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UPWARDS

Deliverable D8.4

Stakeholder engagement

WP	8	Dissemination, external communication and exploitation
Task	8.3	Stakeholder engagement

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[1] Dissemination level: **PU** = Public, **PP** = Restricted to other programme participants (including the JU), **RE** = Restricted to a group specified by the consortium (including the JU), **CO** = Confidential, only for members of the consortium (including the JU)

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1. Introduction

This report is aimed at presenting the approach that UPWARDS have taken in engaging a broad range of stakeholders in wind energy sector. Starting from the networks established and mobilized around the goal of wind energy within the UPWARDS project, this report presents a comprehensive stakeholder analysis and reports on the activities that have taken place and are envisioned to take place with a purpose of stakeholder engagement. The overall goal was to make use of the following channels and to use the following means for stakeholder engagement, in collaboration with Wavestone in charge of project's dissemination and communication activities:

1. Social medias, including UPWARDS project LinkedIn page, are used to ensure the highest visibility of UPWARDS on the web and increase project outreach since the beginning of the project. A dedicated social media strategy was developed to assess the most efficient and effective channels for the project's scope. UPWARDS's communication is also complemented by the partner's own channels.
2. UPWARDS project website: the main entry point featuring information for both the professional community and the general public. The project website is updated regularly.
3. Events and face-to-face communications: meeting with relevant people and organizations (on technological platforms as well as in the conferences, seminars, stakeholders' workshops, etc.) remains a vital part of the communication plan, where adapting to the specific needs of organizations will be carefully planned. More details on the attended events are provided in the section 3 "Stakeholder engagement activities".
4. Stakeholder community: as the project is predominantly research oriented with deep expertise in modelling and digitalisation, there is a will to have an "open innovation" approach to publications and meet ups. This will be the basis of the strategy to generate engagement in the project's audience. Planned workshops with citizens and policy-makers will be cornerstones of the project's strategy;
5. Physical contact: UPWARDS will bring people together through congresses, workshops, seminars, specific trainings and frequent participation to events.

One of the main indicators of impact will be the number of stakeholders active in UPWARDS and giving feedback about the project outputs. Also, EEAB and stakeholders such as associations and working groups in EU platforms, will help boost UPWARDS's outreach, as multipliers.

The following chapter will present how these means of engagement and dissemination were or will be enrolled with identified stakeholders. The information about each organisation has been directly retrieved from their websites (links are provided in table for further reading).

2. Stakeholder analysis

This chapter presents a comprehensive review of stakeholders identified in the context of the UPWARDS project. A multi-level approach has been taken to identify a range of actors that have a degree of relevance for the UPWARDS project and have committed or potentially can be involved in contributing to achieving goals within UPWARDS or disseminating the achieved results.

The stakeholder analysis includes all the relevant stakes and interest positions that actors may take within wind energy sector. Actors may choose to these stakes are visualised in Figure 1 depicting different types of stakeholders in wind energy sector that UPWARDS project is part of. The following sections expand on each of these broad categories.

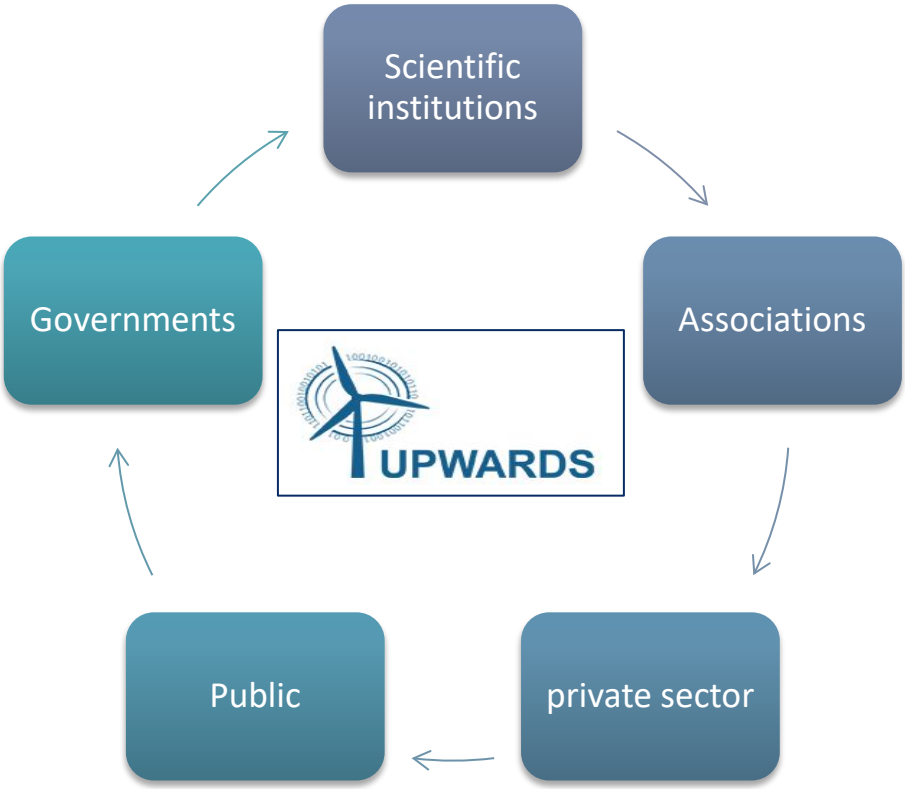


Figure 1. Stakeholders related to UPWARDS

Stakeholders within the UPWARDS consortium

The table below presents the organizations involved in UPWARDS which are organizations represented by the individuals participating in the UPWARDS consortium. Each partner is representing organizational goals that tend to be directly linked to wind energy sector, with wind turbine manufacturers having direct interest in wind turbine industry. The remaining partners are also considered stakeholder of the wind energy sector because through the project they co-create knowledge on wind turbine technology and its possible adaptation. Because of this goal, it is important to make explicit what the role of each organization is within the consortium in order to provide a transparent information to the public and other stakeholders of wind energy sector who are interested in following the process of wind turbine innovation and to provide opportunity for their engagement. This transparency is also important in facilitating dissemination of UPWARDS activities and focus from the early stage and in long-term.

Partner	Country	Objective within wind energy sector
Wageningen University and Research	The Netherlands	Provide better understanding on opposition to wind energy and the role of public engagement in wind energy sector. As University of Life Sciences, its core expertise is to bridge natural and social sciences by developing applied interdisciplinary solutions.
Aalborg University	Denmark	As expert in wind turbine composite blade modelling and testing, AAU contributes as WP5 leader, for the coordination and execution of the research aimed at developing progressive material damage models and simulation tools. AAU has a long and well-proven internationally recognized track record concerning composite materials technology and strives to continue to drive the R&D of simulation capabilities and experimental techniques. For material damage model parameter identification and validation, AAU also contributes with experimental material testing ranging from coupon to blade sub-structural level through its high-end Composite and Mechanical Testing Laboratories.

AWA Truepower SL	Spain	Is an expert in atmospheric conditions simulation, and is the forecast provider for over 60 GW of installed renewable energy projects, it assess over 200 GW and provides power forecast to over 1000 renewable energy plants. For over 30 years AWA (formerly AWST) accurately modelled the atmosphere and its impact on the local, regional, or global energy industry. They perform big data analytics using high-performance computing which allows us to quantify the uncertainty of scheduling real-time renewable energy and utility electric loads.
The Fraunhofer Society	Germany	Fraunhofer ITWM contributes with integrated simulation, high-perfomance computing, and knowledge retrieval. ITWM provides its powerful HPC infrastructure as well as the know-how in model-order reduction and parallel computing. Furthermore, the expertise in machine learning methods (esp. deep learning) are used for data mining and knowledge retrieval.
Samtech SA	Belgium	As expert in wind turbine non-linear FEA modelling, including composites, kinematics and mechatronics, SAMTECH brings its pre-existing expertise in 3D systems simulation and composite structures sizing using its FEA solver SAMCEF. SAMTECH contributes to the implementation of an unsteady vortex panel method, a two way coupling in co-simulation between fluid (STAR-CCM+) and structure-mechanisms-control, with 3D flexible models of composite blades. SAMTECH also contributes to the development and the identification of new material laws for composite blades and to the HPC integrated simulation framework developed by the UPWARDS partnership.
Sintef AS	Norway	Sintef contributes to the project in two different fields; materials technology and flow technology. In materials technology SINTEF just won a H2020 project on developing new materials for turbine blades and in flow technology SINTEF has expertise in modelling advanced flow fields inside wind parks. Currently SINTEF is working with the wind energy division in Statoil where the result are used for their upcoming offshore wind parks in the North Sea. SINTEF supplemented with the HPC capacity has the necessary computing resources needed.
Siemens Gamesa renewable Energy AS	Denmark	As one of the world largest wind turbine manufacturers and the world market leader in offshore wind turbines, SWP brings its pre-existing expertise within composite blade design and manufacturing. SWP contributes with the design of the commercial 2,3 MW SWP WT and definition of a virtual prototype of a 15 MW WT to utilize in simulation under realistic conditions in UPWARDS. SWP defines and manufactures coupon and blade substructure specimens for the experimental testing campaigns. SWP is highly involved in WP5 in has been contributing to national and international research projects concerning modelling and simulation of complex, hierarchical or highly coupled dynamical phenomena since many years.

Siemens industry software NV	Belgium	As software editor in fluid dynamics and acoustics, Siemens Industry software contributes to both CFD computation, including Fluid-Structure Interaction, and aero-acoustic modelling and prediction. SISW is a world leader in Acoustic Simulation (formerly LMS International) and CFD computation (formerly CD-Adapco). STAR-CCM+, the SISW CFD commercial software, has been the first CFD code to use over 100,000 computer nodes. This expertise is used in the HPC integration framework.
National University of the Littoral	Argentina	UNL brings an important theoretical background in numerical simulation methods to other European partners. This expertise cannot be found in Europe because it is based on the theoretical background of SAMCEF Mecano that is already a unique tool in the world for integrated numerical simulation of 3D non-linear flexible mechanisms using Finite Element Method.
Wavestone Luxemburg	Luxemburg	One of the leading independent players in the European consultancy sector, and the number one in France, Wavestone brings to the project its expertise in dissemination and communication strategies as well as support for management activities, including IP, data and innovation management. Leader in dissemination and communication actions within UPWARDS project, Wavestone makes sure that UPWARDS reaches its key audience in the most effective way.
Von Karman Institute for Fluid Dynamics	Belgium	VKI is as WP4 leader, responsible for the coordination and execution of the research work aimed at developing high- fidelity aeroacoustic prediction tools. IVKDF has a long-standing expertise in the modelling and simulation of rotating machinery noise by means of CFD-based statistical formulations and for the propagation of acoustic waves in inhomogeneous media. In this project, IVKDF combines those tools to obtain an accurate, yet efficient aeroacoustic simulation chain, nested in the global simulation platform.

External stakeholders (within EU)

This chapter presents a list of stakeholders of the EU wind energy sector. These stakeholders were identified based on their direct contribution to wind energy sector in terms of having stake in wind energy market, regulation, policy or planning. Next to that a number of lobbying and citizen groups as well as NGOs are listed due to their direct stake in shaping the political context of the European wind energy sector. These stakeholders are approached during the project duration at least at one point or multiple times to consult on the topics listed in the table as well as to broaden the networks of UPWARDS. The networks are broadened by asking for reference to other actors in wind energy sector that belong to the network of the listed stakeholders. Members of these organizations are thus experts in their own domain whose feedback and knowledge is an asset for UPWARDS and is helping to achieve and improve goals of UPWARDS. The way in which these stakeholders are or will be involved varies from phone call conversations, email exchange to interviews in person and participation in research or project activities.

Associations

Association members and decision-makers will be approached in events and working groups related to the wind industry. The following associations are given priority:

Stakeholder name	Country (headquarters)	URL:	Role	Problem statement within wind energy sector	Contribution/form of engagement with UPWARDS (already made or planned in next phases of the project)
WindEurope	Belgium, Brussels	https://windeurope.org/	Wind energy association- European network	WindEurope is the voice of the wind industry, actively promoting wind power in Europe and worldwide. We have over 400 members, active in over 35 countries. In addition to wind turbine manufacturers with a leading share of the world wind power market, our membership encompasses component suppliers, research institutes, national wind and renewables associations, developers, contractors, electricity providers, finance and insurance companies, and consultants	• Possibly disseminate knowledge achieved within UPWARDS in the European networks of the association. Contact with the organization has been established (with Dorina Iuga, senior project manager). The organization was in advisory board of EU funded win-wind project within horizon 2020. • The organization will also provide feedback on research focus for studying public engagement with wind energy in Europe and brainstorm on possibilities for integration of data into the integrated simulation. Future exchange is likely to take place on conference organized by WindEurope which provide opportunities for further stakeholder engagement within Wind Europe's network.

European Renewable Energies Federation	Belgium, Brussels	http://www.eref-europe.org/	federation of national renewable energy associations	EREF is the federation of national renewable energy associations from all EU Member States, representing all renewable energy technologies. For 20 years, EREF has been the only association to holistically represent all renewable's in negotiations on EU energy policy and continues to promote the interests of independent renewable power, fuel and heat production by striving to create, maintain and develop a stable and reliable framework for renewable energy producers.	• Provide feedback on UPWARDS focus on public engagement • Share knowledge on public concerns about aspects of technology and landscape design, planning and long-term management • Disseminate UPWARDS results
European Council for Energy Efficient Economy	Sweden, Stockholm	https://www.eceee.org/	NGO	Eceee is a membership-based non-profit association. As Europe's largest and oldest NGO dedicated to energy efficiency, we generate and provide evidence-based knowledge and analysis of policies, and we facilitate co-operation and networking.	• Provide feedback on UPWARDS focus on public engagement • Share knowledge on public concerns about aspects of technology and landscape design, planning and long-term management • Disseminate UPWARDS results

European Energy Research Alliance	Belgium, Brussels	https://www.eera-set.eu/eera-joint-programmes-jps/list-of-jps/wind-energy/	The European Energy Research Alliance (EERA) is an association of European public research centres and universities active in low-carbon energy research.	Bringing together more than 250 organisations and around 50,000 researchers from 30 countries, EERA represents Europe's largest energy research community. The mission for EERA JP Wind is to provide strategic leadership for medium to long-term research and to support the European wind energy industry and societal stakeholders. The joint programme brings together all public research organisations in Europe with substantial research and innovation efforts in wind energy.	• Planning & Deployment, social, environmental and economic issues – Coordinated by Lena Kitzing, DTU • Provide feedback on UPWARDS focus on public engagement • Share knowledge on public concerns about aspects of technology and landscape design, planning and long-term management • Disseminate UPWARDS results
European Technology and Innovation Platform on wind energy	Belgium, Brussels	https://etipwind.eu/?ref=tpwind	EU funded project	ETIP Wind provides a public platform to wind energy stakeholders to identify common Research & Innovation (R&I) priorities and to foster breakthrough innovations in the sector.	• Provide feedback on UPWARDS focus on public engagement • Share knowledge on public concerns about aspects of technology and landscape design, planning and long-term management • Disseminate UPWARDS results
European Forum for Renewable Energy Sources (EUFORES)	http://www.eufores.org/	Belgium, Brussels	parliamentary network	EUFORES is a European parliamentary network with Members from all major political groups in the European Parliament as well as in the national and regional Parliaments of the EU Member States. Apart from the Members of Parliament, EUFORES is supported by a broad range of non-parliamentary members - renewable energy companies and associations, scientific institutes, energy agencies, NGOs and individuals who are strongly committed to renewable energy and energy efficiency. EUFORES is financed by members'	• Provide feedback on UPWARDS focus on public engagement • Share knowledge on public concerns about aspects of technology and landscape design, planning and long-term management • Disseminate UPWARDS results

				contributions, EU grants and private sponsorships.	
European Renewable Energy Centres Agency	https://eurec.be/	Belgium, Brussels	NGO	Established as a European Economic Interest Group in 1991. An independent member-based association, it incorporates 48 research groups from all over Europe, and covering all forms of renewable energy.	• Provide feedback on UPWARDS focus on public engagement • Share knowledge on public concerns about aspects of technology and landscape design, planning and long-term management • Disseminate UPWARDS results
European Association for Renewable Energies (EUROSOLAR)	https://www.eurosolar.de/en/	Germany, Bonn	NGO	Non-profit association that works independently of political parties, institutions, commercial enterprises and interest groups to promote the total replacement of nuclear and fossil energies with renewable energy sources.	• Provide feedback on UPWARDS focus on public engagement • Share knowledge on public concerns about aspects of technology and landscape design, planning and long-term management • Disseminate UPWARDS results
REScoop	https://www.rescoop.eu	Belgium, Berchem	*European federation of citizen energy cooperatives*	REScoop.eu is the European federation of citizen energy cooperatives. We are a growing network of 1,500 European energy cooperatives and their 1.000.000 citizens who are active in the energy transition.	• Provide insights on what drives positive engagement of publics in energy cooperatives • Provide insights in what kind of participation in wind turbine design do cooperative facilitate and how this matters for acceptance • Disseminate UPWARDS results in community

Private sector engagement

This list includes stakeholders that were identified as relevant for Upwards project, based on the existing network of UPWARDS partners as well as external to UPWARDS consortium stakeholders who do/or could contribute to UPWARDS. This list is however not exhaustive nor representative of the wind energy sector. Instead it includes a sample of stakeholders that represent the different stakes of the private wind energy sector in Europe including: manufacturers, certification companies, energy companies (exemplified by the Dutch wind energy sector), test sites, technology developers, wind farm owners and operators, utility companies, engineering services, etc. these actors will be approached at fairs and will participate in meetings and workshops organised in the frame of WP7 and WP8 (social acceptance task 7.2 and exploitation task 8.4)

Standardisation/certification bodies: standardisation in the wind industry normally is related to tower structures and blade design, not to simulation models. However, the project results will surely have impact in the design of WT and wind farms i.e. TC obtaining timing, and thus standardisation/certification bodies will be targeted as stakeholders. These will include organisations such as IEC and CENELEC and independent bodies such as DNV GL that will be kept aware in related events and specific meetings. AWS will also play its part in the standardisation/certification activities as a company owned by a certification multinational, UL; DNV GL will be represented on the EEAB.

The focus in engaging those stakeholders is on industries related to wind energy: comprising not only wind turbine manufacturers and wind farm developers and operators, but also for future sectors of application for the simulation models that will be developed during the project, such as the aerospace, automotive and naval sectors. UPWARDS' main industrial stakeholders will be approached through associations' events and through:

a. Participation in scientific and technology/industry conferences introducing new technology developments and models;
b. Publications in industry-relevant and scientific journals;
c. Participation at fairs related to the project developments e.g. high performance computing, composites, mechanical fluid and noise modelling, etc.

Stake/ role	Stakeholder name	Country (headquarters)	Webpage	Role within wind energy sector	Contribution/form of engagement with UPWARDS (already made or planned in next phases of the project)
Manufacturer of wind turbines	Siemens Gamesa renewable Energy	Spain	https://www.siemensgamesa.com/en-int	Gamesa provides cleaner, more reliable and more affordable wind power.	• Inform UPWARDS about state of art of Siemens practices around public engagement, customer satisfaction, opposition to wind energy as well as co-design? • Provide feedback on questions for the public/developers and project managers considering technological solutions to challenges of wind energy projects implementation
Wind energy developers and energycompany	PowerPeers	Netherlands	https://www.powerpeers.nl/	Energy company that sells wind energy, aims to increase the market share of RES	• Website connecting producers of wind energy with potential consumers, the company mediates the transition and enables long-term engagement of consumers with wind turbines through smart technologies. • Contact with the company will be established with a purpose of interview concerning the ways in which they manage to facilitate positive engagement of customers with wind energy
	Samenom		https://www.samenom.nl/projecten/		
	Van der bron		https://vandebron.nl/		

	PureEnergie	Enschade, the Netherlands	https://pure-energie.nl/	Wind energy developer (project development and public participation) and energy distribution to consumers. Pure energy has a platform through which they sell wind energy to individual consumers who can choose from which project want to source energy from.	• Interviewed expert of pure energy in the domain of public participation in wind energy developments- explained their procedures for gaining acceptance and listed the technology –related challenges that WP7 takes into account in • Pure energy has a number of successful cases of endorsed by publics (local and broader) wind energy projects • Pure energy made a call for connecting project developers with technology manufactures to improve the amount and possibilities of tailor-made solutions in cases of local opposition/ or lack of approval of standard designs.
Test site	Test center Osterlid of DTU wind energy	Denmark	https://www.vindenergi.dtu.dk/english/test-centers/osterild	DTU Wind Energy is one of the largest and most well-known university department for wind energy in the world with 250 employees. This test center is a unique location for public stakeholder engagement as it has visitor center (invites public to familiarize with wind turbines, their design and impact on landscape).	• Field visit is planned in for research on public engagement in design of wind turbines. • Inform UPWARDS about the results of visitor centre on visitors' perceptions of wind turbines • WP7 will inquire about the possibilities for public engagement at the site// visitor centre with wind turbines • Possibility to gain data about public perceptions of particular wind turbines?

Initiative established by government to support energy transition in the NL	Millieucentrale	Netherlands	https://www.milieucentraal.nl/klimaat-en-aarde/energiebronnen/windenergie	Provides practical knowledge and advice to individuals interested in improving the sustainability of their households and in investing in renewable energy, including wind.	• Contact with the company will be established with a purpose of interview concerning their experiences and knowledge of the challenges of the wind energy sector when it comes to engagement consumers

Other stakeholders

In addition to the stakeholders listed above, a number of other stakeholders have been identified.[4]

UPWARDS will be disseminated through participation in key events of several European platforms (conferences, brokerage events etc.). Furthermore, knowledge will be shared in the platforms' communities and communication through partners that are already members of such platforms. The SET-Plan, under whose umbrella the following platforms are organised, will be given priority:

- ETIPWind: logically, the first EU platform targeted will be the technology platform focused on wind energy. Having several representatives in the ETP's steering committee i.e. SINTEF, Fraunhofer (ITWM) and Siemens (SWP and SISW), UPWARDS consortium will present and discuss the project findings, not only in steering committee meetings and workshops, but also in the social media (https://etipwind.eu/);

- ETIP SNET: as one of the major barriers in wind energy implementation in EU, the necessity of an innovative, smart grid goes in hand with UPWARDS' developments. Therefore, the partners will give also priority to the regional workshops organised by the ETIP Smart Networks for Energy Transition (SNET), as well as participate in the ETP's working groups, in which SINTEF, AAU, Fraunhofer (ITWM) and Siemens (SWP and SISW) are already active (http://www.etip-snet.eu/);

- ZEP (Zero Emission Platform): in order to encourage the development of low-carbon technologies and approaches, UPWARDS partners will boost their presence in the events organised by the Zero Emissions Platform (http://www.zeroemissionsplatform.eu/), as well as in related social media. SINTEF is a member of the platform, which includes 2 governmental agencies, 3 NGOs, 5 companies and 7 RTOs/academic partners.

- ETP4HPC and related PPP: there is a deep component of high-performance computing in the project, making necessary to introduce the project developments to the members of the HPC EU platform, if the full network of stakeholders is to be engaged in the project. Fraunhofer (ITWM) are members of the ETP (European Technology Platform) and will network in the events organised by the platform, as well as participate to publications issued by the ETP, should the opportunity arise (http://www.etp4hpc.eu);

- EERA (European Energy Research Alliance) on wind; represents an important dissemination channel as the members works within the scientific and technological area. One of the task leaders from SINTEF is the SINTEF representative in EERA. (https://www.eera-set.eu).

[4] Many of these have been listed in the UPWARDS proposal

Members of advisory board (External Expert Advisory Board (EEAB)

The following EEAB members have or will be involved in the UPWARDS project as valuable stakeholders:

Member of advisory board	Country (headquarters)	Webpage	Stake/ role	Contribution/form of engagement with UPWARDS (already made or planned in next phases of the project)
Eugene de Beer	The Netherlands	Peutz	Experts (consultants) in the domain of acoustics and noise, including wind energy	Feedback on the way UPWARDS aims to address and investigate the role of noise pollution form wind energy in sustainable wind energy developments and the ways of public engagement with noise mitigation strategies and technological solutions
Ivan Pineda	Belgium	Wind Europe	The director of Public Affairs of wind Europe	Share own expertise on public participation and provide feedback on UPWARDS from the perspective of public engagement In wind turbine design, with attention to noise reduction
Gudmund Olsen	Norway	Statoil	Dir R&D Offshore wind	Share own expertise on park Development (at Hywind) Offshore wind and in marine environment, especially in relation to public concerns and stakeholder needs for offshore wind turbine developments
Todd Griffith	USA	Sandia Nat. Lab.	Technical leader	basic R&D Offshore Wind Materials
Amilcar Quispitupa	Denmark	DNV-GL	Senior Engineer	IEC Standard Materials

External stakeholders (global networks)

A number of global networks are relevant stakeholders to the UPWARDS project:

Name organisation	Web url	Location	Organizational aim	Engagement with UPWARDS
International Energy Agency	https://www.iea.org/	Paris, France	This NGO work spans a variety of programmes and initiatives, helping ensure energy security, tracking clean energy transitions, collecting data, or providing training around the world	UPWARDS presence at an event organized by IEA, for example: IEA Clean Energy Transitions Summit Conference — Paris, France (09 Jul 2020) (https://www.iea.org/events/iea-clean-energy-transitions-summit) This ministerial-level event will bring together key government ministers, CEOs, investors and other major stakeholders from around the world with the aim of accelerating the pace of change through ambitious and real-world solutions. The immediate aim will be to focus on concrete actions to reverse the growth in carbon emissions this decade, focusing on all the fuels and technologies that can help achieve that goal rapidly.
IRENA International Renewable Energy Agency	https://www.irena.org/	Abu Dhabi, Dubai	Intergovernmental organisation with 161 Members, IRENA plays a leading role in the energy transformation as a centre of excellence for knowledge and innovation, a global voice for renewables, a network hub and a source of advice and support for countries.	Include reports developed by Irena about the trends in global wind energy sector (https://www.irena.org/wind) into background for the social acceptance of wind energy as well as establish contact with the organization to promote UPWARDS and improve the research focus on acceptance
Renewables Now	https://www.ren21.net/		REN21 is the only global renewable energy community of actors from science, governments, NGOs and industry. We provide up-to-date and peer-reviewed facts, figures and analysis of global developments in technology, policies and markets. Our goal:	Connecting UPWARDS to The REN21 Academy which is co-organised with members of the REN21 community and is for the community. It takes place biennially in the years between the IRECs. The purpose of this event is to encourage discussions around topics that are relevant to the REN21 community and the larger issue of achieving an energy transition with renewables. Candid discussions among participants help stimulate new ideas and approaches to tackle these key topics, moving

			enable decision-makers to make the transition to renewable energy happen – now.	forward. The uptake of renewable energy and a transition to more sustainable future affect us all. The REN21 Academy provides a space where tough questions can be asked and answers debated.
100% renewables	http://www.global100re.org/	Germany, Bonn	The goal of this NGO is to initiate dialogue about 100% RE, build capacity and educate policymakers about the opportunities, case studies and stories that are happening all over the world.	Establish contact to disseminate UPWARDS research outputs and to get inputs for the research on societal factors for wind enegry development
American Wind Energy Association	http://www.awea.org/	USA, Washington, DC	National trade association of the U.S. wind energy industry, AWEA is a national trade association representing wind power project developers, equipment suppliers, services providers, parts manufacturers, utilities, researchers, and others involved in the wind industry.	Compare and reflect on opportunities and challenges of public participation and engagement in wind energy sector in Europe and America
Centre for Sustainable Energy (CSE)	https://www.cse.org.uk/	UK, Bristol	independent national (UK) charity aims to advance sustainable energy policy and practice. Provides training in sustainable2 construction	Insights for UPWARDS: The Protocol for Public Engagement with Proposed Wind Energy Developments in England https://www.cse.org.uk/downloads/toolkits/planning/renewables/protocol-for-public-engagement-with-proposed-wind-developments-england.pdf
Energy 21	https://www.energy21.com/	Utrecht, the Netherlands	Registered educational charity which aims to unite local groups that are working toward the use of renewable energy.	Inquire about the trends in industrial exploitation of wind power from the perspective of social and environmental challenges

Global Wind Energy Council (GWEC)	https://gwec.net/	Brussels, Belgium	Members of this the international trade association for the wind power industry include over 1,500 companies and institutions, including all the world's major wind turbine manufacturers	Learn from the organization about the global trends in wind energy sector in terms of best, global practices for sustainable expansion of wind power. Explore opportunities for dissemination
World Renewable Energy Congress	https://www.wrenuk.co.uk/	UK	This Non-profit organisation affiliated to UNESCO, aims to promote the technical education of scientists, engineers, technicians and managers and to apply itself to the energy needs of developing and developed countries.	Explore possibility to present UPWARDS at one of the congresses
World Council for Renewable Energy	https://www.wcre.org/	Bonn, Germany	NGO aiming to develop policies and strategies for renewable energy by bringing it into the mainstream of world economy and lifestyle.	Establish contact to explore possibilities for exchange of insights on wind energy with potential contribution to research on acceptance
WINDExchange	https://windexchange.energy.gov/	USA	WINDExchange provides resources to help communities weigh the benefits and impacts of wind energy.	Provide input for work package of public acceptance with respect to successful practices for community engagement- what kind of engagement in technology design is facilitated, what is missing and at what point in time?
US Department of Energy	https://renewableenergy.inl.gov/wind	USA	The wind power program at INL supports The U.S. Department of Energy (DOE) Wind Energy Technologies Office (WETO), and is committed to supporting the development and deployment of a	

			portfolio of innovative technologies for clean, domestic power generation to support an ever-growing industry.	
The Wind Energy Institute of Canada (WEICan)	https://weican.ca/	Canada	The Wind Energy Institute of Canada is a not-for-profit entity formed in 1981 that advances the development of wind energy across Canada through research, testing, innovation and collaboration.	Establish contact to learn about wind turbine development in winter conditions as well as in natural areas and on indigenous land. A possible exchange with their laboratory would be beneficial as the it features a 10 MW Wind R&D Park, a storage test bed, meteorological towers and a small wind test bed, as well as other facilities. These, in addition to our extensive data sets and experienced personnel, provide opportunities for government, public/private sector companies and academia to research, demonstrate, test and validate technologies and concepts in a real-world setting

Community stakeholders
(regional authorities and citizens): community stakeholder management is key in wind project implementation and organisations that ignore their stakeholders will eventually have to address their concerns. UPWARDS will involve citizens, policy makers and industry representatives in some EU countries. Second, the outcomes of these discussions will be integrated into the models from WP2-WP4 and to identify performance objectives analysed in WP6 through dedicated workshops. These stakeholders will be subject of surveying to follow up the socio-economic impact of the project (WP7). Also, publications in the general press will be used to keep the audience aware. Organizations representing the interests of broader public include:

1. **The Danish association of wind turbine owners, Danmarks Vindmølleforening (DV)** membership number to 12,258. Since January 1, DV owners have registered 280 new turbines for a total capacity of 218 MW, the group says. This gives a DV member total of 3553 machines with a total installed capacity of 1206 MW -- more than half of the installations in the country. Since 1995 alone, about 4000 new members have joined the organisation and its installed capacity has quadrupled, says DV. (source: https://www.windpowermonthly.com/article/958880/wind-turbine-owners-association-grows)

2. **WindCentrale** is a platform that enables individual investors to buy wind turbines or shares of turbines. It is an innovative initiative established in the Netherlands with 15.000 people already involved. The concept of this initiative is visualized by the graphic below:

https://www.windcentrale.nl/hoe-werkt-het/

3. **Energy Academy**

Source: https://energiakademiet.dk/en/energyacademy

Samsø Energy Academy is located on the island of Samsø, in the heart of Denmark. Samsø Energy Academy is a project-based organization focused on the consequences of climate change. UPWARDS interest in the academy is in learning about the exceptional story of success that Samso has achieved in wind energy and broader transition to 100% energy self-sufficiency from renewables. As the academy showcases the good practices of public engagement and shares their know-how,

the work package of UPWARDS on social acceptance could gain valuable insights from this community that could be further translated into guidelines for sustainable wind turbine development and design.
The Energy Academy is a physical gathering and meeting place for all kinds of people who are interested in community development. Put simply, its organizational goal is to convey knowledge about holistic cooperative processes. Samsø Energy Academy has eight full-time employees who live on Samsø, working with community development and sustainable solutions.
The Energy Academy's name is inspired by Ancient Greece and functions as a local gathering place for the island's various organizations. It hosts meetings and gatherings concerning subjects such as education and research, including courses, meetings, seminars, and exhibitions about energy, climate change, and sustainable resources. The Samsø Energy & Environmental Office, the Samsø Energy Agency, and the Samsø Energy Service are also based at Samsø Energy Academy. Their activities include energy efficiency advice for companies and homeowners, tours – including tours for specific trades and industries – and workshops and seminars. Samso Energy and Environment Office, Samso Energy Agency and the Energy Service Samso also attend the academy and carry out the activities of energy consulting to companies and private tours, guided tours, workshops and seminars.

4. Public/ local communities

This stakeholder category is very broad and context specific as there are many wind energy communities across Europe and it would be impossible to list them all. However, local communities in vicinity to wind energy project are important actors in wind energy sector as they are those most affected by wind energy developments. Next to that, broader public also increasingly becomes involved in wind energy through financing mechanisms that allow for financial participation, but also beyond. This is why, UPWARDS gives a special place to engagement of this stakeholder group. Local communities and broader publics will be directly approached and thoroughly considered during the next stages of research of the work package of societal acceptance (finalized by the M48) in which empirical cases are selected to investigate engagement at local level with wind energy technologies and landscapes across the stage of design, planning and ongoing management of wind energy projects. In order to get an in-depth understanding of the needs, perceptions and practices of local communities and publics that are related to wind energy, a number of potential cases is picked. These will showcase good practices of public and stakeholder engagement with wind energy, unravelling how local communities and broader publics are engaged in co-production (active and long-term involvement) in wind turbine and landscape design, planning and ongoing management.

The list of potential cases that exemplify good practices of public engagement include:

1. Fosen (Norway): existing case of win-wind project of continuous developer and community dialogue, Dialogue that takes into account local concerns to reduce the perceived negative impact of wind energy development, resulting in actual changes to projects.
2. The Region of Abruzzo, existing case of win-wind project in Italy, of Wind Farm Repowering in Abruzzo, Italy where authorities and wind energy farm operators opted to repower their local wind farms towards increased energy production. This process of renewal was seized as an opportunity to reduce visual and environmental impact, and thus to increase social acceptance.
3. Tula Municipality in Sardinia, Italy, a case of win-wind project of "Tax Cuts and Landscape Commitments". Sardinia, Italy hosts one of wind park developer ENEL Greenpower's biggest wind farms; ENEL is the owner and sole investor in the farm. When plans were announced

to extend the farm, the developer faced community pushback. To solve these challenges, they had to cooperate with the local authorities and citizens[5].

4. Birkenes (Norway): case of win-wind project, of a Local innovation house. In a voluntary agreement between the project developer, EON, and the municipality of Birkenes in Aust-Agder Norway, the former agreed to finance the development of an innovation house. This is expected to employ 4 – 6 persons and it will cost an estimated 20 million NOK. One of the functions of this innovation house will be to educate the public in general, in particular local students, about wind energy. The local house can also be used as conference and/or meeting rooms. Several open meetings have been held to discuss the precise location of the proposed innovation house[6].
5. Samsø: is a case of Samsø is a small island off the coast of Denmark and home to about 4,000 Danish citizens who are proudly living on 100% renewable energy. When the government launched a competition in 1997 to develop an experimental, model renewable community, Søren, Brian and Erik initiated the Sustainable Island project. With the help of self-organized cooperatives, private local investments, and some very resourceful and ingenious citizens making small changes in their own livelihoods, the island became self-sufficient on renewables. The Samsingers now have their sights set on the next challenge: to be completely free of fossil fuels.[7]

[5] https://winwind-project.eu/fileadmin/user_upload/Resources/Posters/WinWind-poster-2-English-A1-no-marks.pdf
[6] https://winwind-project.eu/fileadmin/user_upload/Resources/Deliverables/D4.2_Good_Practice_Portfolio.pdf
[7] https://climateheroes.org/heroes/samso-wind-change/

3. Stakeholder engagement activities

This chapter lists and describes key activities that contributed to the visibility of UPWARDS among the stakeholders identified above as well as enabled broadening the networks with a purpose of collaboration, dissemination and data gathering. The activities of engagement were focused on reaching out to researchers and thematic networks around renewable energy, public engagement and sustainability governance, including:

1. **Win-Win(d) conference**

Win-wind project is an EU-funded project aimed at tinning social acceptance for wind energy developments in wind scarce regions. Win-wind is a collaborative, multi-stakeholder project. It involves local and national stakeholders who co-create the research and facilitating the development of actual wind energy projects. The project has just ended and contributed a better understanding of societal acceptance of wind energy that includes:

- regions specific barriers
- legal, institutional and political drivers
- procedural and community engagement
- taxonomy of social acceptance barriers

UPWARDS was represented at the final event (conference) of this project in order to enable building on the result achieved within the win-wind consortium as well as disseminating the knowledge about UWPARDs. UPWARDS had a stand with posters and flyers distributed to participants. After a presentation, there was also possibility for participants to ask questions about UPWARDS and to provide feedback. The participants of the discussion included partners of the win-wind project but also broader public composed of diverse stakeholders of wind energy sector including:

1. Lutz Ribbe European Economic and social committee
2. Fran Sonderhous, Onshore wind energy agency (expert on participation)
3. Jurisc Ozolins, consultant
4. Giorgia Rambelli, ICLEI Europe
5. Kristin Linnerud, senior research fellow at CICERO, Norway
6. Thomas Bjordal, Norwegian windpower
7. Ruth brand schock enercon IPP Deutschland GMBH
8. Alerto cena, bepte consultores
9. Nicolea del buffalo, Ecorys Spain
10. Jan Steinkol, RED renewable energy directive

2. **Energy Alliance Wageningen**[8]

Wageningen University (WU) specializes in life and social sciences and focuses its research on scientific, social and commercial problems in the field of life sciences and natural resources in which the university is considered world-class.

In fulfilment of its reputation and in alignment with its commitment, as part of the UPWARDS consortium, WU has formed the Wageningen University & Research Energy Alliance (WUR Energy Alliance).

The primary ambitions of the WUR Energy Alliance are:

- Consolidate and expand links with other universities, research institutes, governments, private sector entities and civil society entities as a network focusing on the intersection of energy projects and the life sciences
- Increase visibility of energy research within WU and more importantly in the public awareness, focusing on the core strengths of WUR and the strategic programs of the involved science groups.

[8] *article by Gary Grima posted on UPWARDS website on 7/29/19*

- Facilitate new collaborations to put knowledge into practice with the groups & research institutes that WU is partnering with through grant proposals, publications and educational activities through regular general and specific meetings on relevant energy topics and around relevant projects/calls.

The alliance thus serves as a network to promote the subject of wind energy and more specifically the impact that the UPWARDS project will have on wind-turbine design and engineering as well as the wind energy industry thanks to its development of software tools that will make building the next generation of wind turbines possible.

3. SENSE Conference: Our future Energy Landsacpe[9]

Wageningen University and Research (WUR) recently held the SENSE Conference: Our Future Energy Landscape (SENSE conferentie Ons Toekomstige Energielandschap).
The event was primarily meant for (Dutch) stakeholders. The aim was to contribute to meaningful exchange at the regional level and align research with the needs of the Dutch actors regarding the topic of energy governance and development.
As WUR is considered as a source of sound policy advice and good practices it could facilitate the connection of the academic questions to those of industry actors and policy makers. The event was thus an occasion to promote the research WU is doing in the energy domain, including its involvement in the European Commission funded UPWARDS project.

**Translation: alternative landscape*

An in-depth understanding of regional priorities & challenges
The event consisted of morning presentation sessions from WUR's key researchers. The theme for the day was renewable energy was discussed in context of impact on landscapes. How society will deal with ever increasing renewables infrastructure in landscapes, in the future is an important question that concerns policy makers and thus industry players.
The afternoon consisted of several, parallel workshop sessions attended by policy makers, public officers & developers. Bringing together this broad audience was a key point of the event. The topics covered during these workshops were:

- Multifunctional land-use
- Preconditions for successful participation processes for the energy transition,
- Financial and social participation models
- Design dilemmas for sustainable energy along infrastructure.

[9] *Article by Gary Grima, Posted 8/8/19)*

4. Energy week in Brussels

Official info: https://www.eusew.eu/about-conference

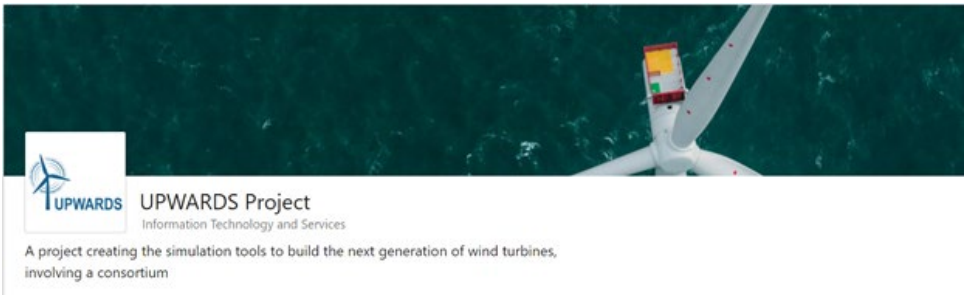
The Policy Conference is the biggest European conference dedicated to renewables and efficient energy use in Europe. Sessions organized by the European Commission and energy stakeholders focus on sustainable energy issues, debate new policy developments, best practices and sustainable energy ideas. Next to the conference, the Networking Village brings the EUSEW Community together to forge alliances whilst the EUSEW Awards celebrate outstanding projects and ideas.
UPWARDS will be present at the event, sharing the up-to-date results achieved within the consortium and engaging with present stakeholders including: Public authorities, energy agencies, industry associations, businesses, civil society organisations

4. Dissemination and stakeholder engagement

The strategic dissemination plan builds upon the identification of the project stakeholders and interested audience. Based on this, the appropriate dissemination channels are selected and the identified communication tools are adapted. The following dissemination plan describes the potential of UPWARDS' consortium for outreach at a regional, national and EU levels.

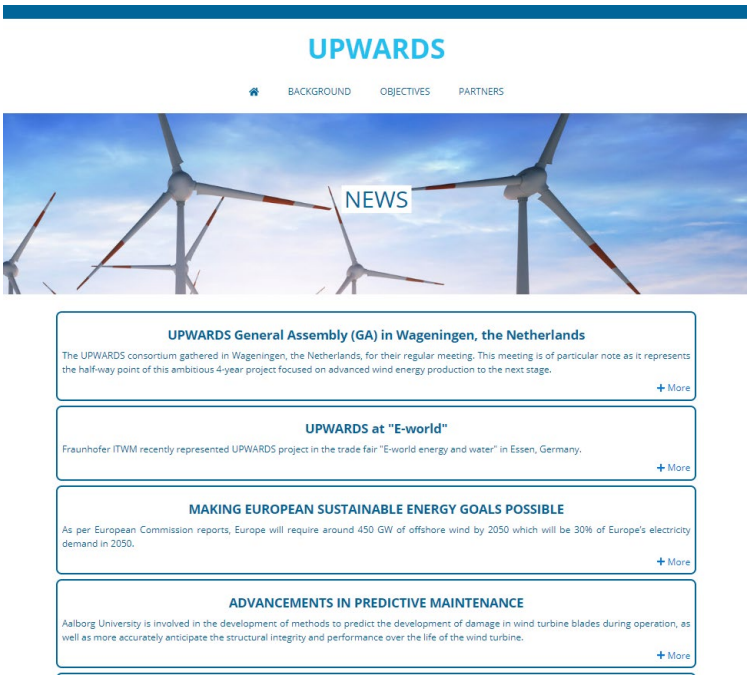
Progress on stakeholder engagement

Having been established on schedule, the website has been regularly updated with news reports and articles regarding the progress of the UPWARDS project. This is done in order to maintain constant communication with the various stakeholders being targeted. Furthermore, the news articles, are promoted on LinkedIn and shared among the consortium members with relevant stakeholders in the professional sphere to affect direct engagement on the progress made with those concerned.



UPWARDS project's LinkedIn page has 24 followers and 11 articles were produced and posted. Following indicators were tracked for the LinkedIn page at 30-day averages: 600 impressions, 2 new followers, 15 unique visits. Moreover, the page is currently averaging over 200 impressions and around 20 clicks per article.

The average length of time of a website visitor's session lasts a bit longer than the time needed to read the typical news article that is posted (just over 3 minutes). Additionally, based on tracking done so far it is seen that peak traffic on the website occurs in the middle of the week and so the posts are now being posted accordingly. The website has been consistently getting around 15 visitors per week and work is being done to drive this up further going forward.



Moreover, with regards to promotional material for events, a general flyer about the project was produced by Wavestone and updated upon partners demand. Flyer is distributed to general public during partners' participation in different events or conferences.

In this context, various groups of stakeholders were engaged through attendance of various industry events where the project was promoted. Promotional material was made and adapted for each event. During the **E-World Energy & water event**, Fraunhofer promoted UPWARDS to various actors in

this trade fair for the energy industry, highlighting the impact the project will have on the industry ability to deploy and grow energy infrastructure. This allowed UPWARDS to broadly engage stakeholders in the industry from all across Europe and the world.

During the **Energy Alliance Dialogue event and the SENSE conference Wageningen** university promoted discussion concerning the social/societal impacts that the shift in energy would impact society. One of the particular points of discussion during the sense conference was regarding the impact of the geographical displacement that occurs when shifting energy production infrastructure from traditional fossil fuel sources to wind. This was done by engaging all the various stakeholders involved including policy makers, industry actors, NGOs and associations concerned with the topic (that represent the general public). Thus UPWARDS through Wageningen was able to specifically engaged stakeholders in this region.

Dissemination via scientific community

As part of the progress made, a publication has been produced by the partner Aalborg University:

Carreras L., Turon A., Bak. B.L.V., Lindgaard E., Renart J., Martin de la Escalera F., Essa Y., A simulation method for fatigue-driven delamination in layered structures involving non-negligible fracture process zones and arbitrarily shaped crack fronts, Composites Part A: Applied Science and Manufacturing, 122, 107-119.

The article was recently published in the journal Composites Part A: Applied Science and Manufacturing and can be accessed via the links :
https://www.sciencedirect.com/science/article/pii/S1359835X19301514
https://arxiv.org/abs/1905.05000