ELEMENT: D12.5 LOCAL COMMUNITY ENGAGEMENT REPORT

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EXECUTIVE SUMMARY

This report provides feedback on below 3 local community engagement activities that were held from June 2022 to February 2023 related to the test from February to April 2023 of a tidal turbine in the Etel estuary in Brittany, France, for the ELEMENT project.

- A local Nautical Commission meeting was convened on 29th June 2022 to explain the project to local marine users and Prefects and to receive their observations and recommendations regarding the test;

- A local public town hall meeting was held on 24th October 2022 to explain the project to local citizens before the Etel tidal turbine test started;

- A site visit on the test premises was carried out on 9th February 2023 with local authorities, associations, businesses and journalists with the tidal turbine visible before the machine was put in the water.

The Nautical Commission provided a favourable opinion on the project. The main takeaway from the Commission was to inform marine users of the project and remind them of the site's navigation rules. Navigation remains permitted but it is reminded that fishing with passive gear is prohibited in the sector, as well as anchoring and diving.

The public town hall received more interest than expected with 75 participating citizens. The participants' concerns related to this new technology were dissipated by explaining the project and answering their questions. Moreover, a survey was conducted during the event and showed that tidal turbine technology is the favoured source of electricity in general and even in case when the tidal turbine is installed close to the participants' homes and/or work area. Most participants mentioned that public events should be organised prior to such installations.

The site visit, that showed the tidal turbine before installation, was positively welcomed by the local authorities, associations, businesses and journalists. A number of positive articles, radio and television news were published with regards to the event.

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INTRODUCTION

A Funding Grant was awarded from the European Union's Horizon 2020 research and innovation programme to develop and validate an innovative tidal turbine control system, using the tidal turbine itself as a sensor, to deliver a step change improvement in the performance. This will demonstrate Effective Lifetime Extension in the Marine Environment for Tidal Energy (ELEMENT), driving the EU tidal energy sector to commercial reality. This was in response to the call LC-SC3-RES-11-2018: Developing solutions to reduce the cost and increase performance of renewable technologies.

This document pertains to work package 12 that is focused on the socio-economic impact assessment of tidal energy and is led by IDETA. Within WP12, there are four specific tasks. This document is associated with task 12.2 and relates to the "Regional Impact Analysis". This task analyses the socio-economic impact of tidal energy around the Étel test centre in France. It is led by IDETA with the support of CHBS, GUINARD, FEM, INNOSEA, NOVA and OREC. This task has two deliverables:

- Deliverable 12.2 entitled "Regional Impact Analysis Report" was published in month 24. This public report details the socio-economic impact of tidal energy around the Étel test centre in France.

- Deliverable 12.5 entitled "Local Community Engagement Report" is this current report. It is published in month 48. This report details the response to community engagement activities regarding tidal energy in the Etel estuary.

This document is structured as follows:

- Section 1 provides the local community engagement strategy for the Etel estuary test site;

- Section 2 details the response from the local community regarding the above strategy.

The ELEMENT project was delivered in parallel with another European Union Horizon 2020 tidal energy project called EnFAIT. The EnFAIT Funding Grant was awarded from the European Union's Horizon 2020 research and innovation programme in January 2017 to demonstrate a grid-connected tidal energy array at a real-world tidal energy site, propelling tidal energy towards competing on a commercial basis with alternative renewable sources of energy generation – Enabling Future Arrays in Tidal (EnFAIT). This was in response to the call LCE-15-2016: Scaling up in the ocean energy sector to arrays to generate significant learning through demonstration of cost-effective tidal arrays.

The ELEMENT deliverable 12.5 re-purposes the Local Community Engagement Strategy from the EnFAIT project. The two projects demonstrated tidal turbines in different countries. The ELEMENT project deployed temporarily a tidal turbine in the Etel estuary in the Morbihan region of Brittany, France, for demonstration in the first quarter of 2023 while the EnFAIT project installed a permanent and growing tidal array located in Bluemull Sound in the Shetland Islands of Scotland, United Kingdom. There is near to 1,500 km in a straight line between the two locations.

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Figure 1 – Locations of the two test sites: the Etel estuary for ELEMENT and Bluemull sound for EnFAIT

Figure 2 – Closer look on location and tidal turbine (Nova M100 in Bluemull) and (Nova RE50 in Etel).

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1. LOCAL COMMUNITY ENGAGEMENT STRATEGY

For ELEMENT, IDETA used the EnFAIT project's "Local Community Engagement Strategy" as a starting point. An initial strategy was developed by IDETA in December 2018 to support the engagement activities held in the Shetland Islands during the EnFAIT project. By re-using this strategy, the engagement activities held in Brittany for the ELEMENT project will help IDETA fine-tune and finalise the strategy as part of the EnFAIT deliverable "Final Local Community Engagement Strategy" due in June 2023.

The below sequential process diagram features the common themes of the EnFAIT and ELEMENT local community engagement strategy:

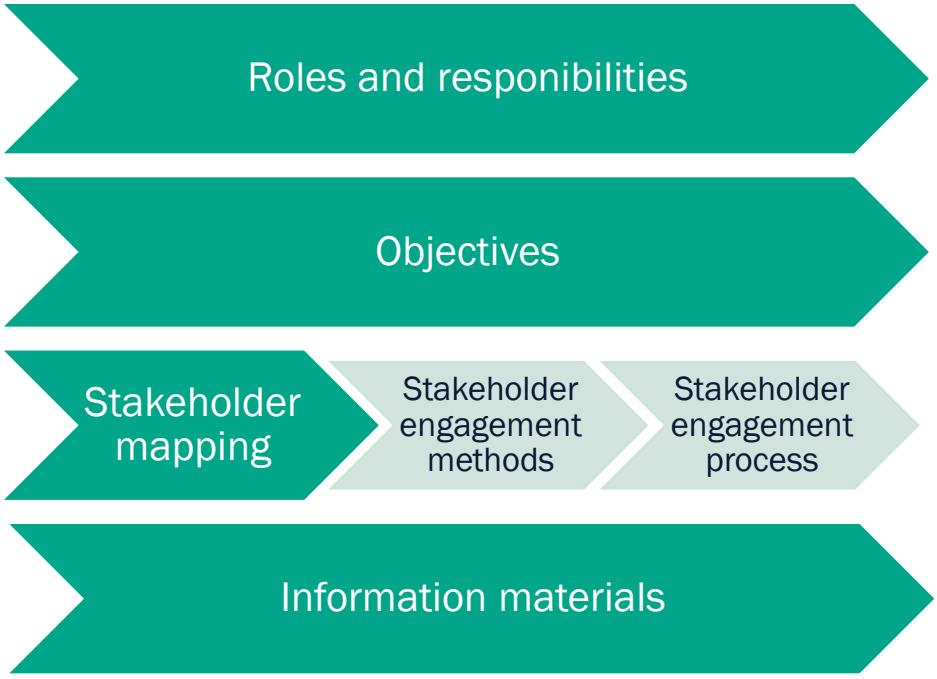

Figure 3 –Common ELEMENT and EnFAIT Local Community Engagement Strategy

The below sub-sections highlight the key takeaways regarding the above strategy's themes.

Roles and responsibilities

The following ELEMENT partners' roles and responsibilities were identified:

Nova Innovation (NOVA), as lead partner in the ELEMENT project:

- Approves the Local Community Engagement Strategy,
- Approves all project information materials,
- Participates in task 12.2 meetings and local community engagement activities,
- Supports IDETA and the local French partners in the general planning and coordination of the local community engagement activities,
- Approves the deliverable 12.5 "Local Community Engagement Report".

IDETA, as leader of Work Package 12, task 12.2 and deliverable 12.5:

- Prepares the Local Community Engagement Strategy,
- Prepares Local Community Engagement information materials,

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- Manages, plans, prepares and participates to task 12.2 meetings and local community engagement activities,
- Drafts the deliverable 12.5 “Local Community Engagement Report”.

ORE Catapult (OREC), as leader the Communication Work Package 2:
- Reviews Local Community Engagement information materials,
- Updates the ELEMENT website,
- Reviews the deliverable 12.5 “Local Community Engagement Report”.

Chantier Bretagne Sud (CBS), as leader of the Estuary Testing Work Package 10, together with Guinard Énergies Nouvelles (GEN):
- Supports activities locally, contacts local authorities, provides local guidance,
- Reviews Local Community Engagement information materials and adds information from their scope of work,
- Animates, plans, prepares and participates in task 12.2 meetings and local community engagement activities,
- Reviews the deliverable 12.5 “Local Community Engagement Report”.

France Énergies Marines (FEM), as leaders of the Environmental Assessment Work Package 4:
- Reviews Local Community Engagement information materials and adds information from their scope of work,
- Prepares and participates in task 12.2 meetings and local community engagement activities,
- Reviews the deliverable 12.5 “Local Community Engagement Report”.

InnoSea (INNO), as leader of task 12.3 “French estuary/run of river site assessment”:
- Participates in local community engagement activities.

Objectives

The above-mentioned project partners identified the following objectives of the Local Community Engagement Strategy:

- Obtain the perceptions of the local community on their electricity supply, including from renewable energy sources;
- Obtain the views of the local community on the ELEMENT project;
- Provide information to the local community on the ELEMENT project so that they understand the overarching aims, the key and local activities and timeline of ELEMENT.

Stakeholder mapping

The above-mentioned project partners identified four communes surrounding the test site in the Etel estuary: Belz, Etel, Plouhinec and Sainte-Hélène.

Location	Metropolitan France			
Region	Brittany			
Department	Morbihan			
District	Lorient			
Community of Communes	Auray Quiberon Terre Atlantique		Blavet Bellevue Océan	
Commune	**Belz**	**Etel**	**Plouhinec**	**Sainte-Hélène**

Table 1 – Local communes identified around the test site in the Etel estuary

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Within these four communes, the following local community stakeholder groups were identified:

- Residents,
- Second-home owners,
- Students,
- Oyster farms and associations,
- Ferry service project,
- Boat cruise companies,
- Museum,
- Port,
- Leisure activity clubs, interest groups and committees (diving, paddling, kayaking),
- Companies in the nautical sector (boat manufacturing, turbine supply) as well as other sectors,
- Ecological and environmental interest groups,
- Regional authorities, officials and politicians,
- Local Press.

Stakeholder engagement method

The project partners agreed on the following local community stakeholder engagement methods:

- A public town hall meeting before the Etel tidal turbine test started;

- A site visit to local authorities, association, businesses and journalists with the tidal turbine visible before the machine was put in the water.

Within deliverable D12.3, INNO had already organised key informant interviews and questionnaires to receive feedback from French companies on the subject. Please refer to D12.3 for more detail.

In parallel, CBS and GEN attended a local Nautical Commission event organised by local marine users.

Moreover, as part of business as usual, CBS welcomes students on their premises. During the visits of the students of the Lycée Maritime d'Étel as well as those of the UBS of Lorient, CBS presented the ELEMENT project, thus also satisfying activities for WP2 on Communication and Dissemination.

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Stakeholder engagement process

<u>The local Nautical Commission event</u>

On June 29th, 2022, the local Nautical Commission organised a meeting with CBS and GEN regarding the ELEMENT project. The local Nautical Commission is a consultative commission who takes decision on nautical aspects of officially requested projects. The members of the commission are local marine users. The commission is co-presided by the Atlantic Maritime Prefect and the Morbihan Prefect. In this event, the commission was responsible for examining the ELEMENT project's installation of NOVA's tidal turbine in the Etel estuary.

The meeting started on the CBS site to show where the turbine would be installed. It continued by a presentation from GEN on the project. The commission members then provided their observations and recommendations, detailed in Chapter 2.

<u>The local public town hall event</u>

On the evening of October 24th, 2022, in the Belz Town Hall, the ELEMENT team presented the project and informed the local community of the temporary deployment of Nova Innovation's RE50 tidal turbine in the Etel estuary for testing purposes.

Citizens were informed of the local engagement activity through the local communes' billboards (see photo 1) as well as through the local newspaper "Ouest France" who published an article on the project and informed the local community in the 4 communes of the upcoming event.

Photo 1 – Local Belz municipality's billboard showing the town hall event details

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Photo 2 – Town hall event held on 24 October 2022

The meeting officially started at 18h00 with CBS's opening speech that provided the context. FEM then presented the project and explained where and when the tidal turbine will be tested. At the end of the presentation, the participants were invited to ask their questions. To continue the discussion in a more informal manner, the meeting concluded by inviting the participants to the local oysters' buffet where smaller casual groups were formed to further discuss the subject.

<u>The site visit event</u>

On February 9th, 2023, the ELEMENT team organised a site visit to show the NOVA RE50 tidal turbine before it was deployed in the Etel estuary on CBS's premises. CBS, FEM and NOVA welcomed the local authorities, interest groups, businesses and press who had received official invitations to the event.

Photo 3 – NOVA's tidal turbine RE50 visible during the site visit, before the deployment in the Etel estuary

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Photo 4 – Speeches during the site visit

Information materials

Before any activities, the existing ELEMENT project website was updated to provide a French translation of the key pages, and the video was also translated and made available in French on the website.

The participants to the public Town Hall event were offered a flyer on the project which also included an optional survey (see Annex 1) aiming to collect the local community's observations on tidal and other sources of renewable and non-renewable energies. The survey was also available online for a couple of weeks. The results of the survey are published in Chapter 2.

For the public meeting, 2 other supporting materials were used:

- The French-version of the ELEMENT project video.

- A PowerPoint presentation of 16 pages (see front page below and full version in Annex 2) containing the following elements:
  - Welcome speech,
  - Introduction: objectives of the meeting,
  - Project: Viewing the video, slides on the project, the local test and the local Nautical Commission's observations and recommendations,
  - Environmental impact: studies from EnFAIT and ELEMENT and the continued study during the test,
  - Questions & Answers including collection of the completed surveys.

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Figure 4 – Front-page of the public town hall presentation

In addition, throughout the testing period, a poster (see Annex 3) was placed in front of the CBS premises. The official national walker's trail GR 34 passes around the CBS shipyard, as shown in map figure 5.

Figure 5 – CBS shipyard and the GR 34 walker's trail in blue

In parallel, a poster was placed at the ports of the estuary and all the slipways of Étel and Belz (see Annex 4). This was recommended by the local Nautical Commission to remind users of the general security rules and map out where the tidal turbine is installed for the test period. The information panel confirms that navigation remains permitted but reminds that fishing with passive gear is prohibited in the sector, as well as anchoring and diving.

Finally, during the site visit, project notices were displaced at the CBS site.

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2. RESPONSE TO LOCAL COMMUNITY ENGAGEMENT ACTIVITIES

Participation in local activities

The local community engagement activities were well-attended. Without counting the representatives from the project partners, there were:

- 75 participants at the public town hall event;
- 17 participants at the site visit event;
- 11 participants to the Nautical Commission event.

Observations during the local activities

In general, the participants of the 3 local events were interested in understanding this new technology to produce green electricity through the currents of the water.

The Nautical Commission event

During the local Nautical Commission meeting, the Commission members raised observations and recommendations by risk category. The text below is quoted from the minutes of the meeting:

Recreational fishing: very little practice, nets prohibited in the Ria, only drift fishing practice. No particular constraint.

- The risk being limited to a simple loss of equipment, there is therefore no need to restrict drift fishing activity as authorized today.

Pleasure boating: development of practices with inexperienced users (rental of small vessels without a licence, launching, etc.). In the event of a mooring line "snapping" on the rotor, the risk of serious consequences for the vessel is very low but not entirely zero. An adapted communication effort is necessary.

- Beyond the AVURNAV (official authorisations) which will be broadcast during the duration of the experiment, the commission recommends the following information actions:
    - Relay of information by local associations of yachtsmen, tourist offices and the fishing committee for professionals,
    - Information of their tenants by the renters of nautical units,
    - Installation of information panels on the main slipways of the Ria by the project leader, under the responsibility of the mayor.

Additional recommendations:

- Given the available space directly above the tidal turbine (5 meters from the turbine blades to the water surface), the Commission does not consider it necessary to prohibit or limit navigation on the site during the experiment,
- Likewise, the Commission observes that setting up beaconing on site could prove to be counter-productive and generate other dangers given the water currents observed on site.

Conclusions of the local Nautical Commission:
The Commission issues a favourable opinion on the project as presented, subject to the above recommendations.

The public town hall event

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During the public town hall, the below questions were asked by the audience during the Q&A session at the end of the presentation:

1. Will navigation remain possible above the tidal turbine?
2. Is diving possible near the tidal turbine?
3. What means are in place to avoid staining and fouling the tidal turbine?
4. Do the different waves from the tidal turbine impact mammals?
5. Will the presence of the tidal turbine be visible on the surface?
6. What is the time scale of turbulence phenomena?
7. What will be done with the energy produced?
8. Which ship will be used for the launch given the difficulty of arriving in the Etel estuary from the sea?
9. Will the area where the tidal turbine will be installed be clearly demarcated?
10. Is this immersion a “one shot”?
11. What noise pollution is produced by this tidal turbine?
12. Will this tidal turbine have an impact on fish?
13. What about the ban on the installation of tidal turbines in the Gulf of Morbihan?
14. Have you had an opinion from the regional archaeology service regarding the possible discovery of remains?
15. Are you going to dig or concrete the ground to install the tidal turbine?
16. What is the turbine rotor speed?
17. What is the difference between the tests carried out by Guinard Energies Nouvelles and those of ELEMENT?
18. What is the end goal of the ELEMENT project?
19. How long does the tidal turbine operate in a day?
20. How long will it take to install the machine?
21. Is there already a set day for the installation?
22. Will there be upstream communication in the press?
23. Could this type of tidal turbine be submerged further offshore?
24. What is the electricity production for this tidal turbine versus a wind turbine?
25. Did the tests carried out in Ouessant with the Sabella tidal turbine prove the profitability of the machine?
26. Is the propeller fixed or variable?
27. Does the machine stop at the slack?
28. Does it work both ways?
29. Where will the generated electricity go?

Moreover, while waiting for the public town hall event to start, people answered the paper survey. The survey was also available online. In total, the participants completed 15 surveys: 14 paper copies and 1 online version. Unfortunately, there were insufficient paper copies of the flyers during the event, as more people attended than expected.

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Survey results

There were 15 completed surveys during the public town hall. The detailed answers to the local survey are provided as of the next page. Beforehand, below are some key takeaways of the results.

The local survey confirms that participants are in favour of tidal turbine technology, and that this technology is favoured above the other technologies. This is true in general, where renewable energy sources show up in the top positions, as shown in below table.

Technology	Very favourable	Favourable	Total in favour	%
Tidal turbine	11	4	15	100%
Photovoltaic panels	8	6	14	93%
Tidal power plant	6	7	13	87%
Hydroelectric dam	6	6	12	80%
Wind turbine	5	6	11	73%
Nuclear plant	2	7	9	60%
Gas plant	1	0	1	7%

Table 2 – Survey response to favoured power generation technologies in general

Tidal turbine technology remains the favourite even if the installation is close to the participants' homes and/or work. In fact, in this case, the participants favoured it more when deployed in the sea or estuaries, with 14 in favour against 1 participant who didn't respond to the question. When it comes to tidal turbines in river, 13 participants were in favour, 1 had no opinion and 1 didn't respond. Tidal turbine technology is therefore in the top three favourite technologies deployable close to participants' lives, followed closely by PV panels on the roof. Although this latter technology has the same favourable rate as the tidal turbine in the river, it is interesting to note that there is 1 unfavourable vote, and 1 participant didn't reply. The overview of the favourite installations close to the participants' lives is shown in table 3.

Technology	Very favourable	Favourable	Total in favour	%
Tidal turbine at sea	8	6	14	93%
Tidal turbine in the estuary	8	6	14	93%
Tidal turbine in the river	8	5	13	87%
Photovoltaic panels on the roof	7	6	13	87%
Offshore wind turbine	5	6	11	73%
Fields of photovoltaic panels	4	5	9	60%
Onshore wind turbine	3	6	9	60%
Tidal power plant	4	3	7	47%
Hydroelectric dam	3	4	7	47%
Floating photovoltaic panels	2	3	5	33%
Mini nuclear power plant	0	5	5	33%
Large nuclear power plant	1	3	4	27%
Gas plant	1	0	1	7%

Table 3 – Survey response to favoured power generation technologies near participants' homes &/or work

To understand the 15 survey-participants general mindset when it comes to electricity means, the survey asked questions on electricity consumption profiles, needs and opinions. This is detailed

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below and shows that the participants seem sensitive on ecological aspects but don't necessarily know their own electricity needs. All participants knew their tariff profile.

The 15 participants of the survey had variable consumption profiles. Some didn't know their yearly consumption, while the others replied from a very small 400 kWh/year to a high 17,800 kWh/year. It is not possible to confirm if these consumption figures are accurate, however they are possible in the local French context. Indeed, some participants may be second-resident flat-owners with little consumption needs, while other participants could be residents of large houses or domains with potentially electric radiators, which is a common heating technology in France.

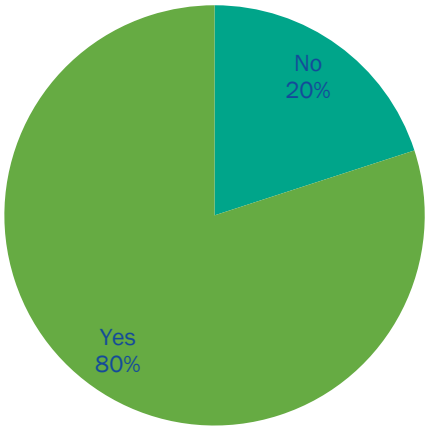
When it comes to the 15 survey-participants' opinion on what criteria is the most important to them when deciding which electricity they buy, the top criteria is that the electricity should be ecological, followed by stable prices and autonomy against geopolitical issues. The least important is the price itself. This is shown in table 4. This result may be temporarily affected by the current Ukraine war and embargo on the Russian gas, which is negatively affecting the stability of the electricity market. However, even in this context, the most important criterium is ecology and no participants considered this criterium as unimportant, since the 2 voters that didn't consider ecology as important either didn't reply or had no opinion on the subject.

Criteria	Very important	Important	Total important	%
Ecology: the cleanest	7	6	13	87%
Price stability: the most fixed	4	7	11	73%
Autonomy: the least impacted by geopolitical situations	4	7	11	73%
The short circuit: the most local	4	6	10	67%
The price: the cheapest	4	4	8	53%

Table 4 – Survey response to importance of certain criteria when buying electricity

Below are the detailed answers to the local survey.

1. Before hearing about the ELEMENT project, did you know about tidal turbine technology for producing electricity using tidal currents?



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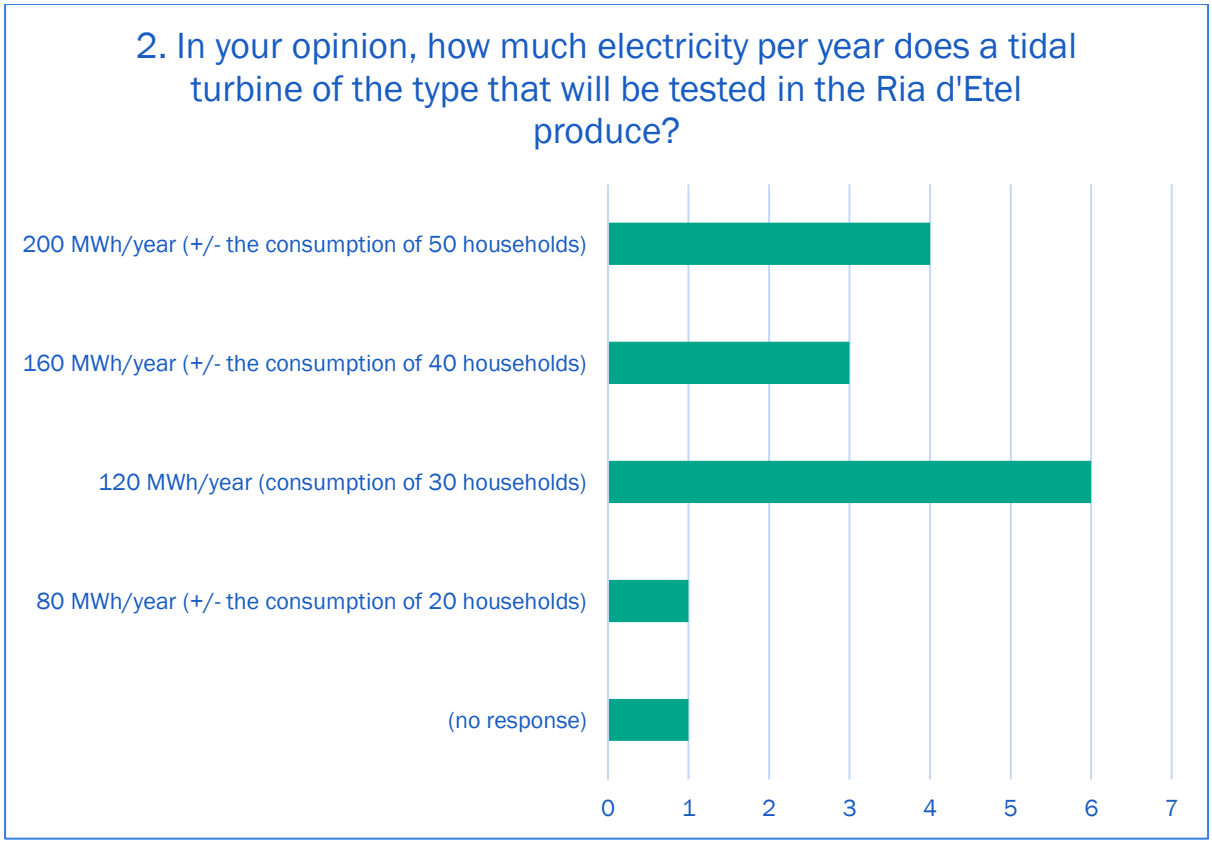

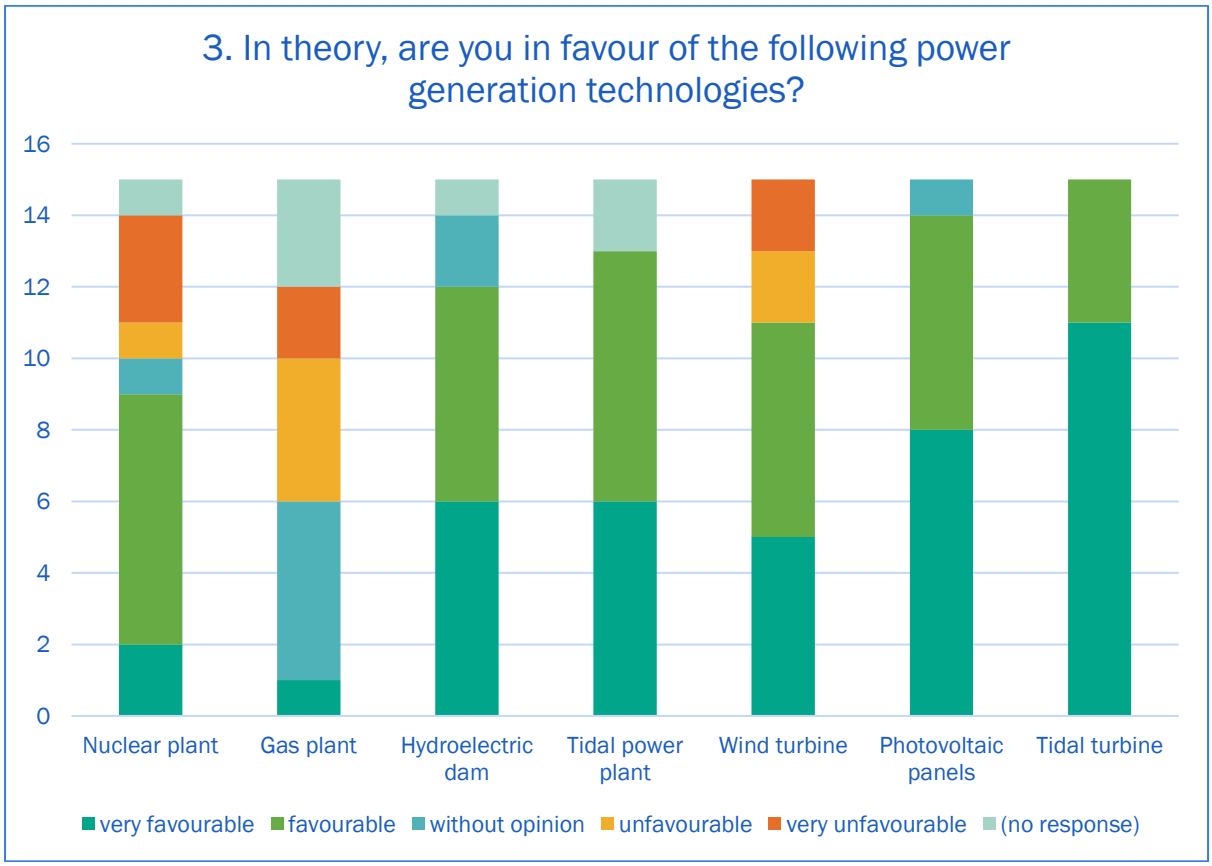

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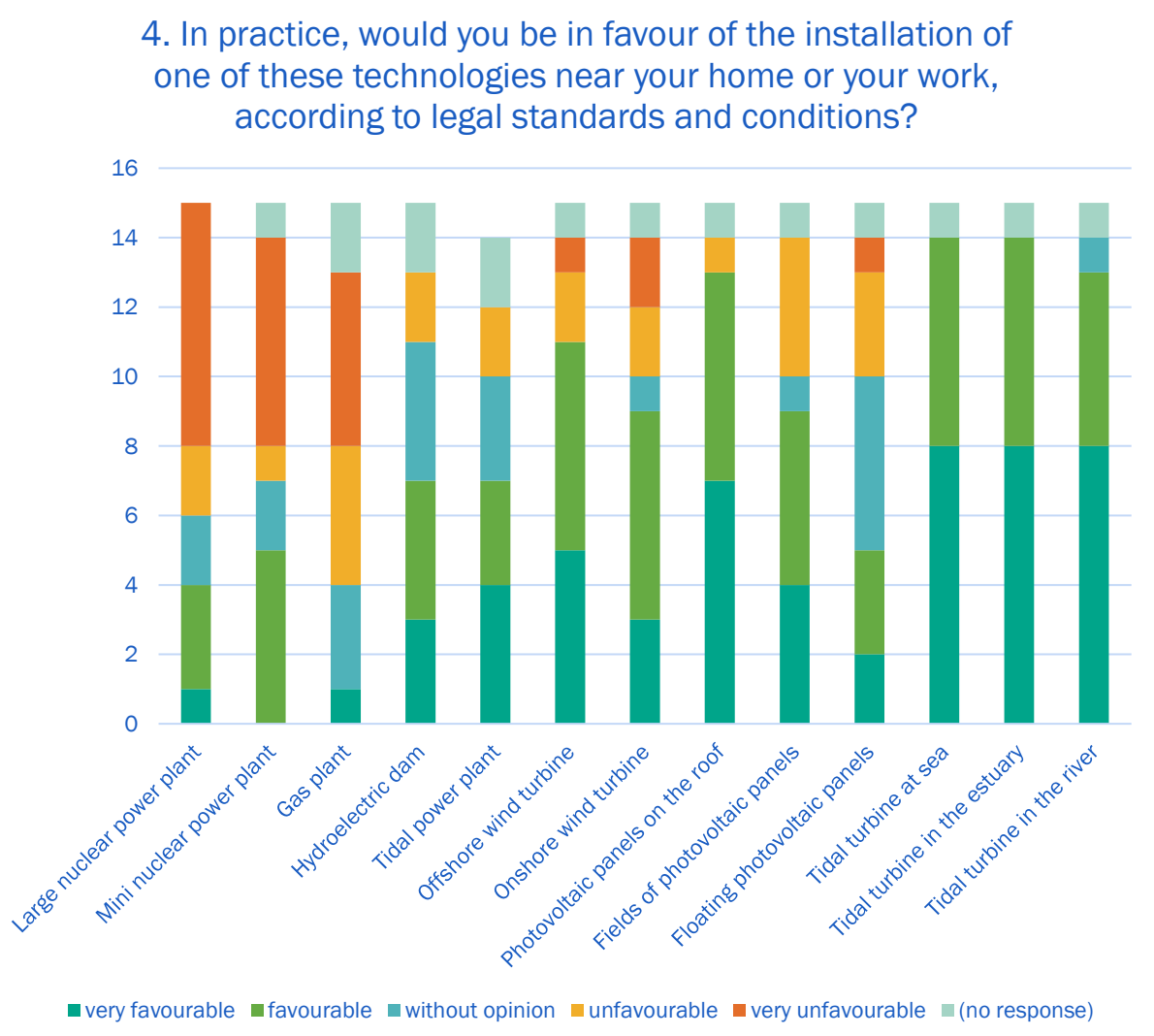

5. In your opinion, can the installation of tidal turbines have a positive and/or negative effect on the natural environment? If yes, which?

1. (No response)
2. Fairly neutral, I think
3. Positive because the tidal turbine does not pollute
4. Without opinion
5. I don't know
6. No
7. Without opinion
8. Yes, tidal turbines should be favoured (clean energy)
9. No known noticeable effects
10. (No response)
11. No, in relation to the impact of fishing
12. Positive because proximity of production and little environmental impact
13. Without arguable opinion
14. Maybe depending on the installation cycle, maintenance but weak a priori
15. Positive contribution of ecological energy without fossil source

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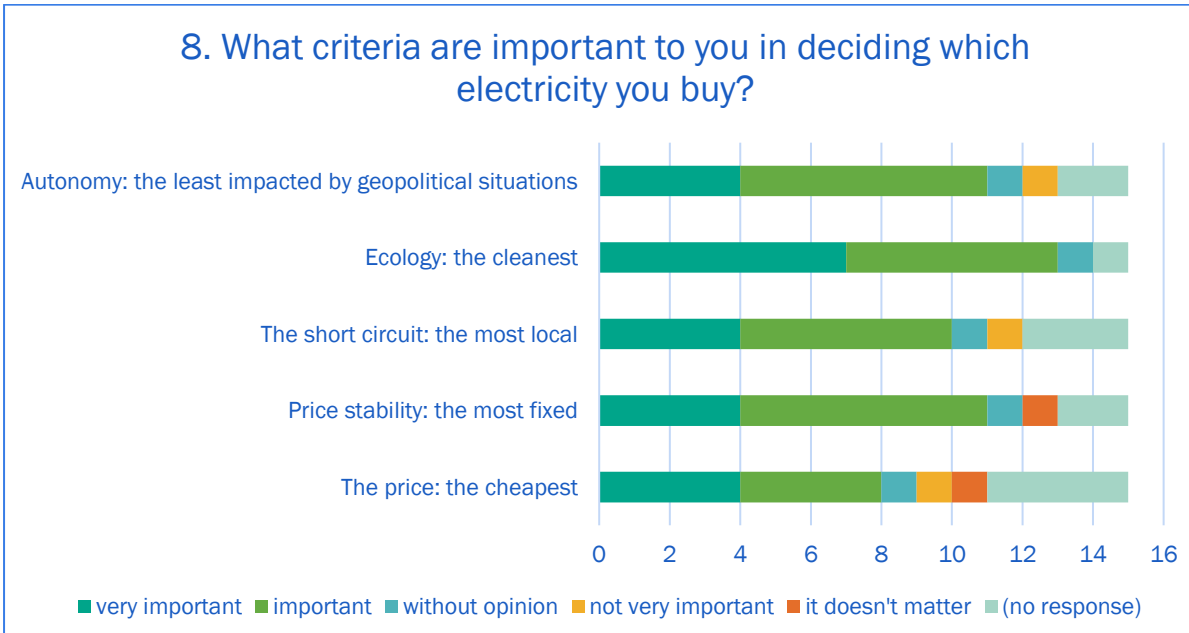
6. In your opinion, can the installation of tidal turbines have a positive and/or negative effect on the local socio-economic fabric? If yes, which?

1. Not really, except for a local build or assembly
2. Jobs
3. Positive
4. Without opinion
5. Positive: employment
6. No
7. Yes, inexpensive local energy
8. Yes, if the price per kwh is cheaper
9. Yes, positive local jobs
10. (No response)
11. Positive: local employment, local economic activities
12. Without opinion
13. Without arguable opinion
14. Yes, business network - construction - maintenance
15. Positive, natural production

7. In your opinion, what would be the ideal consultation process to carry out before the installation of tidal turbines?

1. Inform the users of the place, professionals, boaters, divers...
2. ?
3. (No response)
4. Public information
5. Public meeting, website
6. Meeting
7. Consultation of local populations
8. Public info meeting, same as tonight. By improving the sound system... which is a bit lacking tonight.
9. Public meetings & community notices
10. (No response)
11. Public consultation such as an offshore wind farm but on a smaller scale
12. Public inquiry and downstream public results
13. Without specific advice
14. Public meeting
15. Local referendum



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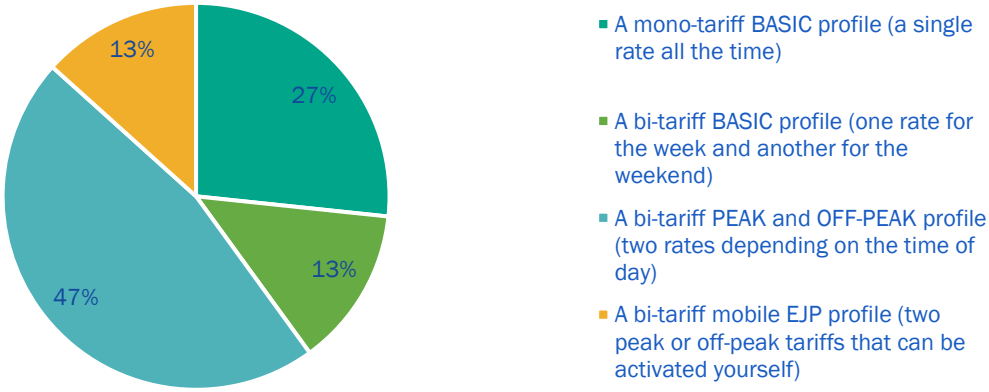
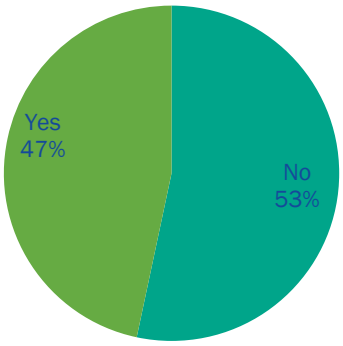
9. What electricity consumption profile do you have for your home?

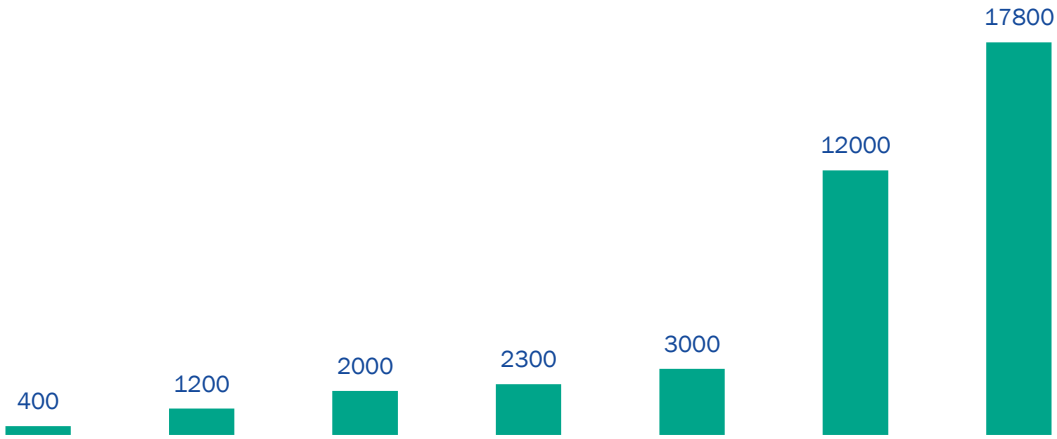


10. Do you know the annual electricity consumption of your home?

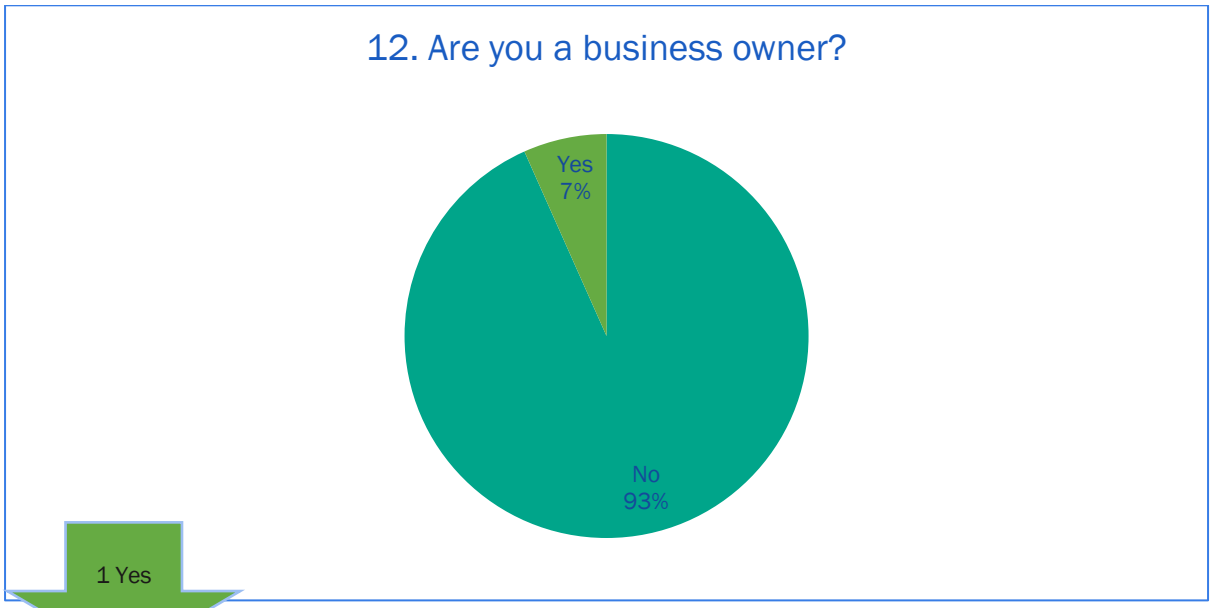


7 Yes

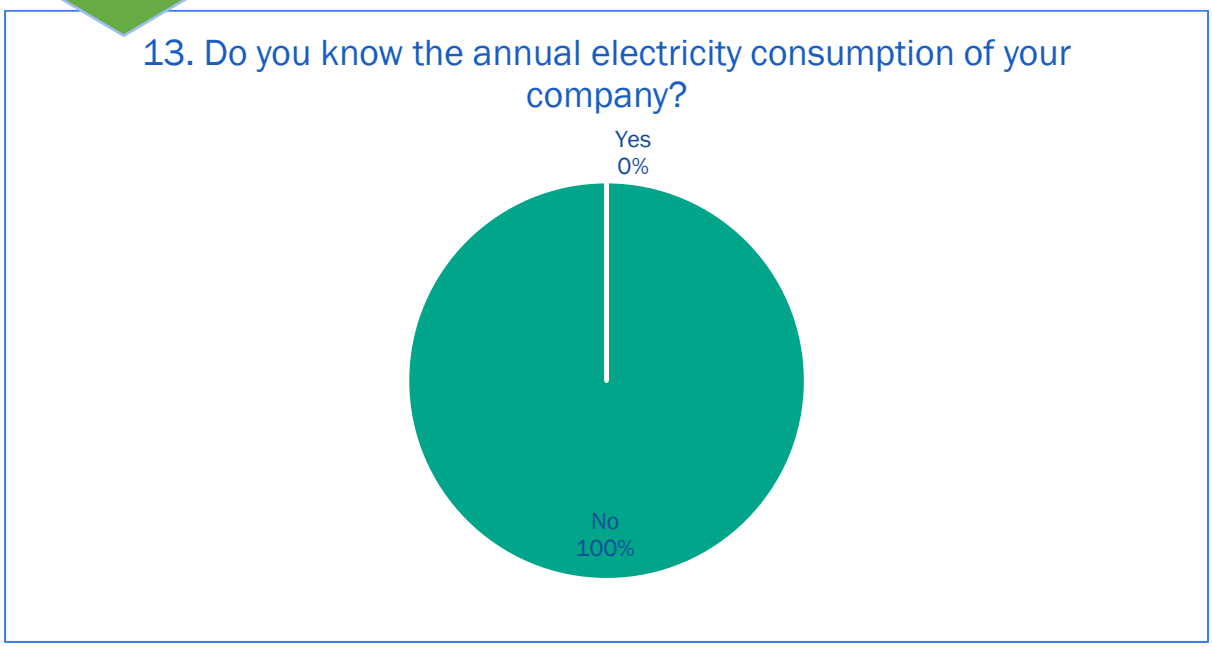
11. How many kWh/year of electricity do you consume for your home?



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 815180.



1 Yes



Press coverage

Thanks to the public relations work for the local community engagement activities, the six following media companies shared articles, radio and television news on the ELEMENT project during the period of October 2022 and February 2023:

- France 3: 1 television news,
- Ouest France: 2 articles,
- Le Télégramme: 3 articles,
- The West of France API Agency: 1 article,
- Le Marin: 1 article,
- RCF: 1 radio news,
- OffshoreEnergy.biz: 1 article.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 815180.

3. CONCLUSIONS

The local community engagement activities held during the ELEMENT project tidal turbine test in the Etel estuary confirmed a growing positive interest on the subject. The different events targeted different local stakeholders and were each welcomed by the participants and the press.

Tidal turbine technology is a favoured energy source locally and their deployment doesn't trigger a NIMBY effect ("not in my backyard") as can be is the case for wind turbines. However, the local community is more receptive to a tidal turbine project that is well communicated to the community at an early stage before deployment.

Due to the water currents of the Etel estuary, standard navigation rules ban passive gear fishing, anchoring and diving. The installation of the tidal turbine therefore didn't have any impact to the users of the Etel estuary. In any case, in the event of an incident with the rotor, the risk of serious consequences for the vessel or users was considered very low by the local marine users.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 815180.

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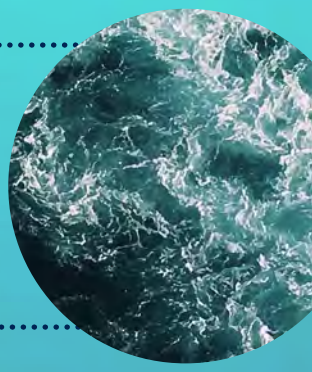
Element

UN PROJET DE RECHERCHE POUR AMELIORER LA PERFORMANCE DES HYDROLIENNES

Quelques éléments de contexte...

Une hydrolienne est une turbine immergée qui utilise l'énergie cinétique des courants de marées pour produire de l'électricité. Les sites propices à ce type d'installation se caractérisent par la présence d'importants phénomènes de turbulence qui varient dans le temps et l'espace et qui induisent de fortes contraintes sur les machines qui y sont installées. Une meilleure connaissance et prise en compte de cette turbulence est cruciale pour accroître la performance et la fiabilité des hydroliennes.



Le projet de recherche européen ELEMENT

Le projet de recherche ELEMENT réunit 11 acteurs clés privés et publics issus de différents pays d'Europe autour d'un objectif commun : améliorer la performance d'une hydrolienne en vue d'accélérer sa commercialisation.

ELEMENT va permettre de tester l'utilisation de systèmes de contrôle basés sur l'intelligence artificielle qui ajusteront le fonctionnement de l'hydrolienne aux conditions de courant et maximiseront ainsi la quantité d'énergie récupérée. Le projet s'intéresse également à l'évaluation socio-économique du secteur de l'hydrolien. Deux sites d'étude ont été retenus : les Îles Shetland en Écosse et la ria d'Etel en France.

Test d'une hydrolienne pendant 3 mois en ria d'Etel

Après avoir subi des tests en usine sur banc et des essais de traction en mer, l'hydrolienne RE50 de la société Nova Innovation sera déployée près du Chantier Bretagne Sud pour tester sa performance. Trois mois d'essais sont prévus à l'hiver 2022 - 2023. L'hydrolienne sera ensuite retirée de l'eau pour être rapatriée en Ecosse.

Une réunion publique le 24 octobre 2022 à Belz

Une réunion publique est organisée le 24 octobre 2022 de 18h00 à 21h00 à la maire de Belz avec l'équipe scientifique et technique du projet ELEMENT. L'objectif : détailler le contenu des essais qui vont être menés en ria d'Etel et échanger avec les différentes personnes concernées.

+ d'infos sur
element-project.eu

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Des partenaires scientifiques et techniques locaux

France Energies Marines

France Energies Marines est l'Institut pour la Transition Energétique dédié aux énergies marines renouvelables. Sa mission : fournir, valoriser et alimenter l'environnement scientifique et technique nécessaire pour lever les obstacles auxquels est confronté cette filière. Fort d'une équipe pluridisciplinaire de près de 70 collaborateurs et d'un modèle de collaboration public-privé, l'Institut a une raison d'être : la R&D, qu'elle soit collaborative ou menée dans le cadre d'une activité de services. Son siège est situé à Plouzané, près de Brest.

Rôle dans le projet ELEMENT

France Energies Marines est en charge de la caractérisation de la ressource et de la turbulence, de l'étude de la biocolonisation et de la modélisation de l'impact environnemental d'une hydrolienne en ria d'Etel.

Chantier Bretagne Sud

Le Chantier Bretagne Sud, filiale du Groupe ACTI, propose une large gamme de bateaux en aluminium construits dans ses ateliers. Il réalise également différentes prestations de services de type entretien, stockage et mise à l'eau. Couvrant sur une surface de 10 000 m², ses installations comprennent un hangar de 30 m de long et 21 m de large, un pont roulant de 5 T et une aire de carénage s'inscrivant dans la démarche Vague bleue.

Rôle dans le projet ELEMENT

Le Chantier Bretagne Sud héberge et gère la phase d'essais en ria d'Etel. Son équipe est en charge de la construction de la base gravitaire et du montage de l'hydrolienne. Elle supervise les opérations à terre. apporte son aide dans la conception des procédures associées aux tests.

Guinard Energies Nouvelles

Guinard Energies Nouvelles, start-up brestoise et filiale du Groupe ACTI, développe depuis 2008 des hydroliennes de petites et moyennes puissances destinées au marché fluvial et marin. Pour chacun des systèmes proposés, des modélisation numériques, des tests en bassin et des prototypes ont été réalisés et certifiés par la Direction Générale de l'Armement Technique Hydrodynamique.

Rôle dans le projet ELEMENT

Guinard Energies Nouvelles est titulaire de l'autorisation d'occupation temporaire en ria d'Etel. Elle apporte son expérience sur le site d'étude et supervise les opérations en mer.

11 partenaires

Element

Durée : 48 mois

Budget : 5 millions d'euros

Ce projet bénéficie d'un financement du programme européen de recherche et d'innovation Horizon 2020 (Convention de subvention n°815180).

Nous avons besoin de votre avis...

Dans le cadre du projet ELEMENT, nous réalisons une enquête sur la perception par les citoyens de l'énergie hydrolienne.

1 / Avant d'entendre parler du projet ELEMENT, connaissiez-vous la technologie hydrolienne pour produire de l'électricité grâce aux courants de marée ?

☐ Oui ☐ Non

2 / À votre avis, combien d'électricité par an produit une hydrolienne du type de celle qui sera testée en ria d'Etel ?

☐ 4 MWh/an (consommation d'un ménage moyen) ☐ 40 MWh/an (consommation de 10 ménages)
☐ 80 MWh/an (consommation de 20 ménages) ☐ 120 MWh/an (consommation de 30 ménages)
☐ 160 MWh/an (consommation de 40 ménages) ☐ 200 MWh/an (consommation de 50 ménages)

3 / En théorie, êtes-vous favorable aux technologies de production d'électricité suivantes ?

	Très favorable	Favorable	Sans avis	Défavorable	Très défavorable
Centrale nucléaire	☐	☐	☐	☐	☐
Centrale à gaz	☐	☐	☐	☐	☐
Barrage hydroélectrique	☐	☐	☐	☐	☐
Usine marémotrice	☐	☐	☐	☐	☐
Éolienne	☐	☐	☐	☐	☐
Panneaux photovoltaïques	☐	☐	☐	☐	☐
Hydrolienne	☐	☐	☐	☐	☐

Si vous ne connaissez pas la technologie, merci de ne pas répondre sur la ligne correspondante.

4 / En pratique, seriez-vous favorable à l'installation d'une de ces technologies près de votre habitation ou de votre travail, selon les normes et conditions légales ?

	Très favorable	Favorable	Sans avis	Défavorable	Très défavorable
Grande centrale nucléaire	☐	☐	☐	☐	☐
Mini centrale nucléaire	☐	☐	☐	☐	☐
Centrale à gaz	☐	☐	☐	☐	☐
Barrage hydroélectrique	☐	☐	☐	☐	☐
Usine marémotrice	☐	☐	☐	☐	☐
Éolien en mer	☐	☐	☐	☐	☐
Éolien terrestre	☐	☐	☐	☐	☐
Panneaux photovoltaïques sur toiture	☐	☐	☐	☐	☐
Champs de panneaux photovoltaïques	☐	☐	☐	☐	☐
Panneaux photovoltaïques flottants	☐	☐	☐	☐	☐
Hydrolienne en mer	☐	☐	☐	☐	☐
Hydrolienne en estuaire	☐	☐	☐	☐	☐
Hydrolienne en rivière	☐	☐	☐	☐	☐

Si vous ne connaissez pas la technologie, merci de ne pas répondre sur la ligne correspondante.

5 / Selon vous, l'installation d'hydroliennes peut-elle avoir un effet positif et/ou négatif sur le milieu naturel ? Si oui, lequel ?

.....

6 / Selon vous, l'installation d'hydroliennes peut-elle avoir un effet positif et/ou négatif sur le tissu socio-économique local ? Si oui, lequel ?

.....

7 / Selon vous, quel serait le processus de concertation idéal à mener en amont de l'installation d'hydroliennes ?

.....

8 / Quels critères sont important à vos yeux pour décider de l'électricité que vous achetez ?

	Très important	Important	Sans avis	Pas très important	Aucune importance
Le prix : le moins cher	☐	☐	☐	☐	☐
La stabilité du prix : le plus fixe	☐	☐	☐	☐	☐
Le circuit-court : le plus local	☐	☐	☐	☐	☐
L'écologie : le plus propre	☐	☐	☐	☐	☐
L'autonomie : le moins impacté par les situations géopolitiques	☐	☐	☐	☐	☐

9 / Quel profil de consommation électrique avez-vous pour votre habitation ?

- ☐ Je ne sais pas
- ☐ Un profil de BASE mono-horaire (un seul tarif tout le temps)
- ☐ Un profil de BASE bi-horaire (un tarif pour la semaine et un autre pour le weekend)
- ☐ Un profil HEURES PLEINES et HEURES CREUSES (deux tarifs selon l'heure de la journée)
- ☐ Un profil TEMPO (six tarifs selon l'heure de la journée et la période de l'année)
- ☐ Un profil EJP bi-horaire mobile (deux tarifs heures pleines ou creuses activables soi-même)

10/ Connaissez-vous la consommation d'électricité annuelle de votre habitation ?

☐ Oui ☐ Non

11/ Combien d'électricité consommez-vous pour votre habitation par an ?

..... kWh/an

12/ Etes-vous patron d'une entreprise ?

☐ Oui ☐ Non

13/ Quel profil de consommation électrique avez-vous pour votre entreprise ?

- ☐ Je ne sais pas
- ☐ Un profil de BASE mono-horaire (un seul tarif tout le temps)
- ☐ Un profil de BASE bi-horaire (un tarif pour la semaine et un autre pour le weekend)
- ☐ Un profil HEURES PLEINES et HEURES CREUSES (deux tarifs selon l'heure de la journée)
- ☐ Un profil TEMPO (six tarifs selon l'heure de la journée et la période de l'année)
- ☐ Un profil EJP bi-horaire mobile (deux tarifs heures pleines ou creuses activables soi-même)
- ☐ Un profil EP bi-horaire jour-nuit (un tarif avantageux pour la nuit)

14/ Connaissez-vous la consommation d'électricité annuelle de votre entreprise ?

☐ Oui ☐ Non

15/ Combien d'électricité consommez-vous pour votre entreprise par an ?

..... kWh/an

Vous pouvez aussi participer à cette enquête en ligne

https://framaforms.org/lenergie-hydrolienne-1665410224

Element

Expérimentation d’une hydrolienne en ria d’Étel

Réunion d’information publique

Belz, le 24 octobre 2022 à 18h00

Ce projet a reçu un financement du programme de recherche et d'innovation Horizon 2020 de l'Union européenne sous le numéro de convention de subvention 815180

NOVA INNOVATION · CBS · FRANCE ENERGIES MARINES · INNOSEA An ABL Group Company · University of Strathclyde Glasgow · NORTEK · CATAPULT Offshore Renewable Energy · IDEETA · DNV·GL · wood. · ABB

Agenda

1. Accueil
2. Introduction
3. Présentation du projet
4. Étude d’incidences sur l’environnement
5. Vos observations

Ce projet a reçu un financement du programme de recherche et d'innovation Horizon 2020
de l'Union européenne sous le numéro de convention de subvention 815180

Element

Accueil

Ce projet a reçu un financement du programme de recherche et d'innovation Horizon 2020
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Element

Introduction

En tant que citoyens, entreprises ou associations de Belz, Étel et Plouhinec, vous avez été invité à cette réunion publique.

Merci d’être présent.

Les objectifs de la réunion sont de :

1. Présenter le projet et le test dans la ria d’Étel
2. Partager les études d’incidences sur l’environnement
3. Récolter votre avis

Ce projet a reçu un financement du programme de recherche et d'innovation Horizon 2020
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Element

Description du projet ELEMENT

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Element

Description du projet ELEMENT

Objectif

Améliorer les performances d'une hydrolienne

Partenaires

14 acteurs privés et publics européens, dont 4 en France

Innovation

Systèmes de contrôle basés sur l'intelligence artificielle :

- Optimiser le fonctionnement de l'hydrolienne en écoulement turbulent
- Maximiser la quantité d'énergie récupérée
- Augmenter la fiabilité et durée de vie de l'hydrolienne

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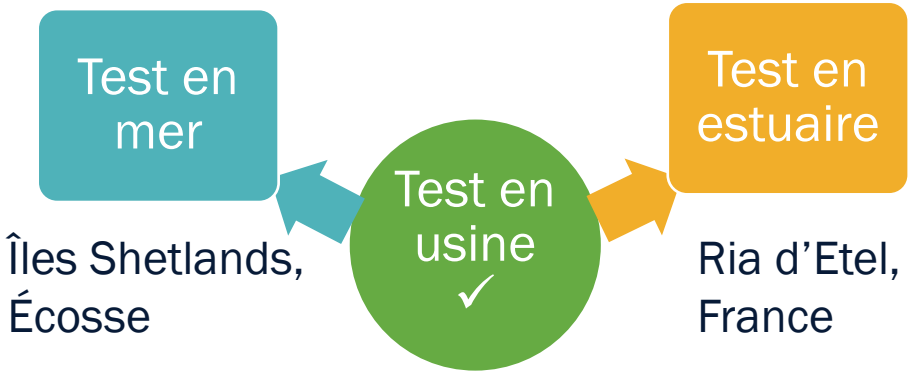
Description du projet ELEMENT

Tests



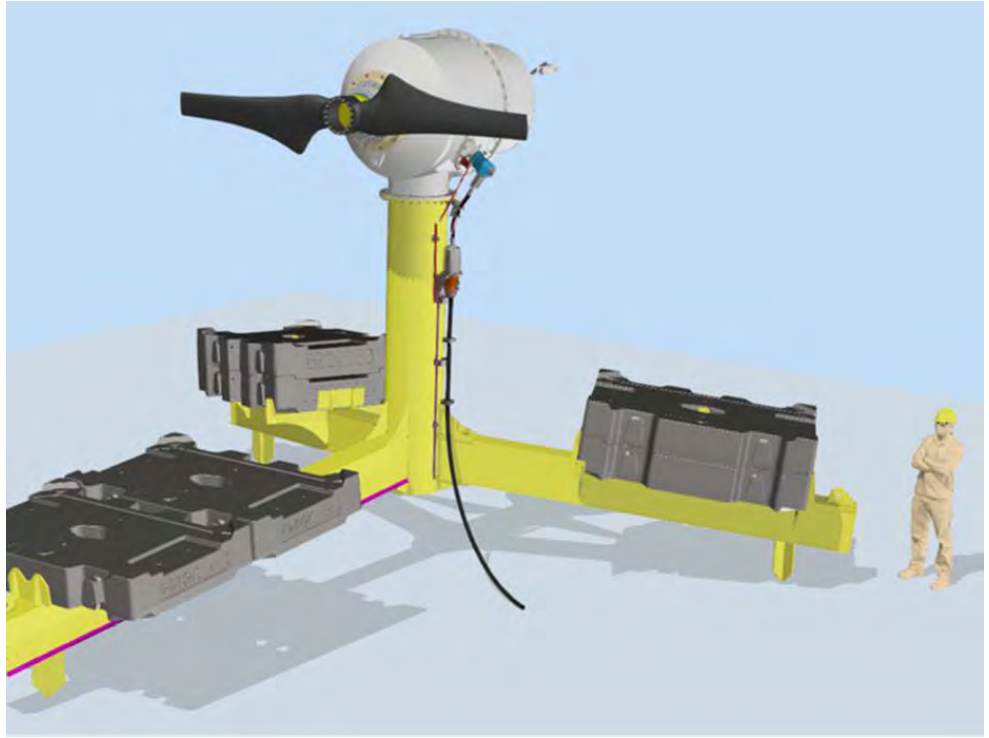
Période de test dans la ria d'Étel

- 3 mois en hiver 2022-2023

L'hydrolienne dans la ria d'Étel

- Modèle RE50 : 7m de haut
- Production : 150 MWh/an

NOVA INNOVATION



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Element

Description du projet ELEMENT

Zone de test dans la ria d'Étel

- Zone abritée
- Profondeur entre 12 et 18m
- Courants maximum de 6 nds
- 150m du chantier naval CBS
- AOT (autorisation d'occupation temporaire) de Guinard Energies Nouvelles

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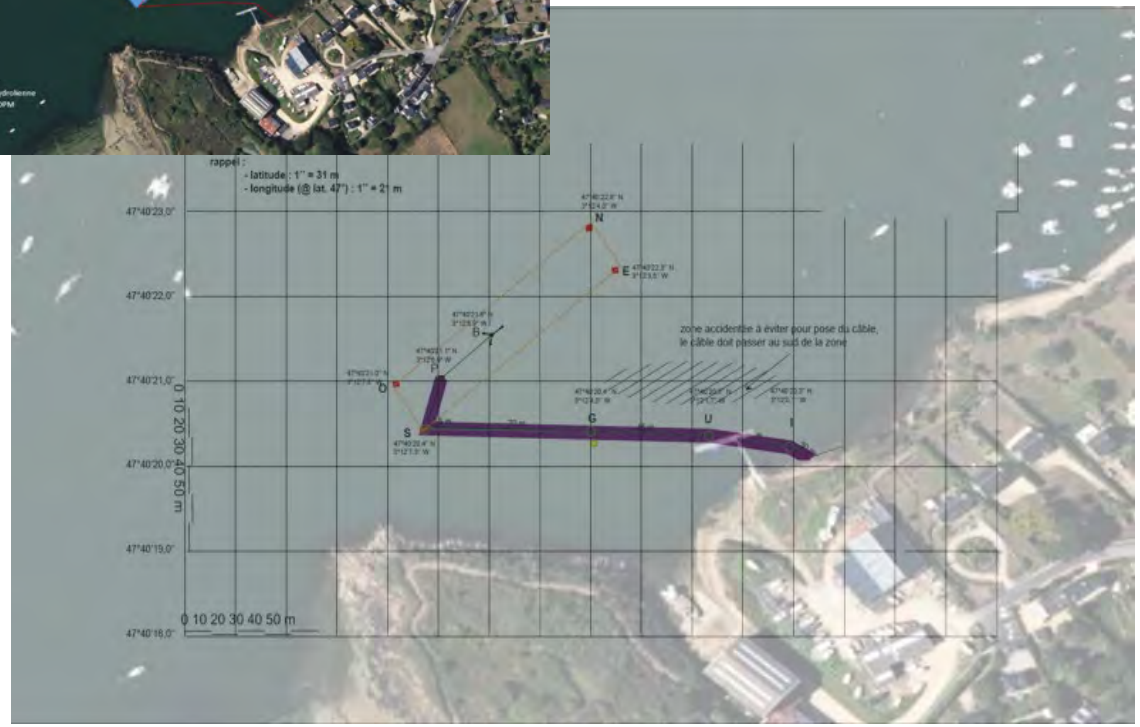
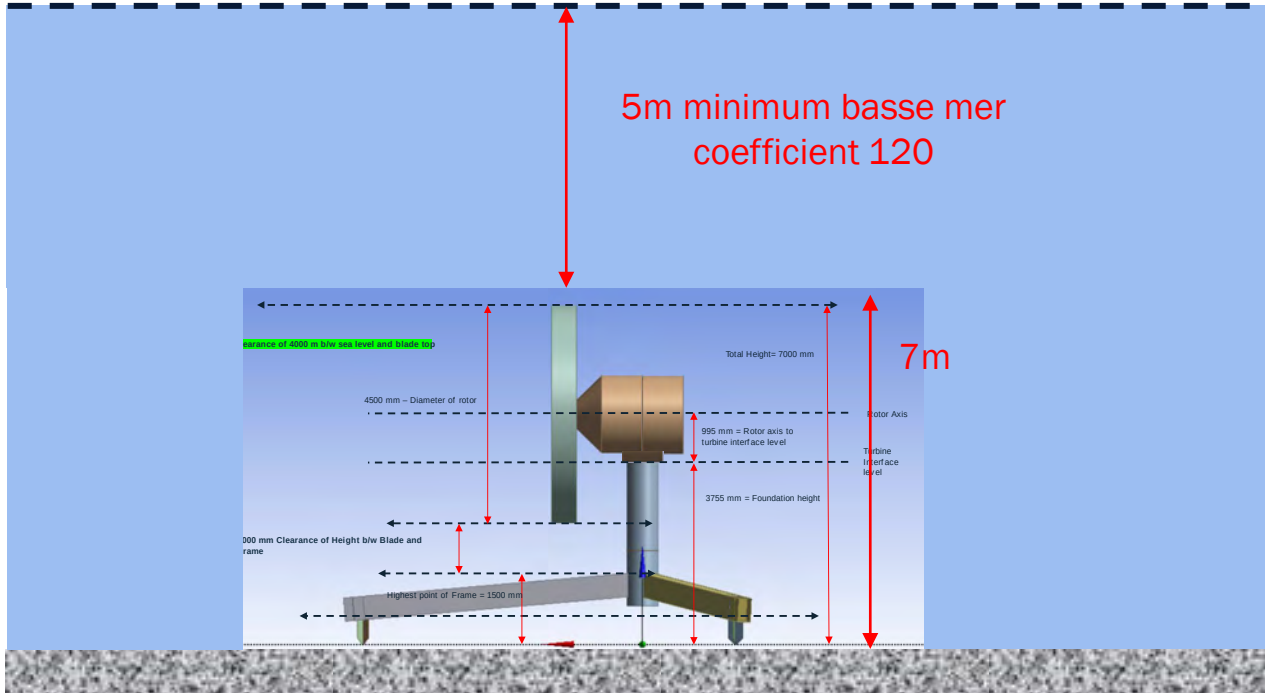
Description du projet ELEMENT



L'hydrolienne

- 5m de pied de pilote
- 0,5% de la section de passage



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Element

Observations et recommandations de la Commission nautique locale

Compte rendu de la réunion à Belz le 29 juin 2022

Navigation

- La circulation des navires en surplomb de l'installation reste ouverte
- Pour rappel, le mouillage reste interdit
  - En cas de « croche » d'une ligne de mouillage sur le rotor, le risque de conséquence grave reste très faible. Des panneaux d'information seront mis en place aux principales cales de mise à l'eau.

Pêche

- Pour rappel, la pêche avec des engins dormants reste interdite
- La pêche à la dérive peut se produire (risque limité de la perte de matériels)

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Element

Evaluation environnementale

Projet EnFAIT

- Site : la ferme d'hydroliennes en mer dans les Îles Shetlands
- Suivi environnemental
  - Avant le projet (sans installation) : depuis novembre 2010
  - Pendant le projet (avec installation) : depuis mai 2017
  - ➢ Pas d'impact sur mammifères marins, poissons et oiseaux plongeurs

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Element

Etude environnementale

Projet ELEMENT

- Site temporaire : la ria d'Étel
- Suivi environnemental :
  - Caractérisation de la ressource et de la turbulence
  - Etude de la biocolonisation
  - Modélisation de l'impact environnemental

© FEM

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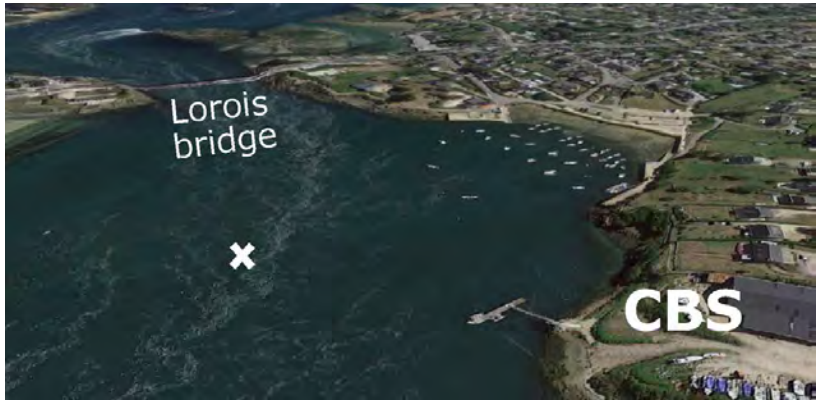
Caractérisation de la ressource et de la turbulence

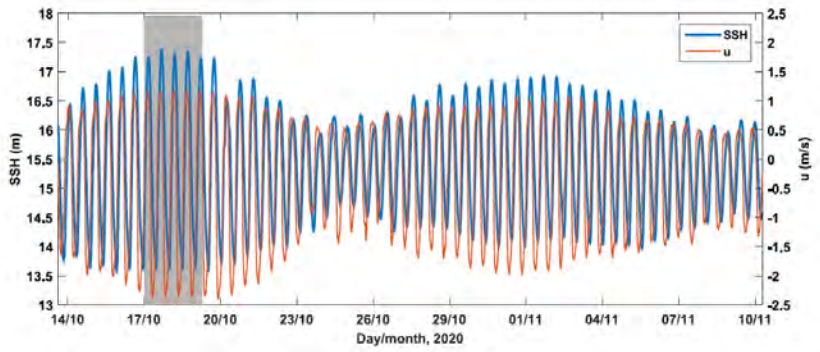
Quantification de l'intensité de la turbulence grâce aux mesures de vitesse recueillies par un profileur de courants (ADCP) à 5 faisceaux

Données collectées sur une période de 27 jours de février-mai 2020

Définition d'une méthodologie innovante pour évaluer la turbulence et publication dans la revue scientifique internationale *Renewable Energy* en 2022

Utilisation de cette méthodologie pour la conception des futures hydroliennes





© FEM, Nortek

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 815180.

Element

Etude de la biocolonisation

Installations de bouées équipées de plaques de PVC en 3 points différents

Suivi du processus de biocolonisation sur un an avec des relevés de plaques en juillet 2021, janvier 2022 et juillet 2022

Elaboration d'un protocole de suivi et de caractérisation du biofouling incluant différentes mesures (ex. épaisseur, rugosité) et permettant d'identifier les principales espèces

Utilisation de ce protocole pour prévoir l'influence de la biocolonisation sur une machine donnée à un site particulier

5 mois

11 mois

© FEM

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 815180.

Element

Modélisation de l'impact environnemental

Utilisation du module « Evaluation de l'impact environnemental et de l'acceptabilité sociale » de la suite logicielle open source DTOcean+

Développement d'une nouvelle fonctionnalité de ce module portant sur l'évaluation du risque de collision pour les mammifères marins et les oiseaux

Amélioration de la suite logicielle DTOcean+ et utilisation dans la conception des futurs projets de fermes hydroliennes

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Element

Vos observations

Questionnaire

Pour le volet socioéconomique du projet ELEMENT, nous aimerions avoir votre avis (anonyme) concernant l'énergie hydrolienne et l'électricité

- Aujourd'hui avec le questionnaire papier (à rendre ce soir)
- Cette semaine avec le questionnaire internet (lien dans la brochure)

Contact

Via le site internet www.element-project.eu

Discussion

Avez-vous des questions ou observations à partager ?

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de l'Union européenne sous le numéro de convention de subvention 815180

Element

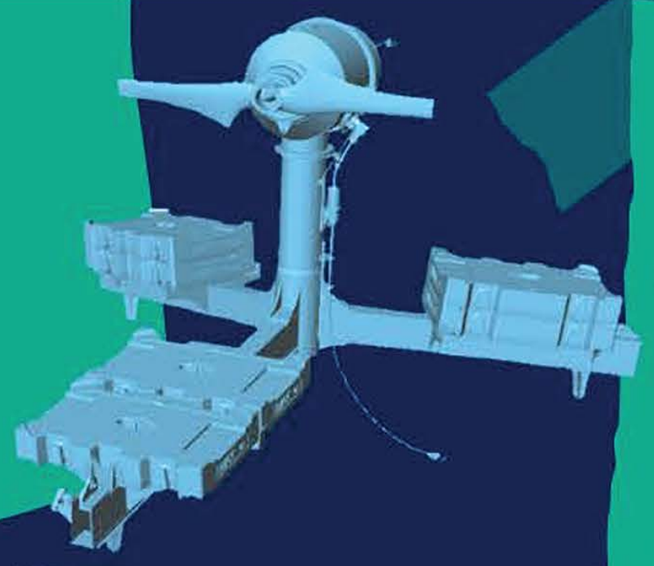
Element

Hey !

Sais-tu qu'il y a de l'électricité produite sous l'eau ici ?

En effet, il s'agit d'une **hydrolienne** !

Dans le cadre du **projet européen ELEMENT**, une **hydrolienne expérimentale** est immergée dans la Ria d'Etel.



Qu'est-ce qu'une hydrolienne ?

Ehh bien.. C'est Une source d'**énergie renouvelable** !

Une Hydrolienne c'est comme une éolienne mais sous-marine... Au lieu d'utiliser l'énergie cinétique (=vitesse) de l'air sa turbine utilise l'énergie cinétique des courants marins !

La turbine transforme l'**énergie hydraulique** en **énergie mécanique,** qui est alors transformée en **énergie électrique** par un alternateur.

TOUS LES +

- Non polluante, durable et inépuisable
- Fiable, prédictible et exploitable
- Pas d'impact visuel
- Faible occupation de l'espace, proximité du littoral et production énergétique importante

INFOS CLÉS

Elle est installée devant le Chantier Bretagne Sud, en aval du Pont Lorois

DE FÉVRIER 2023 À AVRIL 2023

La zone d'essais est centrée sur le point de coordonnées **47°40,36'N ; 003°12,0983'W.**

Elle pèse **14 TONNES** et mesure **7 mètres** de haut avec une pale de **4,5 mètres!**

https://element-project.eu

Ce projet a reçu un financement du programme de recherche et d'innovation Horizon 2020 de l'Union européenne sous le numéro de convention de subvention 815180.

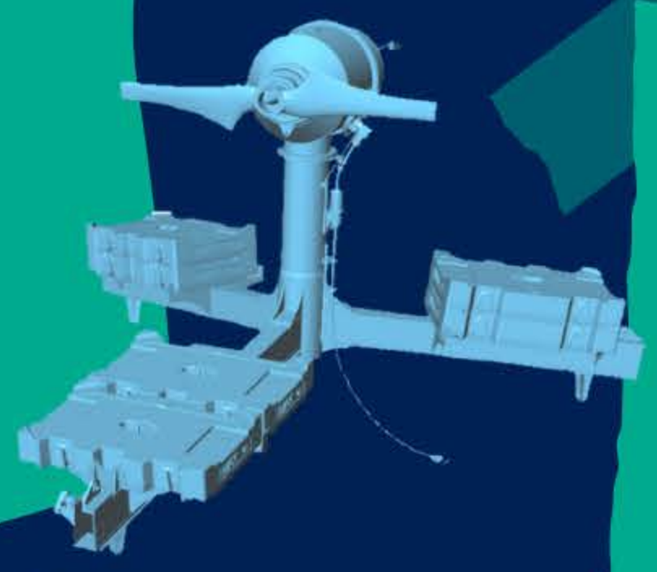
Element

Hey !

Did you know there's electricity being generated underwater here?

Indeed, it is a **tidal turbine**!

As part of the **European project ELEMENT**, an **experimental tidal turbine** is immersed in the Ria d'Etel.



What is a tidal turbine ?

Well. It's a **renewable energy source!**

A tidal turbine is like a wind turbine but underwater... Instead of using the kinetic energy (=speed) of the air its turbine uses the kinetic energy of the marine currents!

The turbine transforms **hydraulic energy** into **mechanical energy**, which is then transformed into **electrical energy** by an alternator.

ALL +

- Sustainable and inexhaustible
- Reliable, quickly exploitable and easily forecastable electricity production
- No visual impact
- Small space needed, near to shore and significant energy production

KEY INFO

It is installed in front of the Chantier Bretagne Sud, downstream of the Pont Lorois

FROM FEBRUARY TO APRIL 2023

The test area is centered on the coordinate point : **47°40.36'N; 003°12.0983'W.**

It weighs **14 TONS** and measures **7 meters high** with a blade of **4.5 meters!**

https://element-project.eu

This project received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 815180.

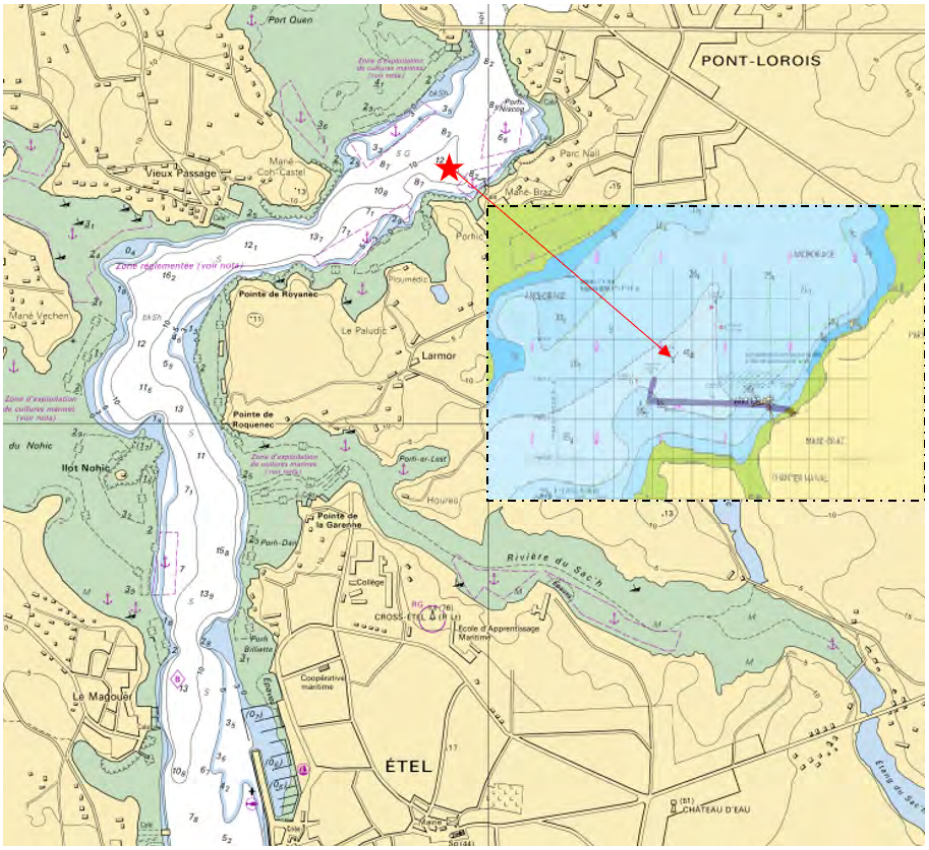
Dans le cadre du projet européen THE ELEMENT, une **hydrolienne expérimentale** est immergée dans la Ria d'Etel de **Février à Avril 2023.**

Elle est installée devant le Chantier Bretagne Sud, en aval du Pont Lorois dans une zone d'essais centrée sur le point de coordonnées 47°40,36'N ; 003°12,0983'W.

Un pied de pilote d'au minimum 5 mètres a été prévu.

Avis aux navigateurs, la navigation reste permis.

Pour rappel : la pêche aux engins dormants est interdite dans le secteur, ainsi que le mouillage et la plongée.



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