very broad list of national and European stakeholders, which are to be involved in the course of the project implementation.

A Steering Group was identified and approached to support the project implementation.

WindEurope has mapped the stakeholders involved in the health and safety for wind energy. For this, we have been in contact with national wind industry associations, international associations, developers, manufactures, wind energy contractors and national and European health and safety agencies. Representatives of these organisations formed a Steering Committee which supported the activities undertaken during this study. The committee played a key role in the workshops, helping to identify the most relevant topics. This group provided guidance on the main deliverables (including during the research phase), participated in four workshops and validated the final recommendations. The members of the Steering Committee contributed with their time and expertise to all these activities. The outcome and recommendations from the study was greatly influenced by the contributions from the Steering Group. In order to facilitate participation, the consortium reimbursed travel expenses for the core group's attendance of the workshops, including flight fares, accommodation and subsistence. Due to the COVID pandemic, some of the travel budget was not spent; it was used for setting up online webinars and meetings that were conducted instead, as described below under 4.3.3.

Below is a short description of each of the key categories. The complete list of organisations is available upon request.

3.3.1.1 Wind industry associations

The Consortium worked with the national associations of France, Ireland, Germany, Poland and UK. They represent the wider industry view. Moreover, the Irish, German, Polish and UK associations were active in health and safety activities and held working groups on this specific topic. They also organised annual events dedicated to H&S at national level, which allows them to have an up to date understanding of potential harmonisation topics.

3.3.1.2 International organisations or other cooperatives at European level

The Global Wind Organisation (GWO) and G+, the global health and safety organisation for the offshore wind industry were invited and accepted to be part of the Steering Committee. Through G+, the main developers and manufacturers active in offshore wind was very well represented. At the European Commission's Recommendation, WindEurope has invited a representative of the EU Joint research Centre, the Virtual Centre of Offshore Safety Expertise (ViCOS). Unfortunately, the line of activities under VICOS is no longer active. WindEurope will invited further international experts based on the EC recommendations, such as North Sea Energy Cooperation apart from GWO and G+ . SafetyOn was also active since it was created end 2019. IMCA, the international marine contractors' association has also contributed extensively. They are currently looking at potential harmonisation as well.

3.3.1.3 Developers and manufacturers

Enercon, Vestas, Siemens Gamesa, GE, Vattenfall Wind, engie, Nordex and Boralex brought a hands-on perspective, based on experience. These developers and manufacturers already have dedicated teams working on H&S and have already been involved in WindEurope's Working Group dedicated to H&S.

3.3.1.4 Health and Safety agencies

One of the key challenges of this Task (and the overall project) was to align different and potentially conflicting perspectives in a well-balanced process. WindEurope addressed health and safety agencies and invited them to take part in a Steering Committee, which was used for presenting, discussing and aligning results and finding of this project. The view of the health and safety agencies was essential to this study, as they are the ones responsible for the regulations and enforcement of workplace health, safety and welfare, and for research into occupational risks.

The agencies contacted were ANSES (French Agency for Food, Environmental and Occupational Health & Safety), the Danish Working Environment Authority (Arbejdstilsynet), the Senior Labour Inspectors Committee on health and safety, the European Commission, the Federal Maritime and Hydrographic Agency (BSH), TKI Wind op Zee, and the National Institute for Safety, Health and Wellbeing at Work (INSSBT). The French, DK, German and UK representatives have shown interest and presented in the first workshop.

Concerning the EU-OSHA, they expressed interest in the Wind Harmony study and supported us intensively with the communication and dissemination, however, they were not be able to attend the workshops physically or online. Our contact person was Emmanuelle Lebrun.

3.3.1.5 Wind energy contractors

WindEurope has identified several companies as invitees: BMS, IMCA, GWS, GeoSea/Deme Group, Seaway and Boskalis. They were invited, however, only IMCA, Van Oord and Boskalis were present in the workshops and contributed extensively.

3.3.2 Challenges experimented

The consortium experienced some difficulties in approaching and convincing government representatives to be part of the group and actively participate in meetings as well as contractors. They seem to be more difficult to engage with. However, WindEurope managed to have good representatives for all the workshops. WindEurope continued its efforts to engage them at least through emails and phone calls and online meetings, when they could not attend physical meetings.

Representatives of the national wind energy associations were also invited, although they all expressed an interest in the event, only some made it to the physical meeting (see point above).

Also, based on European Commission (EC) suggestions, WindEurope was in contact with representatives behind the VICOS initiative. Unfortunately, the network is no longer in use and no representative from Joint Research Centre (JRC) or the EC. WindEurope continued engaging with private stakeholders and experts from the network, based on recommendations from JRC, the unit who managed the network.

The final list of people approached was submitted with the first Stakeholder Engagement Plan and approved by the project officer after a few adjustments.

3.3.3 Stakeholder Engagement Plan and Workshops

A Stakeholder Engagement Plan (SEP) was handed in and approved half July 2019. It also accommodated the EC comments with regard to contractor's definition. This deliverable has been approved by the European Commission.

The first workshop took place in Brussels on 22 October. The event had a part dedicated to the Steering Group meeting and the second one a workshop open to all stakeholders. The event had a very good representation, and people were happy and satisfied with the kick-off workshop despite some reticence in the beginning. It focused on the project objectives and how harmonisation can improve health and safety and bring benefits and costs reduction. The minutes and agenda are in Annex.

The second workshop took place on 28 November in Copenhagen during the WindEurope Offshore Conference 2019. The event hosted a meeting of the Steering Group as well in the afternoon.

The third workshop was supposed to take place in Paris on 13 March. Due to **COVID-19** and lock-down, the event was organised **online**. A series of 1h meetings were held online during the whole day of Friday 13 March.

In addition, to complete the workshop, a series of additional meetings were organised by WindEurope in cooperation with RCG and eclareon with key stakeholders in the industry to complement the meeting and discuss about prioritisation. These **meetings took place between 18 to 26 May**. Essentially, these meetings complemented the discussions on 13 March on the areas and topics to prioritise for harmonisation and recommendations on how to take them forward. This was an additional activity, discussed and approved by the EC project officer.

The 4th workshop was organised online on the 10th June. The project was well attended by industry representatives (more than 70 persons) and other organisations and health and safety agencies. The presentations and discussions afterwards were very good and insightful, addressing the priority topics for potential harmonisation on health and safety and recommendations. The presentations and agenda are attached. No specific minutes were taken as the conclusions were integrated into the final version of Task 5 by RCG.

In addition, the consortium organised several meetings with the Steering Group online to present the intermediary topics and recommendations and ask for their input, in addition to the two physical meetings which took place on 22 October and 28 November 2019. These were

held in 2020 on 28 January, 5 March and 12 May, focusing mainly on defining and agreeing on priority topics for harmonisation and recommendations on how to move forward.

3.4 Deliverables

D3.1: Detailed description of the process for stakeholder interaction, including information and communication plan (Month 2) – the Stakeholder Engagement Plan (SEP) was finalised and approved in July 2019.

3.5 Remaining Activities

WindEurope will continue to discuss health and safety in its Board and other foras, regardless of the Wind Harmony. It will remain an important topic for the sector.

4 Task 4 – Methodologies for Qualification, Assessment and Prioritisation of Potential Harmonisation and Alignment at European Level

This task was described in detail in the Progress Report submitted to the Commission in October 2019.

The final version of deliverable *D4.1: Methodologies for qualification, assessment and prioritisation of potential harmonisation or alignment at European level* was submitted to the Commission in October 2019. Following acceptance of the deliverable by the Commission, it was published on the project website the same month.

The Progress report noted that ‘the methodologies may yet need to be refined’ based on feedback received from the Steering Group and lessons learned from the first project workshop. No substantial changes were made that necessitated a revised version of deliverable D4.1 to be produced. However, as the project progressed, it was necessary to depart from or adjust the proposed methodologies. These changes are described in detail in section 2.2 of the Task 5 deliverable and can be summarised as follows:

- Aspects of the methodologies were applied at all four workshops, instead of only the third and fourth workshops as proposed. This allowed data collection to commence earlier and the project and ensured more thorough consultation with stakeholders.
- The methodologies proposed a rigid, staged approach seeking to ‘lock down’ the outputs of each stage before moving to the next. Since the consortium carried out more stakeholder engagement than originally proposed, with a range of stakeholders bringing different perspectives to the table throughout the project, a more iterative approach was taken to the identification of topics and interventions.
- Addition of an online stakeholder survey to improve the reach of the engagement activities with the aim of gathering views in under-represented industry sectors and markets.
- As originally proposed, potential interventions (recommendations) were to be identified with industry stakeholders in a workshop setting. The COVID-19 pandemic resulted in this workshop (and all other project events) being replaced by a series of virtual events which were not considered appropriate to the intensive group

discussions necessary to ‘workshop’ potential interventions. As such, the consortium proposed a list of recommendations and consulted the industry on these proposals during a virtual ‘round table’ event.

- Other minor technical changes to the collection, assessment, shortlisting and presentation of topics and interventions, including the format and structure of the physical workshops.

5 Task 5 – Applying Methodologies and Presenting Results

This task and the results emerging from it are described in detail in Report: *Qualification, assessment and prioritisation of potential harmonisation or alignment at European level - Application of methodologies and recommendations for intervention*. The activities can be summarised as follows:

- Development of a list of potential candidate topics (based on a questionnaire distributed at the first project workshop, targeted consultation, the outputs of project Tasks 1 and 2, literature research and the expertise and experience of the consortium)
- Assessment and filtering of the potential candidate topics (based on their applicability to work activities, work locations or asset types and project life cycle phases, and the degree of concern expressed for each topic by stakeholders)
- Application of a risk-based impact-concern model to prioritise and shortlist the topics
- Identification of suitable interventions to address each shortlisted topic
- Ongoing consultation on, and refinement of, the topics and interventions
- Preparation of finalised list of interventions, later split into 15 ‘priority’ and 22 ‘additional’ interventions
- Impact assessment of the ‘priority’ interventions, considering costs, benefits and barriers associated with each
- Preparation of final report, including:
 - Comprehensive narrative on the application of the methodologies
 - Analysis of the data gathered (with data tables included as appendices)
 - Detailed description of the context, justification and proposed ‘next steps’ for each priority intervention
- Facilitation of stakeholder workshops and ‘round table’ calls throughout the project
- Conducting an online survey (available for four weeks in February-March 2020) to validate the candidate topic shortlist and explore suitable interventions
- Presentation of priority recommendations at final project workshop (June 2020)

It should be noted that three separate deliverables were originally proposed for this task:

- D5.1: Report containing applying methodologies and draft presentation of results
- D5.2: Report on potential socio-economic benefits, competitiveness improvements, the timescale to become effective and the potential barriers of the harmonisation of health and safety in the wind energy sector
- D5.3: Final list of initiatives on health and safety including socio-economic benefits and potential barriers

Since the content of all three deliverables are closely related, it was proposed to combine them into a single deliverable for submission at the end of the project. This proposal was accepted by the Commission.

An advance copy of the final lists of recommendations (subject to stakeholder consultation and refinement) was provided to the Commission in July 2020. No specific comments on the scope or suitability of the recommendations were received from the Commission.

A draft copy of the final deliverable was sent to the Commission in August 2020). No specific comments were received. The report was subsequently sent to members of the project Steering Group for comment. Comments were received from one organisation and the consortium worked with that organisation to address the concerns raised. Minor amendments were also made in light of information shared during the Best Practice Events. The final version of the deliverable is provided with this document.

Challenges

Barriers to the implementation of the methodologies that were encountered during the project are described in section 8 of the final deliverable.

The main barriers were:

- The COVID-19 pandemic which necessitated changes to the stakeholder engagement activities. To ensure stakeholders had sufficient opportunities to engage with the project and shape the shortlisting of topics and development of recommendations, additional virtual ‘round table’ sessions were convened allowing small, focused groups of stakeholders to discuss the topics, and suitable solutions in detail. The stakeholder survey and the sharing of draft outputs by e-mail also allowed the consortium to gather views in place of physical workshops. As noted, this necessitated minor technical changes to the proposed methodologies, but the overall approach and key principles set out in D4.1 were followed throughout.
- Engagement. While noting very positive overall engagement in the project, there was significant variation in its quality and quantity. On balance, the more consistent and proactive engagement came from:
 - Established stakeholder forums (e.g. G+, GWO and national wind energy associations)
 - Jurisdictions with established wind sectors (primarily northern and western Europe)
 - Offshore wind supply chain (clients, OEMs and contractors)While there were notable exceptions, lower levels of engagement were seen with:
 - Jurisdictions with less established wind sectors (primarily southern and eastern Europe)
 - Onshore wind supply chain (principally contractors)
 - Front line wind workers and/or their OHS representatives
 - Regulators covering both occupational and maritime safety

6 Task 6 – Developing a roadmap for trainings and Exchange of Best Practice Events

6.1 Task Focus as per Consortium Offer

In Task 6 of the Wind Harmony project, a roadmap is developed and 3 best practice sharing events were conducted.

6.2 Adaptations during the project

Due to COVID 2019, none of the best practice events took place physically. All three were organised online. All this has been agreed with the project officer in advance.

6.3 Performed Activities

6.3.1 Development of a roadmap

As required by the Tender Specifications, the Consortium developed a roadmap for two different trainings or courses. The difference in these two courses is indeed the target groups whom the courses will address:

The roadmap is addressing representatives of organisations that are in charge of testing and certifications:

- Public bodies;
- National institutions for standards and certifications;
- European institutions for standards and certifications;
- Higher authorities for legal questions;
- Private bodies
- Technical Inspection Associations;
- Insurance companies.

As well as stakeholders of the wind industry that have to comply with health and safety standards or are affected by them for other reasons:

- Project developers;
- Wind turbine manufacturers;
- Wind power supply chain;
- Working groups from national wind power associations;
- Representatives from ongoing initiatives on standardization;
- Financial institutions that require standards for financial assessments of projects (such as banks and insurance companies).

The consortium designed the structure of the roadmap. The project manager of eclareon and leading experts of RCG did synthetise the core messages of Task 1 and 2 as well as 4 and 5.

The structure of the roadmap is as follow:

- Overview of legislation in target countries
- Description of standardization and certification procedures
- Presentation of the priority topics for harmonisation and recommendations
 - o Training: common standards, mutual recognition and transferability
 - Definition and status
 - Proposed solutions
 - Barriers
 - Benefits
 - Next steps
 - o Electrical, mechanical and other hazardous energies
 - Definition and status
 - Proposed solutions
 - Barriers
 - Benefits
 - Next steps

- Wind turbine safety design standards
 - Definition and status
 - Proposed solutions
 - Barriers
 - Benefits
 - Next steps
- Fitness to work and medical examinations
 - Definition and status
 - Proposed solutions
 - Barriers
 - Benefits
 - Next steps
- Emergency Planning and response
 - Definition and status
 - Proposed solutions
 - Barriers
 - Benefits
 - Next steps
- Critical safety information sharing
 - Definition and status
 - Proposed solutions
 - Barriers
 - Benefits
 - Next steps
- Common regulatory and enforcement approach
 - Definition and status
 - Proposed solutions
 - Barriers
 - Benefits
 - Next steps

The members of the consortium shared the structure with selected experts of their network and especially with those of the steering committee.

Based on the structure described above and the content developed in the earlier tasks, the experts of eclareon and RCG did assemble the content of the roadmap. Graphs and figures are also provided.

The draft of the roadmap has been revised following the same tried and tested routine described for task 1 and 2 as well as chapter 4.2. The newly developed content has been revised first internally by experiences team members and dedicated quality and language experts, then by experts from the partners of the consortium.

6.3.2 Best practice sharing events

The planning and the implementation of the best practice sharing events has been conducted by eclareon in close cooperation with WindEurope. They were organised on 29 September, 13 and 27 October 2020. They were chaired by WindEurope.

In a first step, eclareon and WindEurope prepared both content and the logistics of the three events.

The content of the events did focus on good and best practices regarding health and safety standards. The expert of eclareon did look at such standards that have been either evaluated

as very outstanding because of their potential of becoming standards in other regions as well or their high recognition from authorities or for other reasons that set them apart from other standards.

Eclareon took the list of best practice candidates and shared them internally and then externally with experts from the wind power industry to collect input and comments. Based on these comments, the project manager of eclareon and WindEurope did prepare the material for the best practice sharing events.

For the preparation of the logistics, the expert from WindEurope did identify the right digital tool and in cooperation with the national wind power association the best timing of the webinars. By making use of its own network and the network of the national wind power association, the Consortium did make sure that large group of wind power experts will be invited.

The expert of WindEurope did moderate all three events. The experts of eclareon and RCG presented findings and gave room for discussions.

The first best practice sharing event organised on 29 September 2020 focused on the Spanish context with the participation of following Spanish wind industry representatives:

- Tomás Cabezudo, Technical Director, Spanish Wind Energy Association (AEE)
- Luis Garcia Garrido, Head of Prevention, Acciona Energia
- Jesús Giraldo, O&M international onshore health and safety technician, Iberdrola

The second best practice sharing event on 13 October 2020 did focus on the polish context with the participation of following Polish wind industry representatives:

- Dagmara Żygowska, Consultant & Former VP, Wind Polish Association
- Artur Ambrożewicz, General Manager, VULCAN Training
- Sylwester Maksymiuk, EHS Coordinator & Tech Ops, GE International
- Łukasz Sikorski, Country Manager (Poland), Offshore Wind Consultants

The third and very last webinar on 27 October 2020 did focus on Denmark with following experts:

- Jakob Bjørn Nielsen, Director of Training and Operations, Global Wind Organisation (GWO)
- Jesper Bank, Chief Commercial Officer, Port of Esbjerg

They contained discussions on the roadmap, paths to harmonisation and ways forward.

The question and comments of the participants were recorded and the video protocol of each event was shared on the website of the project.

6.4 Deliverables

D6.1: Roadmap including plans for training

D6.2: 3 Best practice sharing events

The Consortium did prepare a video protocol of each event and shared it on the website of the project www.windharmony.eu.

7 Further work

The project stakeholders were very clear that the report should avoid making multiple recommendations which may be impractical to deliver. For this reason, the recommendations were refined to highlight a relatively short list of priority topics. In addition, taking account the full list of recommendations and the workplans of many of the lead stakeholder groups there is a strong argument that there is no need to identify further work at the current time.

For most of the recommendations, existing stakeholder working groups are already in place who are well-placed to take ownership and drive implementation of the identified topics and to identify new workstreams, as necessary.

The wind sector is expected to play an ever-increasing role in the decarbonisation of the energy sector and related infrastructure. In parallel there is growing expectation from stakeholders and investor partners that high environmental and social governance (ESG) standards - including ensuring the health, welfare and wellbeing of workers – should be central to the culture and performance of the whole supply chain. In this context the project does identify a few high-level areas where further work or engagement could add significant value to the sector as a whole.