



EnFAIT



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ENFAIT ENABLING FUTURE ARRAYS IN TIDAL

Business Plan Template



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I The Project

1.1 Introduction

A 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.

1.2 Overview of this Document

This document is produced as a Business Plan template designed to educate and assist potential project developers entering the ocean energy market. It is to be submitted to satisfy deliverable D3.3 of the EnFAIT project and to be also made available for public dissemination.

Given that the focus of the EnFAIT project is on tidal stream energy, this document has been written from the perspective of a tidal stream developer; however, similar Business Plan structures would be appropriate for developers working in other forms of ocean energy.

Note that the document is intended to be a template for a Business Plan for a *company*, rather than for a specific *project*. The authoring organisation, using this template, is referred to as ‘Company’ throughout.

The following sections of this report set out the various headings and sub-headings proposed for Company’s Business Plan, together with brief suggestions as to what content would typically be expected under each heading/sub-heading.

2 Executive Summary

This section should be a brief (one to four page) summary of Company's business and the funding opportunity.

2.1 Introduction

Briefly summarise:

- Company's background/history and leadership
- Current organisation size and geographic locations
- Company's core technologies.

2.2 Market Overview

Summarise Company's view of:

- The practically-addressable total global tidal stream resource (e.g. in TWh per annum and/or GW of installed nameplate capacity)
- The global tidal stream resource addressable by Company's technology
- The projected market sizes for tidal stream technology and services (e.g. in EUR per annum) over the next ten years
- Key markets on which Company is focusing.

2.3 Products and Services

Summarise:

- Company's current products and services, including key differentiating features
- History of Company's previous products/prototypes
- Company's current plans for product and service developments.

2.4 Funding Opportunity

Summarise:

- The funds currently sought, in order to reach the next stage of commercialisation
- The planned use of these funds.
- The investment rationale: what makes Company an attractive investment opportunity for funders.

3 The Market Opportunity

3.1 Context: Growth in Demand for Renewable Electricity Generation

Set out the overall context for the development of tidal stream power, in terms of:

- Drivers of electricity demand growth, including population growth, economic development, and electrification of transport, industrial processes and space heating
- Third party projections for the growth in total electricity generation/demand
- Climate change policy drivers for the transition to renewable electricity generation, including examples of renewable energy targets in relevant markets
- Third party projections for the growth in renewable electricity generation/demand.

3.2 Advantages of Tidal Stream Power Generation

Set out the key benefits of tidal stream power as part of the renewable energy mix. Depending on Company's chosen technology, these may include: sustainability; predictability (and the value of predictability in an energy mix increasingly reliant on intermittent energy sources such as wind and solar power); minimal visual impacts; minimal environmental and land-use impacts; energy security; compatibility of predictable tidal cycles with energy storage; cost reduction (e.g. through diesel displacement); and economic development opportunities for coastal communities and local/national supply chains in a new industry.

3.3 Resource Overview and Addressable Market

Set out Company's view of:

- The global tidal stream resource potential (e.g. in TWh per annum or GW of installed nameplate capacity) – taking care to distinguish between theoretical resource, technical extractable resource, and practical extractable resource; refer to credible third party estimates, giving an indication of the range of projections for resource potential
- The global tidal stream resource potential addressable by Company's current technology/plans
- The geographic distribution of tidal stream resource (e.g. by country).

3.4 Target Markets and Customer Groups

Set out Company's plans for:

- The geographic markets selected as initial priorities, and the rationale for that selection
- The customer groups (e.g. island communities, industry sectors, independent renewable energy project developers, utilities) expected to be addressed by Company over the next ten years

- The customer groups selected as initial priorities, and the rationale for that selection.

3.5 Marketing & Sales Strategy

Set out:

- The planned approach for raising awareness in relevant markets of Company's technology, products and services
- Company's plans for engaging with the initial priority customer groups
- Progress to date with potential customers
- Sources of differentiation versus key competitors' products and services.

4 Products and Services

4.1 Turbines

4.1.1 Key Design Features

Provide an overview of the design of Company's current/planned turbine(s), including rated power, size, weight, materials utilised, mooring/mounting approach and a description of the key features and how those features contribute to addressable market size/improved performance/reduced cost/improved safety for the turbines.

4.1.2 Performance

Set out the key performance metrics for Company's current/planned turbine(s), including:

- Design performance metrics: e.g. cut-in and cut-out flow speeds, flow speed for rated power, power curve (power output vs flow speed), average availability, expected annual electricity exported for sample site(s), lifetime, survivability in extreme conditions
- Observed performance vs design: from turbines tested/deployed to date
- Explanations for any variance between design and observed performance.
- Expected range of Levelised Cost of Energy (LCOE) associated with the current design, for a representative array.

4.1.3 Supply Chain Strategy and Component Availability

Set out Company's strategy for:

- Buy-versus-make approach to turbine components/sub-systems
- Turbine assembly
- Ensuring resilience/diversity of supply for key components
- Local supply chain development in target geographic markets
- Working with suppliers to drive down unit costs.

4.1.4 Environmental Impact

Summarise:

- The potential environmental risks associated with tidal stream power generation (e.g. fish, sea mammal, diving bird, benthic, noise impacts, water pollution, navigation, fishing)
- How Company's turbines minimise/mitigate these risks

- How the environmental impacts are/will be assessed and monitored
- Consenting/planning requirements in target geographic markets
- Findings re observed environmental impacts from turbines tested/deployed to date.

4.2 Deployment and O&M

4.2.1 Deployment

Summarise:

- The current/planned method for turbine deployment, including types of vessels involved
- Company's approach to the deployment of on-shore infrastructure and sub-sea cabling
- Company's strategy for driving down the risks and unit costs associated with array deployment.

4.2.2 Operations & Maintenance

Summarise:

- Company's current/planned business model for O&M of its turbines
- The current/planned methods for turbine monitoring and control
- The current/planned methods for turbine maintenance, including types of vessels involved
- Company's approach to the maintenance of on-shore infrastructure and sub-sea cabling
- Company's current/planned position on insurance and warranties
- Company's strategy for driving down the risks and unit costs associated with array maintenance.

4.2.3 Decommissioning

Summarise the strategy for minimising decommissioning costs, and the anticipated regulatory requirements for decommissioning in relevant markets.

4.3 Product and Service Development

Describe:

- Company's current priorities for product/service developments
- How these are addressed by Company's current Research & Development programme.

4.4 Intellectual Property

Summarise:

- Any existing patent applications submitted by Company, including priority date, geographic scope and status
- Company's approach to identifying Intellectual Property generated through R&D and operations
- Company's approach to protecting patentable and non-patentable Intellectual Property.

5 Project Development Strategy

5.1 Operational Sites

Describe any sites at which Company's turbines are currently operational, including: location, project developer, consents in place, installed nameplate capacity, distance from on-shore infrastructure, distance from servicing port(s), site depth and peak flow speeds.

5.2 Approach to Site Development

Set out Company's overall strategy on site development, in terms of the mix of Company-developed sites versus those led by third party project developers. For Company-developed sites explain the envisaged sources of project funding, and the timescales associated with reaching financial close. For third party project sites define the routes to market and potential timescales associated with these sites, and the approach towards meeting the working capital requirements for turbine supply.

5.3 Selection Criteria for Sites

Set out Company's key criteria for site selection, and how these criteria may change as the technology matures.

5.4 Pipeline of Sites in Development

Set out any sites which Company is currently developing, and/or which Company is targeting for sales to project developers. Include: location, project developer, consenting status, envisaged site capacity, distance from on-shore infrastructure, distance from servicing port(s), site depth and peak flow speeds, and envisaged deployment timescales.

6 Levelised Cost of Energy

6.1 LCOE Projections

Set out Company's projections for the Levelised Cost of Energy (LCOE) associated with projects using its technology. Include the implied learning rate (cost reduction per doubling of installed capacity), and a comparison with observed learning rates achieved with other renewables (e.g. onshore wind, offshore wind, solar).

6.2 Expected Sources of Cost Reductions

Explain how the Company envisages achieving the projected reductions in LCOE, including the contributions from economies of manufacturing volume, economies of project scale, economies of device scale, turbine design innovations, array design innovations, operational innovations, and reduced cost of capital over time.

7 Corporate Structure

7.1 Shareholding Structure

Set out Company's current shareholding structure, and Company's shareholding in any subsidiaries. Note any share option schemes in place, and any share options granted.

7.2 Board and Senior Management

Provide brief pen portraits of Company's Board Members and Senior Managers, setting out their relevant experience.

7.3 Staff

Summarise Company's current staffing structure, in terms of Full-Time Equivalent (FTE) employees in each functional area. Summarise the geographic distribution of Company's current staff.

8 Financial Summary

8.1 Historic Financial Performance

Provide a table summarising the financial outturns from Company's previous financial years, including key Profit & Loss and Balance Sheet metrics. Note whether accounts have been audited, and any particularly relevant accounting policies.

8.2 Operational Projections

Provide tables/charts to summarise Company's key operational projections (e.g. over the next five to seven years), including annual (and cumulative) device shipments, total annual (and cumulative) capacity shipped, and total FTE staff.

8.3 Financial Projections

Provide tables to summarise Company's projections (e.g. over the next five to seven years) for:

- Profit & Loss
- Balance Sheet
- Cashflow.

8.4 Key Assumptions Underlying the Projections

Summarise the most important assumptions underlying the above projections. Define the approach to mitigating financial risks, including contingencies for unexpected cost over-runs.

9 Company Valuation and Funding Requirement

This section should be included if Company is seeking (debt or equity) funding, and intending to use this Business Plan to support that fund-raising.

9.1 Company Valuation

Set out Company's estimate of its current pre-money equity value, and explain the methodology through which that estimate has been derived.

9.2 Funding Required

Summarise:

- The funding currently being sought, and the envisaged mix of equity vs debt vs convertible loan notes etc.
- Projected future funding rounds required.

9.3 Use of Funds

Describe how Company plans to use the funds currently being sought.

9.4 Investment Rationale

Summarise what makes Company an attractive investment opportunity for funders.

Contact

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