



Discussion Document for Public Distribution

**DEVELOPING AN OCEAN ENERGY
INDUSTRY FOR IRELAND**

April 2009

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Introduction

Ireland has significant but underutilised resources in ocean energy. Developing these resources will bring benefits to Ireland in industrial development, security of supply, and environment protection. This report focuses on industrial development in ocean energy.

Developing the broad industry sector is necessary to bring benefits to Ireland and lead to energy security and sustainability. The purpose of this document is to stimulate discussion of the need to develop a broad industry sector for ocean energy and the advantages for Ireland of developing this sector. The discussion begins by asking *What, Why, How, and Who*.

What is Ocean Energy?

Ocean energy is energy extracted from the ocean environment. This report specifically covers offshore wind, tides, marine currents, and waves. Ireland has substantial wave energy resources and offshore wind. Tidal and marine currents are additional resources with significant potential for exploitation due to their predictability.

Why Develop Ocean Energy?

Developing ocean energy in Ireland provides an opportunity to develop an industry that will provide employment, create export opportunities for products and services, and generate export revenue from supplying electricity to the UK and continental Europe.

Ocean energy has several categories, each with its specific methods for extracting energy from the ocean. The specifics of energy extraction differ between categories but the wider industry shares the same challenges and requirements for development.

Extracting energy from ocean resources must overcome the problems of working in difficult conditions and environments. The North Sea oil industry faced similar problems during its development and the development of an Irish ocean energy industry can use lessons learned from the North Sea.

Countries bordering the North Sea used the opportunity provided by the discovery of offshore oil and gas resources to develop their maritime and offshore engineering industry. Investment in marine technology and in industry led to the development of a broad industry sector in Norway, the UK, and The Netherlands. This development is not shared by many other areas of the world with access to energy resources. Countries that failed to develop broad industry sectors have experienced little innovation or enterprise, instead relying on short-term revenue. The lesson to learn from offshore engineering is that developing a broad indigenous industry sector leads to long-term development and economic growth.

Ireland can use ocean energy to build an indigenous industry that covers design, manufacture, construction, transportation, maintenance, and support services. Ireland can develop companies and employment in several areas in the marine industry and in supporting industry sectors. Ireland should develop activity across these sectors to ensure that there is a wide range of economic activity and indigenous expertise. Ocean energy provides the opportunity for broad development beyond the considerations of renewable energy and sustainability.

How to Develop the Ocean Energy Industry?

Several factors interact to develop an industry sector. Four challenges face Ireland when developing the ocean energy industry.

The first challenge is the problem of planning permission and permits. A company trying to develop ocean energy has to negotiate its way past several government agencies and local authorities. Already, ocean energy companies have moved away from Ireland because of this problem. This blockage needs to be removed as a matter of urgency. There should be a single authority for all development below the high water mark. Dealing with several authorities wastes time and money that could be better used developing the industry.

Financial support is the second challenge. There is little financial infrastructure in place for supporting companies at the different levels from start-up technology companies to large site developers. The financial infrastructure needs to be a mixture of initial government grants, seed-capital, venture capital, bank loans, and private investment. The Irish government should avoid making firms dependant on eternal rounds of grant aid. Instead, it should assist companies to find financial support and prepare an environment in which investors can feel secure about committing funding. Ireland has a track record of success in industrial development and this expertise can be used to develop the ocean energy industry sector.

The third challenge is developing indigenous expertise. Ireland has only a small indigenous marine sector despite the island location. Several companies and universities have expertise in the marine environment but there is a need to significantly expand the level of expertise and the range of this expertise. Recent commitments of government funding for research and for technology development have started to correct this problem. Ireland can learn from other countries to develop indigenous expertise. Examples of expertise from other countries are the offshore industry in Norway and recent developments in renewable energy in Scotland.

Infrastructure is the fourth challenge. Ireland has little physical infrastructure in place to support the exploitation of large-scale ocean energy. The infrastructure requirements include berthing for marine vessels, loading/unloading piers suitable for construction vessels, road and rail transportation to harbours, facilities for refuelling and supply, and training facilities. Ireland needs to develop a fleet of marine vessels for construction and maintenance. This sector is underdeveloped in Ireland and the substantial coastal area provides significant opportunity for developing infrastructure.

Who?

Several organisations have a role to play in the development of the Irish ocean energy industry. Central government sets overall policy and strategy through its departments. Enterprise Ireland and the IDA are the government agencies with executive responsibility for industrial development and have valuable experience in encouraging development. The Marine Institute and Sustainable Energy Ireland assist in research and development. Local authorities, government agencies, and departments of central government interact for planning and licensing, an area that requires urgent reform and simplification.

Semi-state companies have a strong role to play in industrial development. The ESB controls transmission and distribution of electricity. The national grid will require reinforcement and additional capacity for transmission of electricity generated from ocean resources. The ESB has experience with pumped storage at Turlough Hill and

this experience can be used to develop further pumped storage for ocean energy. The port authorities can provide facilities for vessels used in construction, installation and maintenance. CIE has a role to play in the provision of rail transport to port facilities.

Universities have a role to play in education and in research. Activity is underway in education and in research and these activities need to be supported as they require time to nurture before the result is evident.

Commercial companies develop technology, manufacture devices, and perform the many additional activities required to extract energy from the ocean. Installing energy extraction devices, offshore construction, and commissioning are activities where Ireland has little capacity. Increasing the capacity of commercial companies is a significant opportunity for industrial development.

Financial organisations and institutions provide the finance for the commercial companies. These organisations include the banking sector, venture capital, and private investors.

Conclusion

Ireland has an opportunity to develop an indigenous industry sector and world-leading expertise. Ocean energy can develop into a substantial industry sector that creates employment and generates export revenues. Developing the sector requires action from central government to remove roadblocks and to provide a framework for the relevant organisations to interact.

The critical issue is to develop a broad industry sector rather than a narrow focus on a single aspect. Production of renewable energy, sustainability, and security of the energy supply follow from the development of the ocean energy industry as a whole.