



Estuaries, coastal zones and rivers are powerful assets for Europe. Five dynamic partners from Belgium, The Netherlands, The UK and France have teamed up to harness the phenomenal tidal power potential. With the help of European Regional Development Funding through Interreg IV B, tidal energy will soon be a force to be reckoned with. Is it possible to create energy from water in low dynamic areas? Can innovative technologies turn our waterways into commercial energy sources?

In order to find out the pro-tide project undertakes different actions.

A. Exploring the benefits of tidal energy

1. Effective at Low Speeds (but which techniques are best?)

Which technologies are best suited to create tidal energy in low dynamic areas like lakes and rivers? We are exploring the available techniques, testing them in different circumstances and locations, to select the best solution.

2. Low eco impact (even underwater?)

We test the impact of tidal energy techniques on their underwater living conditions.

3. Renewable, green energy (with few commercial examples)

Pro-Tide takes on the challenge to provide go to market solutions for existing tidal energy techniques.

4. Predictable capacity & long lifespan (but is it cost-effective?)

Pro-Tide helps to develop public-private partnerships and thus create proof for marketable techniques.

B. Analysing data

1. Development of a current velocity mapping tool (FR)

The Laboratory of Oceanology and Geosciences/Universite du Littoral - Cote d'Opale analyses the hydrokinetic resources based on in situ measurements of tidal flow characteristics at different sites. They also provide models to ensure the statistical analysis of local turbulence time series in relation with the power production.

2. Mapping existing technologies (NL)

A desktop study summarises all existing technologies and will identify the most suitable techniques for low dynamic areas, keeping in mind the low head, low cost & fish-friendly characteristics of each solution.

3. Potential energy study of the Heusden Lock (BE)

Since the Scheldt has many inlet and outlet constructions, a study maps the cost effectiveness of creating energy with a low head turbine. This pilot has international consequences, since the water supply from the Dutch Scheldt is an important element to guarantee the tidal power.

C. Testing techniques

1. Tidal energy capacity map of the river Scheldt (BE)

Flemish waterway manager 'Waterways & Seacanal NV' (W&Z) is investigating the potential of the Scheldt as a renewable energy provider. Experiments on several locations in the Scheldt will reveal if existing turbine techniques are sufficient to create cost effective energy in the low velocity of the Scheldt water.

2. Lab tests for existing technologies (NL)

Pilot tests (1:10 scale) at Water laboratories help to identify the best suitable tidal energy techniques for low dynamic areas. Full scale tests are prepared in a real water discharge structure which is part of the Deltaworks in the Province of Zeeland.

3. In-water testing of 3 devices around the Isle of Wight (UK)

Around the Island of Wight, 3 early stage tidal energy devices will be tested to develop novel concepts and provide information on environmental impacts and mooring technologies.

4. In-water testing of devices in the Port of Dover (UK)

Three more devices will be tested in the Port of Dover to assess the feasibility of a tidal power station.

D. **Building Facilities**, Research and testing facility.

1. The Perpetuus Tidal Energy Centre (PTEC) in the Isle of Wight (UK)

The Isle of Wight Council is seeking to exploit the powerful tidal resources around the Island, for the generation of renewable energy. The Perpetuus Tidal Energy Centre (PTEC) is a managed test /demonstration facility for tidal energy devices. It is suitable for the deployment of up to full scale single units and small arrays from prototype to pre-commercial demonstrators. The offshore facility will be a 20MW demonstration site of approximately 5 km² located approximately 2.5 km to the south of St. Catherine's Point.

2. A tidal energy plant in the Port of Dover (UK)

The Port of Dover within the Pro-tide project is investigating the feasibility of a tidal energy power station. A tidal investigation zone area of approximately 0.45 km² (45 hectares) outside the Southern Breakwater has been identified. The depths are relatively shallow ranging from 12 m at the near shore to 17 m at the seaward end at Chart Datum. The flow speed is estimated to be between 2-2.5 meters per second. The pilot will test up to three different devices in the investigation zone to assess their performance, environmental implications and compatibility with the site.

3. A Tidal Testing Center in Grevelingen (NL)

The Tidal Testing Centre Grevelingendam (TTC-GD) will be situated at the Flakkeese Spuisluis at the Grevelingendam. The Flakkeese sluice gate consists of six tubes and connects the Grevelingmeer (a lake) with the Oosterschelde (an estuary connected to the North Sea). The water can flow in either direction, depending on the tides. There is public and commercial interest to adapt the sluice gate to provide a unique facility for research and development of technical systems for energy production from free stream and/or low head water streams. Within Pro-Tide, preparation work will be made. Also a cost estimation of a field test with a promising low head technique will be made.

E. **Connecting people**

The Province of Zeeland is responsible for managing the project, guarding the effectiveness of the results and bringing together all tidal energy pioneers.

1. Technical Research Group W&Z coordinates the Technical Research Group (TRG) which will bring together experts from across the project area. This group will make recommendations on technical matters for all the Pro-Tide projects and will compare results from different areas. A master class was held in Antwerp on May 30th, which brought together dozens of experts, from 4 countries.

2. Environmental Aspects Group

The Isle of Wight Council will co-ordinate the Environmental Aspects Group (EAG) which will bring together experts from across the project area. This group will make recommendations on environmental monitoring programmes for all the Pro-Tide projects and will compare results from different areas. A master class will be held on the Isle of Wight in May 2014 and an international workshop in 2015.

3. Economic research group

In addition to measuring the actual energy production, it is important to identify which system can be used best in which specific location. This will increase the outcome of cost-benefit analysis, which will take into account both the construction and maintenance costs. An economic research group will improve the feasibility models for tidal energy plants.

4. Public Private Partnerships

The majority of tidal energy developments are likely to be funded by the private sector. However, the public sector has an important role to play in de-risking the development process and increasing public awareness of tidal energy systems. Pro-Tide will also connect commercial and public parties and actively look for investors.

Using lessons learnt from all the projects, the Isle of Wight will host an international conference in 2015 looking at public private partnerships in the planning, development and operation of tidal energy installations.

Pro-Tide partners

- Provincie Zeeland, The Netherlands
- Waterwegen en Zeekanaal N.V, Belgium
- Universite du Littoral - Cote d'Opale (ULCO), France
- Isle of Wight Council, United Kingdom
- Dover Harbour Board, United Kingdom

For more information: www.pro-tide.eu