SUBMISSION FROM NOVA INNOVATION

About Nova Innovation
Nova Innovation is a tidal technology developer. Our Nova-30 turbine will be deployed in Shetland in 2012 and will be the World’s first community-owned tidal project. An additional seabed lease has been awarded for our five turbine array to be deployed at the same site in 2013/14.

This note is Nova’s response to the Scottish Parliament Inquiry into the Scottish Government’s Renewable Energy Targets. Our answers focus specifically on marine energy, and its potential contribution to the targets.

Targets

Are the 2020 renewables targets (for electricity and heat) achievable? If not, why not?

We believe that Scotland’s 2020 renewable energy targets are achievable given continued, strong political will and long-term, consistent financial signals.

We further believe that marine energy can make a significant contribution to the targets. The recent Scottish Government Electricity Generation Policy Statement considers a scenario where marine energy contributes 1.6 TWh to electricity supplies in 2020, or about 4% of forecast Scottish electricity demand¹. We think this would make an ambitious but achievable target for the marine energy sector.

However, these targets should not be seen as an end in themselves. The objective is to create an indigenous industry where as much of the value as possible is captured by Scotland. In marine renewables, we must not allow an “extractive” industry to be created where Scottish resource is exploited, but the majority of the benefits go elsewhere – as is arguably the case with onshore wind.

A number of lessons can be learned from a close analysis of the development of wind industry in the 1970s and 1980s. Whilst the UK, America and Sweden spent considerable funds on centrally-driven R&D programmes focused on the development of multi-MW wind turbines, the lion’s share of the market was captured by Danish firms. Denmark complemented a centralised R&D programme with carefully designed incentives to create sustainable, competitive markets for wind energy. The markets grew gradually from kW-scale to MW scale over time as the businesses and technologies matured. Denmark eventually prevailed as the dominant force in wind technology over the next two decades.

The Danish wind industry in the 1980s had a striking level of competition and diversity. In the 1980s up to 26 Danish firms had sold more than three turbines – not just developed, but sold². 730 small turbines had been installed across Denmark by

¹ Scottish Government, Electricity Generation Policy Statement, March 2012
the beginning of 1983\textsuperscript{3}. In addition, there was a powerful, cooperative approach to ownership which helped retain market focus and value. The vast majority of the early installations comprised individual machines or small arrays, nearly all of which were cooperatively owned. By 1995, 100,000 households (5% of the population) owned a stake in a windmill guild or cooperative\textsuperscript{4}. The world’s first offshore wind farm (a high risk project) at Middelgrunden in Denmark is 50% owned by 10,000 investors in the Middelgrunden Wind Turbine Cooperative\textsuperscript{5}.

We are concerned that the focus on targets could distract from the greater goal of developing a sustainable, profitable, indigenous renewable energy industry in Scotland. With this in mind we suggest that public policy could benefit from a comprehensive review of the historic development of onshore wind in leading countries, at the time\textsuperscript{6}. The purpose of the study would be to chart the development of the wind industry in different countries; review which policies worked and which didn’t; and draw lessons for Scottish renewable energy policy today.

**Challenges**

(a) **Technology**

Is the technology to meet these targets available and affordable? If not, what needs to be done?

Wave and tidal power are still in the R&D phase, but with the benefit of further investment, both show promise to make a significant contribution to the targets. Scotland is a world leader in the development of these industries and in a perfect position to capture the sector.

Are our universities and research institutes fully geared up to the need for technological development, innovation and commercialisation?

Our Universities are world leaders in marine energy research. We have strong links with both Edinburgh and Strathclyde Universities and believe that institutions like these provide us with one of the industry’s greatest strengths.

(b) **Supply chain and infrastructure**

Is the supply chain in Scotland in place to meet the targets?

For marine energy, the supply chain is sufficient for the current stage of development. In our experience, with the exception of the drive train (generators and gearboxes) and cabling, all the major components for a tidal turbine can be sourced from Scotland. However, a great deal of investment will be required in the supply chain to meet future needs as the industry expands.

\textsuperscript{3} European Wind Energy Association (2007), The Road to Maturity


\textsuperscript{5} http://www.middelgrunden.dk

\textsuperscript{6} This would include at least Denmark, UK, USA, Germany, Sweden, Spain and the Netherlands.
(c) Planning and consents

Is the planning system adequately resourced and fit for purpose?
The Scottish Government has been very effective in building a consents process that is more streamlined and effective in dealing with marine renewable projects. Marine Scotland has made great strides in addressing the problems associated with early project development by providing a one-stop-shop for consenting. However, SNH continue to present significant barriers to development and the industry would benefit from a clear and consistent message to developers: inconsistency can be the death knell of early commercial projects.

How can national priorities be reconciled with local interests?
We believe that a community involvement model similar to that in Denmark for project ownership could accelerate the development of the renewable energy industry and ensure that maximum value is retained within the Scottish economy. This model can also address many of the concerns local communities have with renewable energy, where renewables can be seen as an external imposition with detrimental effects rather than an enterprising local initiative with maximum local benefits.

(d) Access to finance

Will sufficient funds be available to allow investment in both the installation and the development of relevant technologies? What can the Scottish Government do to influence this?
For marine energy, some funds are available for the deployment of a small number of multi-MW projects. However the lesson from the wind industry is that this may not be sufficient for the development of an indigenous industry.

There was significant funding for the development of large-scale wind projects in the USA, Sweden and the UK in the 1980s and multi MW wind projects were developed in all countries. However, these projects did not on their own lead to the development of a sustainable, profitable industry. This prize went to countries like Denmark and Germany, who combined central R&D programmes with measures to encourage the creation of diverse, competitive markets, served by an industry with deep roots running through their national economy. We believe that the marine energy industry could similarly benefit from policies aimed at the creation of a broad base of competing firms.

(e) Skills and workforce development

Will Scotland have sufficient home-grown skills to attract inward investment?
Scotland has many skilled firms and workers servicing the Oil and Gas industry. However, this is a double-edged sword since the emerging marine energy industry must compete with the incumbent Oil and Gas sector on price – the skills are there, but the price is high. This point is addressed in the next response.

Is the skills transfer from the oil and gas sectors being realised?
The Oil and Gas and marine energy sectors share some common skills. However, the transfer of skills is severely constrained by the current high oil price. The Oil and
Gas and Marine Renewables sectors are two different industries based on different cost points. One based on the calorific value of oil and its ability to be stored, whilst the other is based on the calorific value of marine energy and its need to be used immediately. As such, at current oil prices, we see the Oil and Gas industry as having a financially competitive advantage when it comes to attracting the required skills and workforce.

(f) Energy market reform and the subsidy regime

Are the reforms of the energy markets and subsidy regimes at both UK and EU level sufficient to meet the challenge of the Scottish Government's renewable targets?

The reforms proposed in the EMR are promising – as far as they go. However, delaying the introduction, or tinkering with a mechanism after its launch, would have a chilling effect on investment.

A further unresolved issue that particularly affects the marine energy sector is the grid charging regime. The existing regime presents a significant barrier to renewable energy projects in the Scottish Islands, where the majority of wave and tidal resource is located. We welcome the Scottish Government stance on this issue and hope that a resolution can be achieved in the near future.

Summary

We welcome the leading role the Scottish Government has taken in setting targets for renewables and supporting Scotland’s marine renewables sector. A key objective of renewable energy policy is to create a thriving, indigenous industry in Scotland. We believe that there is much to be gained in this regard from a closer examination of the early development of the wind industry. In particular, this should examine the part played by cooperative ownership and the creation of a broad-base of competing firms in the success of the Danish wind industry, and consider the implications for Scottish energy policy.

Nova Innovation
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