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**DECC**

# **Wave & Tidal – Investor Survey**

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**WORLDWIDE**



## Table of Contents

Executive Summary	3
Introduction	6
Findings	9
1. Current perceptions	9
2. Factors affecting marine investment	14
3. Issues encountered to date	17
4. Returns and timescales	19
5. Investment Concerns – technology or timescales?	21
6. Making investment more attractive	22
7. Co-investment	25
8. Partners	26
9. Comparisons with other sectors & markets	27
10. IRR	29
11. Government actions	30
12. Support mechanisms	33
13. Government efforts	36
14. Government rules on VC investment	38
15. Views of public sector support and the UKIIF	29
16. Critical showstoppers	42
17. Future meetings	44
Appendix 1 – Questionnaire	45

## Executive Summary

- During January and early February 2010, Kreab Gavin Anderson interviews 21 banks, corporates, venture capitalists and angel investors to obtain their views of the wave and tidal sector. All are involved in renewable energy and some are already investors in the marine sector.
- In terms of **overall perceptions**, on the positive side respondents across the board generally believe the UK has an excellent wave and tidal resource and represents a unique opportunity for renewable energy generation. Several also mentioned strong policy and early stage financial support from government for the sector.
- However, from a negative perspective, the following topics were raised as **major issues**:
  - Significant technology risk
  - Industry highly fragmented – too many devices exist
  - Huge demand for funding – high cost from start-up to commercialisation
  - Market opportunity does not match investment timescales
  - Technology too early stage for many investors
  - Perceived lengthy timescale to commercialisation
  - Lack of projects in full sea trials
  - Technology not scalable
  - Lack of funding available between research phase and commercialisation
  - Better returns available in other renewables sectors
  - Potential cost per MW
  - Previous experience cause for concern
  - Lack of strong management teams.
- For most of the **banks**, the sector is too small and fragmented for them to actively invest, although some of them are watching it with interest. These are institutions who are currently lending to renewables projects, but primarily wind and biomass in the UK and solar overseas, where the technology is proven.
- In terms of the **corporates** we interviewed, the responses were more varied and generally better informed. Respondents' comments were mixed as to the various merits of wave versus tidal, depending on their own first hand experience. Most are agreed that although the sector is promising, marine technology overall is still very early stage.
- The **venture capital** firms had one major issue in common, namely that the perceived timescale of the investment opportunity does not match the requirements of their funds, which typically have a lifetime of no longer than ten years. Having said this, many of the firms have clearly met the management teams of companies seeking investment, and are thus familiar with the issues facing the sector. The major issues for them include technology risk, the lack of a 'standout' technology, economic viability in terms of cost per MW, the fragmented nature of the industry, scalability and the fact that more attractive investment opportunities exist elsewhere. On the positive side, around half describe the sector as exciting, promising or interesting, although two would clearly not invest in it at any stage, one having recently exited the sector entirely.
- As for the **angel investors**, one is actively investing in both wave and tidal devices, and is obviously positive about the marine sector overall. However, as explained further in the survey, he anticipates that the wave sector investment will either be a huge success or a total failure, while the tidal investment is less risky due to the potential for its effective use in small scale

applications. The other two angel investors were generally more negative on the outlook for the sector.

- Respondents were asked more specifically about **potential investment** in the marine sector. The key factors are listed below, in order of the number of times each issue was mentioned (indicated in brackets), although these responses were spontaneous and the statistics should thus be interpreted with caution:
  - Technology – proof of concept, reliability, credibility and simplicity (11)
  - Management team (9)
  - Funding – level of existing backing and availability of future funding (5)
  - Competition – sustainable competitive advantage (4)
  - Timescale – track record and potential time to market (4)
  - Resource – wave & tidal availability (3)
  - Potential for commercialisation – including scalability (2)
  - Government policy – stability and longevity of incentives regime (2)
  
- Existing participants were asked what **specific issues they had encountered** to date. 11 individuals answered this question, and replies were again spontaneous:
  - Funding – availability of funding at all stages / need for government support (6)
  - Costs – costs exceeding expectations / capital intensity / costs of trialling (5)
  - Technology – reliability (4)
  - Longer term commercial issues – scaling up / becoming cost competitive (3)
  - Management – lack of understanding of costs, time taken & investor requirements (2)
  - Other issues – site licensing & access / environmental complexities (1)
  
- When asked what the **government could be doing to promote the sector** and remove hurdles to deployment, a broad range of issues were suggested:
  - Increase levels of funding (10 spontaneous mentions)
  - Increase ROCs in England & Wales (3)
  - Ensure grid connections are ready for commercial deployment (3)
  - Enhance test sites – provide more locations / ensure sites are grid connected / make it easier to deal with EMEC (2)
  - Facilitate site access and development (2)
  - Facilitate planning rules (2)
  - Promote involvement of utilities and major industrials (2)
  - Work to assess relative attractiveness of marine versus other technologies (1)
  - Reduce Ofgem charges (1)
  - Provide help with test rigs & installation (1)
  - Help pick sector winners on technical merit (1)
  - Provide clarity around long-term leases (1)
  
- In terms of **support mechanisms**, of the 16 individuals who answered this question, nine expressed spontaneous support for the ROC regime. A small minority would support a feed-in tariff for the early stages of deployment. In terms of a potential ROC rebanding, five respondents spontaneously mentioned that the regime should be the same throughout the UK, rather than operating at a preferential rate in Scotland. Three individuals believe a review could be unsettling while three do not, and a further three think a review would only be detrimental to confidence if the banding was revised downwards.

- Finally, respondents were asked what the **critical showstoppers** are for the industry. This elicited a wide range of responses, some already well aired and some new. Two individuals believe there are no showstoppers while one commented that the show has not yet started! For the remainder, the key issues were:
  - Competitive price of marine energy (2)
  - Grid connections (2)
  - Consistent & reliable technology (2)
  - Lack of funding, capital intensity & rates of return (2)
  - Getting devices into the water (1)
  - Too many failures (1)
  - Experience of existing developers – all have spent more than expected (1)
  - Environmental opposition (1)
  - Removal of ROC support (1)

## Introduction

Kreab Gavin Anderson was commissioned by DECC in December 2009 to undertake a survey of investors and corporates regarding their involvement in and attitudes towards the wave and tidal sector. The interviews were designed to obtain insights into current perceptions of the sector in the UK, overall views of the UK as a place to invest in marine renewable energy and potential government actions to encourage investment.

KGA conducted a total of 21 one-to-one meetings and telephone interviews during January and early February 2010. The investor group included companies from across the spectrum, including debt and equity investors, venture capitalists and angel investors. The corporate group ranged from the renewables arms of major utilities to smaller scale participants.

Our interviews followed a questionnaire agreed with DECC in advance (included as Appendix 1). Responses were given on a non-attributable basis and the names of organisations have thus not been used in the report. However, we have listed the type of organisation against each verbatim quote, divided into four sectors: banks, corporates, VCs or angel investors.

In all our interviews, we asked for spontaneous comment rather than seeking answers to specific questions designed to generate qualitative analysis. In addition, some of those interviewed were only willing to answer the key questions, preferring not to go into further detail either because their involvement in the sector at present is minimal or due to time pressures. For this reason, and due to the sample size overall, quantitative evidence must be handled with care. However, to give an indication of the level of response on certain issues, we have added an element of statistical information.

This report presents summaries of the most common and salient points, along with key quotations from respondents.





## Findings

### 1. Current Perceptions

What are your current perceptions of the wave & tidal sector in the UK?

Is it a potentially interesting sector for you?

On the positive side, respondents across the board generally believe the UK has an excellent wave and tidal resource and represents a unique opportunity for renewable energy generation. Several also mentioned strong policy and early stage financial support from government for the sector.

However, from a negative perspective, the following topics were raised as major issues:

- Significant technology risk
- Industry highly fragmented – too many devices exist
- Huge demand for funding – high cost from start-up to commercialisation
- Market opportunity does not match investment timescales
- Technology too early stage for many investors
- Perceived lengthy timescale to commercialisation
- Lack of projects in full sea trials
- Technology not scalable
- Lack of funding available between research phase and commercialisation
- Better returns available in other renewables sectors
- Potential cost per MW
- Previous experience cause for concern
- Lack of strong management teams
- Previous experience gives cause for concern.

The verbatim quotes below have been divided by type of institution. For most of the **banks**, the sector is too small and fragmented for them to actively invest, although some of them are watching it with interest. These are institutions who are currently lending to renewables projects, but primarily wind and biomass in the UK and solar overseas, where the technology is proven.

*“It’s theoretically a promising sector, given what I know about the UK coastline and the resource, but although I wouldn’t want to use the word immature, it’s not sufficiently evolved to be yet deemed a full-blown industry. It has the potential to become a global industry, but right now it’s still niche and doesn’t fit into the investment characteristics that we are seeking to achieve.” Bank*

*“To be honest this sector is not something we would look at yet, as we only look at projects over 50MW. The smallest project we did last year was a hydro project of 90MW and it wasn’t in the UK. It’s is the lower end of the spectrum for us. Our capital is spread across all sectors and, within renewables, across all technologies. So as a large bank, we have to look at the right type of projects, where we can provide at least 30% of the debt. Otherwise the returns are too low for us. Maybe once technology trials are completed, and the industry is backed by*

*larger players, then we would look into it. At the moment there are too many options to get our hands on, which means we don't have to focus on wave and tidal." Bank*

*"This is really not in our sector. It's too small and really a VC or utilities investment at this stage. The only way to get investment moving forward would be to get a large utility looking at the sector. The issues, we feel, are the lack of strong management teams, the technology and of course the scalability. As debt providers, we are more focused on wind and other renewables technologies which are economically viable. Having said that there are always projects coming through the door now – particularly in our private equity department – which we cast an eye over, although we've not done anything formal yet." Bank*

*"Until a couple of months ago, I felt it was languishing. My hopes have now got up that something might materialise purely because of the licences that were recently issued. Otherwise the sector would remain stuck in test-beds with no sign of any real projects materialising. But with the one or two exceptions, such as Pelamis and MCT, there are just no projects there which are ready to be built on a MW level." Bank*

In terms of the **corporates** we interviewed, the responses were more varied and generally better informed. Respondents' comments were mixed as to the various merits of wave versus tidal, depending on their own first hand experience. Most are agreed that although the sector is promising, marine technology overall is still very early stage.

*"We are looking at both wave and tidal. There is huge promise – there's a lot of activity going into it now and that will ramp up over time. It's early stage – they are still testing devices, even, for instance, the Pentland Firth one. Policy support in Scotland is very strong and at the UK level there is a sense that it is getting stronger and stronger. Grid connection has been a big worry but this is also easing a bit now. The technology is still at a young stage. There is some naivety in terms of the timeframe and also in accepting that we need to push ahead and get projects in the water and learn from them." Corporate*

*"There are two tidal successful prototypes – Marine Current Turbines and Tidal Generation Limited (backed by Rolls Royce) going into Orkney. Wave is much less encouraging. Poor precedents have been set by Pelamis and their severe mechanical troubles. Aquamarine's Oyster is much more encouraging, although they've taken £20m to reach their current position." Corporate*

*"Wave has a huge potential. Lots of work still needs to be done in the space, but I am very optimistic so I believe the sector could potentially be developed in the next 24 months." Corporate*

*"Wave power technology is getting a poor reputation. The perception is that wave power doesn't work due to the Pelamis experience. The poor reliability of the technology is driving a perception change in the City." Corporate*

*"The market is full of hope and aspiration. It will happen, due to the low carbon drive, and the supply chain from the oil and gas industry is in place. Maturing of the technology and the right level of government support will be necessary, but for investors the technology is maturing over a long life cycle." Corporate*

*"The overall perception is that the number of devices vying for attention and funds is huge, and there's no way of filtering out devices that are unlikely to succeed. Therefore there is much wastage. The valley of death problem is quite acute. Our project was recognised by the*

*Carbon Trust under the Marine Energy Accelerator. In the research phase it's possible to get support, however once you progress from the 'push' from research towards the 'pull' from the market there is a huge chasm. The cost of energy from these devices is much higher (and far from grid parity) so the government has to extend its efforts to make these companies more attractive to the market. The market is risk averse at the moment therefore may need more government effort, but this can recede later once economic conditions improve." Corporate*

*"I am new to this sector and my impression is that it is still very much in its early infancy. I heard recently that this sector is some 20 years behind wind, and that seems to be about right. It has a long way to go before it will be of any use." Corporate*

The **venture capital** firms we interviewed had one major issue in common, namely that the perceived timescale of the investment opportunity does not match the requirements of their funds, which typically have a lifetime of no longer than ten years. Having said this, many of the firms have clearly met the management teams of companies seeking investment, and are thus familiar with the issues facing the sector. The major issues include technology risk, the lack of a 'standout' technology, economic viability in terms of cost per MW, the fragmented nature of the industry, scalability and the fact that more attractive investment opportunities exist elsewhere. On the positive side, around half describe the sector as exciting, promising or interesting, although two would clearly not invest in it at any stage, one having recently exited the sector entirely.

*"Most propositions are in the British Isles. From our narrow investment fund's perspective, with a life span of say ten years, they are unattractive. But from a broader perspective of what's good for the country, this holds much promise and I'd love to see more funding directed at this area." VC*

*"My perception is it's a developing sector. We have received many pitches and enquiries from this area in recent months with very similar technologies. The trouble is that we have a small fund, half way through its ten year life, and those technologies require quite a lot of money and a lot of time before we're able to make an exit. We have a ten year life to worry about, we have has to get in and get out within that time span. If we were a bigger fund we might have a different attitude." VC*

*"It's early stage, very exciting, and the UK has taken an early lead, but there are significant challenges in developing the industry. There are significant resources in the UK, but also there's a significant funding gap. I did invest in Ocean Power Technologies a few years back and was lucky enough to go in and come out at the right time. I'm currently looking at some other companies in this sector." VC*

*"Many companies are seeking funding in this area and it is an area where the UK does maintain a lead. So from a deal supply perspective, there is no shortage of deals. But overall, the problem VC funds have is the pure capital intensity. It is beyond the scope of most early stage VC players, so this is a key area for action by the utilities themselves. In short, when considering the attractiveness of an investment, the return potential is obviously key. The higher the capital intensity, then the higher the return requirements need to be. Looking at the market overall, once you get the right technology then there will always be a market take-up. But right now, in addition to technology, the other question I would ask is how is the cost per MW going to be reduced?" VC*

*"We see wave and tidal as being interesting but not something for the next 3 years. We're involved in a lot of other renewables – wind, offshore wind, biomass, solar. Although it's potentially interesting, there are a lot of projects that are doubtful. There are lots of designs and there is no stand out technology. There doesn't seem to be any consensus about which technology is the right one. I have looked at a number of them – around 10-20. One of the issues is that the environment is so aggressive – salt water, strong tidal areas – and then there is the maintenance and overhauling. The combination of this aggressive environment and the fact that the technology is not mature stops us from investing. We're not early stage investors." VC*

*"We don't have any investments in wave. Tidal is more interesting – this needs to be pushed. It's the resource that is most predictable and the least volatile. From a human perspective, it is also the least obstructive to the surroundings and there is less debris if things go wrong. In terms of investment and engineering, it's very hard to capture energy from wave. It is risky. Tidal is less risky." VC*

*"There are lots of companies out there, with lots of different technologies. The sector is not creating any value and is certainly not commercial. Overall I really don't see it progressing in the near future." VC*

*"We are former participants, but have now completely moved out of the sector. Wave and tidal technologies just seem to stagnate, so I would have to say that we, as a firm, are not very positive. There are too many companies, often too small, which means the competition for funding is really high, and most of them are facing a financial black hole. On the other hand, you have offshore wind, with proven and successful technology, where returns on investment are expected. Scalability is another issue – wave and tidal projects are too small and companies are struggling to develop big projects. In the UK the opportunity clearly is in Scotland, but the scale is small, and there will also need to be major grid reinforcement to make it viable." VC*

As for the **angel investors**, one is actively investing in both wave and tidal devices, and is obviously positive about the marine sector overall. However, as explained further in the survey, he anticipates that the wave sector investment will either be a huge success or a total failure, while the tidal investment is less risky due to the potential for its effective use in small scale applications. The other two angel investors were generally negative on the outlook for the sector.

*"This sector is a unique opportunity for the UK, especially Scotland, to create a new world leading industry. The wind resource is all here, as are the engineering, shipbuilding and construction capabilities from the North Sea. The momentum is good already. We don't want to repeat what happened with offshore wind, which all went to Denmark and Germany. The wave and tidal industries, in my experience, are quite different. The people involved and the associations are all different. The biggest hurdle for tidal is for the manufacturers to bring it to utility scale. Some of the operators will claim they can scale up – MCT, Open Hydro, the Rolls-Royce backed device – but I personally think that tidal will be best suited to small scale river and community projects. There will be small tidal devices but no small wave devices. It's a similar comparison between micro-wind and offshore wind. There will be a market for tidal energy, and it will need the same sort of support, but it's a different industry." Angel Investor*

*"It is a all very new technology and needs to go through too many stages until anyone can get a return on it – small scale, medium scale, large scale, massive scale – until there will be*

*project finance in it. If you invest in early stage investments as we do, you just get wiped out by this sort of thing. It would take too long – by the time you get in, you're already being diluted. It is very unlikely that we would ever invest. It's not really a venture investment. Could this change in the future? No, I really don't think the industry is going to get the investment it needs from venture capital – especially tidal. You need good intervention from banks. You need government intervention at an earlier stage. So in short, there is potential but we are a long way away from it bearing fruit. There will be a lot of money needed and we are a lot of stages away from getting to commercial operation.” Angel Investor*

*“The sector is massively under-capitalised, has been largely under the radar of institutional investment and has been perceived as the poor cousin to wind. There's also uncertainty in terms of technology, site licensing and operational efficiencies.” Angel Investor*

## 2. Factors affecting marine investment

### What are the most important factors influencing an investment in marine renewable energy?

Following on from the question on overall perceptions, respondents were asked more specifically about potential investment in the marine sector. The key factors are listed below, in order of the number of times each issue was mentioned (indicated in brackets).

- Technology – proof of concept, reliability, credibility and simplicity (11)
- Management team (9)
- Funding – level of existing backing and availability of future funding (5)
- Competition – sustainable competitive advantage (4)
- Timescale – track record and potential time to market (4)
- Resource – wave & tidal availability (3)
- Potential for commercialisation – including scalability (2)
- Government policy – stability and longevity of incentives regime (2)

It should be noted that these responses were all spontaneous and the statistics should be interpreted with caution. Further on in our survey, for example, far more respondents went on to emphasise the importance of government policy when asked directly about it.

The verbatim responses are listed below and did not differ greatly between each category of institution.

*“Technology is probably the biggest issue and funding hot on its heels. Can you prove it will work, and how reliable will it be, that’s clearly the biggest issue for any financier.” Bank*

*“I guess It’s threefold. Firstly, the regime in which the technology will be deployed, so generally for the UK, Portugal even certain areas of the US, that’s reasonably solid. Secondly, it’s proof of concept while it’s out in prototype or beta testing. And then, it’s really more proof of commercialisation, not even scalability, through an offshore installation.” Bank*

*“At this stage in the wave sector, probably the technology is the key. Very few are succeeding. The market is reeling from having backed some losers, so much scepticism abounds. The team issue is also important – investors will be assessing the merits of the team very closely, asking the question ‘can they bring this device to market?’ There are not enough hands-on technology experts, whilst theoretical professors are omnipresent.” Corporate*

*“The stability of the incentives regime and long term funding are most important. There is a wide diversity of technologies at various stages of maturity. From our point of view it’s also about picking winners – who will invent the Ford Escort of wave and tidal? First to market will certainly have a competitive advantage.” Corporate*

*“Transparency of the market and the overall market potential are the most important factors, after an assessment of risks and returns.” Corporate*

*“In my view, technical credibility is affecting investment in the sector. The reason why I think that is because at this stage there are very few projects available, it is more a trial period.”*

*Wave and tidal companies need money to develop the technology. The opportunity will be when we actually understand the technology better, and it may take some time.” Corporate*

*“I think it is a combination of factors. We look at everything. Stage of development – is it at full stage prototype yet? Is the concept itself good? Is there the availability of resources needed? There are a lot of different devices for different conditions – especially with tidal. We also look at the existing financial backing and how this would fit with our requirements.” Corporate*

*“Firstly, all standard investment rules apply. We need to believe there’s a team that is capable of executing according to plan. We need to believe in the sustainable competitive advantage of the business, typically through novel technology and good IP defence. We need to believe that the company can mature within the timescales available to us (under the ten year fixed life fund). In the first five years of a fund, we make new investments, and in the second five years we achieve realisation. Typically people look at 3-7 years for a return.” VC*

*“Technology is the most important – technology that can be commercialised within a realistic timeframe. The timescale is too long for many VC-type investors to consider. The credentials of the team are also important, and it’s a question of putting together a business case for rational investors. The experience that has been had from the few companies that have actually raised funding has been pretty negative. I am looking forward to one or two companies coming forward demonstrating that they can produce electricity!” VC*

*“The management team is probably the most important criterion. The challenge for us is to persuade the inventor to let go of the reins and allow a Chief Executive, a Sales Executive and a Finance Director and a to step in – building a team is very important. If they’re not willing to listen we won’t invest. As far as technology is concerned, we’re set up to go very early – we’re almost obliged to go at the very early stages. We’ve done stuff that’s proof of concept – we’re happy to do that. But it has to work, and if it does work will there have to be a market. Coherent government policy in this industry is also important.” VC*

*“Timescale is also definitely a huge issue. Some people often present us with a 25 year play, which is impossible for us since we have 5 years left. Again the management issue is crucial – if it looks like the original scientist wants to keep control then we won’t invest. We like to build the best team. The scale of money required is another issue, people need millions. So, it’s a mix of timescale and money required – we have to ask whether these projects will actually be doable, and will they be doable with the amount of money available.” VC*

*“The quality of the management team is an issue for us. We really don’t see much strength there generally. Then there’s the technology and of course the competition. But really, we don’t have the time or the patience to invest in the space, because the technology is not economic.” VC*

*“For the sector to be attractive, we’d need to see a track record. We need to see 5 years or so of operating data. We haven’t put money into it because we’re not an early stage investor. We don’t take risk in terms of the technology. What we do is back the management team and build it – we work on the roll-out stage. I think, realistically, that progress is likely to come through the utilities, not through venture capital.” VC*

*“Overall, I suppose technology is the most important aspect. Engineering and technical issues do not put us off any more in this sector than in any early stage business. That’s what VCs are there to do. You’re dealing with solid engineering therefore there will be the*

*expertise from the spin-out from offshore oil and shipping. But wave and tidal is competing with many other technology companies. If you are running a cleantech fund and you are facing a more or less similar return from an area that you understand more, or you perceive to be lower risk, then you'll run with the alternative project. It's hard to see really disruptive technology in the sector that merits taking a huge punt. It's hard to recognise where are the best ones lie. When is there going to be one that is absolutely step-out, ie 50% better than the competition, in a way that is patented and protectable? Nothing really stands out as being the best solution in the same way that three blade large-scale wind turbines have become the dominant solution for wind. Solutions are probably going to come from the utility companies."*  
VC

*"Definitely the team, since the barriers and hurdles facing a tidal project require a very experienced team. The technology is relatively simple, not that complex – yes, it's an extreme environment – but it's really a matter of re-assembling existing technology."* Angel Investor

*"I would say that technical credibility and technological simplicity are important, then scalability and IP. There's no competition yet because there's no market – the only real competition is offshore wind. We had no management at the outset, although we've now got a first class team. Simplicity is crucial when looking at the technology – investors must be able to understand it, the device must be easy to operate and maintain, and it must be easy to buy components. There must be some IP, but it need not be designed to crowd other players out – we want an industry, not just one company involved in the sector. Economics are not really a consideration – we will either make money or lose it all! Scalability is crucial – we must be able to get to utility scale. We are aiming at energy generation for grid connection, so we must be serious about size. I think scalability is a big problem for some of the other companies."* Angel Investor

### 3. Issues encountered to date

**Looking specifically at your own investment, what issues have you encountered to date?**

Only existing participants answered this question, thus reducing the number of responses to 11. The answers given were again spontaneous and break down into five areas:

- Funding – availability of funding at all stages / need for government support (6)
- Costs – costs exceeding expectations / capital intensity / costs of trialling (5)
- Technology – reliability (4)
- Longer term commercial issues – scaling up / becoming cost competitive (3)
- Management – lack of understanding of costs, time taken & investor requirements (2)
- Other issues – site licensing & access / environmental complexities (1)

One individual also specifically raised the Marine Renewables Deployment Fund and the Marine Renewables Proving Fund, noting that while the MRDF was not taken up due to the lack of suitable technologies, the MRPF would hopefully be more successful.

*“The big issue is the requirement to raise a great deal of money for pre-revenue companies with a lot of technology risk. This limits the number of participants. In the wave sector, to move from an idea to developing a complete commercial device will take around £50m in my view. One specific issue we encountered was with management. We employed a substandard CEO at the outset in an effort to save money, but that’s a real false economy. You really do need a strong management team.” Angel Investor*

*“Site licensing is the first and foremost issue – finding a site and being able to survey it to the extent that you have enough confidence that it is the right site. Then getting access to the site – there are hoops to jump through just to place a device 100m off the coast of the Humber, even if it’s known that the device has to be dismantled after testing. Then there’s the environmental assessment. It’s all very complex compared to sticking something in the middle of the field. Authorities are not used to being asked whether we can place something in the ocean just off the coast.” Angel Investor*

*“Operational costs are way over the estimated forecasts. The same issue has dogged offshore turbines, and maintenance is so much more costly when having to be carried out offshore.” Corporate*

*“Finding investors - very few actually understand marine and wave energy. An education task is necessary. Whilst there’s much momentum, and many present themselves as green investors, this amounts to little once you start to probe. Much talk and buzz, but serious investors are hard to find. To raise serious sums you have to build a coalition of investors.” Corporate*

*“It is very expensive to trial and companies need a lot of support to become commercial. At this stage it is about pouring in a lot of money.” Corporate*

*“It’s going to take several years and there is a lack of suitable funding. We need a complete sweep – from capital grants to revenue support for a market. If these are all in place then it will really encourage the sector to go forward and fill in the gaps in experience. The introduction of the MRPF grants was very welcome. The MRDF didn’t work as well as it could have as the devices weren’t ready but with the MRPF stimulating the sector, hopefully the MRDF will be taken up. The £9m cap means that it’s effective up to 4MW but after that it is pretty diluted. There is a gap there.”*

*“The reliability over the long-term of the equipment and the scaling up as well – you need to turn 100-200 kW into more of a 1-2 MW offering. The cost per MW is very high, similar to industries such as solar, but in this case it appears to be off the chart.” Bank*

*“The market pull system would help too. 2 ROCs needs to go up to 5 ROCs. We need 5 ROCs for tidal too. Not forever. With time and experience, we won’t need it anymore.”  
Corporate*

*“A very poor management team and their lack of understanding of the scale investment needed. They are totally disconnected from reality in terms of investment needs, timings and technology. They all have engineering backgrounds and they strongly believe they can do in the next 18 months.” VC*

*“The technology is the most important thing. Marine investment will be discarded if it’s not at a certain stage of development. MCT is exciting because it is getting there. It’s commercialisable. The most important factor is how quickly it can become cost competitive. But the big issue is really funding – it’s extremely capital intensive and that’s why utilities won’t take it on. £8m went on the MCT prototype alone. We need support from the government.” VC*

*“We have been investors in the past but are no longer. Wave and tidal is very capital intensive, there’s too much competition and it has no technical credibility. Having said that, investors don’t seem to stop pouring money into the sector. For us, it is too expensive. The only reason why, to be honest, those companies still survive is because the government keeps on offering grants. The need is for big utilities to enter the market and finance projects on balance sheet – by investing and developing those small companies we may see a positive change in the space. During current times, wave and tidal is not bankable and therefore there’s not a lot of investment interest. Why invest in wave and tidal when one can develop wind?” VC*

#### 4. Returns & Timescales

**Are you able to talk to us about your investment in terms of desired returns and timescale?**

Only six respondents answered this question, with answers varying considerably depending on the type of institution.

- For equity investors, desired ROE is in the 15-20% range, ideally in a timescale of 2 to 3 years.
- The two VCs who responded had opposing views – one commenting that they generally require an exit after five years, while the other said that he anticipated no return for the first five years.
- For one of the major utilities, no comment was made on return but their timescale is 20 to 25 years, as the investment is viewed as strategic rather than purely commercial.
- The one angel investor who gave a specific answer differentiated between his investments in wave and tidal – in the case of wave he anticipates either making a considerable return on investment or losing his money entirely, while tidal is seen as slightly less risky as it can be potentially deployed at a smaller scale.

*“In general, it depends on what type of capital you are putting in, debt or equity, but return on equity is going to have to be in the 15-20% range. We would prefer to come in, hold an investment for 2-3 years, and then sell it on to someone else.” Bank*

*“We can’t really comment on returns. In terms of timescale, we take a very long term view. We are a utility so we look 20 – 25 years on. In terms of the risk-return balance, we would normally look for very high returns because of the risk but this is something that we are doing strategically. We can overcome risk to some extent. But even that needs grant support. VCs really require a good return. We can take a longer term view as our cost of capital is lower. Early projects do really need grant support though.” Corporate*

*“It’s very much driven by individual opportunity but always seeking to exit within five years. I have an open mind with many of the businesses. I also hold an advisory hat, so much of what I do is constructing a business case for projects that don’t have the return characteristics that you’d expect, so that a quick cashflow breakeven could be funded on some other agenda. But this is a challenging sector.” VC*

*“It too early to say, but I don’t expect any returns in the next five years.” VC*

*“We made our investment 3 years ago, since when there have been 3 rounds. It’s been a struggle. VCs are not coming forward yet, partly because of the technology, partly because of the state of the market. Some of the early investment has not proven to be such a hit, so investors are cautious. In our case, our first investment comprised business angels combined with our co-investment fund. We raised £750,000 last year and are now seeking £2.5m.” Angel Investor*

*“In our wave project, we’ve invested £400,000 to date. Our timescale is 8 to 10 years. Our return will either be our money back times 50, or we’ll lose it all! It is high risk. In tidal, we’ve invested £200,000 to date. We’re less likely to lose money in tidal than wave because it’s less risky and can potentially operate at a smaller scale, where the market exists and the level of investment required is smaller.” Angel Investor*

## 5. Investment Concerns – Technology or Timescales?

**In relation to market timing and opportunity – are your concerns related to marine energy being such an innovative technology or more that it does not fit in with your own timescales and life of the fund?**

Only a handful of respondents answered this question. Most concerns, regardless of institution, focused on technological risk and the consequent length of time in getting prototypes to commercial roll-out. As seen in the answers to Question 1, the amount of time required to fund marine energy projects generally falls outside the timescales for return required by VC investors.

*“Timescales are the key. Because technologies are going into such a hostile environment, testing is lengthy. There is little prospect of the investor making a quick buck. Sheer logistics of design, manufacture, deployment, coupling, and testing can take 4-5 years to get a full-scale prototype out there and tested. Moreover, what is the revenue climate going to be in the future? Forecasting the price per kW hour, price of oil, many calls to make, means a very uncertain environment if looking 7 years ahead.” Corporate*

*“Our resource focus is on technology that is actually happening. Wave is ticking along with an immature status, unlike wind turbines. Marine is possibly not being considered because other technologies are more prominent.” Corporate*

*“The technology is not that complex – it’s just metal and water – so the proof points are not around technology, but robustness in the North Sea in the winter is first and foremost. Undergoing a cycle of trials on an annual basis, over several years, means that the timescales are inordinately long. Capital requirements to build a business are huge. It’s quite hard to have uniquely defensible technology. Winners are likely not to be the best technology and but are likely to be those with the most mature, most robust and cheapest technology, and one that’s able to obtain funding.” VC*

*“This sector doesn’t sit within the timescales due to the challenges caused by the several stages of testing that cost much time and money.” VC*

*“We invest for five years, and this is something we have just looked at – so let’s see.” VC*

*“We always knew that this would be a long term investment. We went in with our eyes open, and initially it was essentially an act of faith. When will our investment be revenue generating? Likely by 2013, and profit making by 2014-2015.” Angel Investor*

## 6. Making investment more attractive

What would make an investment in marine renewable energy more attractive?  
Do you agree with the suggestions below:

1. Government relaxing the rules on VC investment
2. Greater corporate venturing
3. A more stable financial climate
4. A greater track record of pricings and exits
5. A clearer and more visible funding path for companies
6. Stability of long term funding
7. Government guaranteeing some sort of price structure
8. Definition & longevity of government policy & regulation
9. Increased government support (eg matched funding & tax incentives)
10. More government support on policies and standards in the sector?

This question was structured differently from the earlier questions, being prompted rather than spontaneous, and led to a number of new issues being raised. Besides the issues of funding and technology, which have been discussed extensively above, comments included respondents' views on the economic climate, corporate venturing, political stability, guaranteed pricing structures, tax incentives, the government support mechanism, consistency of government policy and track record. The only subjects not mentioned included a clearer and more visible funding path for companies and more government harmony on policies and standards in the sector.

- The **economic climate** has clearly led to a lower level of funds being available (particularly VC funds, as will be seen below in the answer to Question 14). Not only has availability deteriorated, but the cost of funds has also increased and, as one investor points out, there has been a flight towards proven technology.
- In the case of **corporate venturing**, this is seen as beginning to happen. The involvement of a major utility or industrial player appears to be likely to increase the levels of confidence and potential support for lending, although it clearly has to be the right partner.
- **Political stability** is seen as being essential by all those we spoke to, not only in the answer to this question but throughout the survey. Clearly, some would favour a direct form of **pricing structure** rather than the ROC scheme, but the longevity of government policy and regulation is viewed as absolutely critical. Two mentioned that they would favour feed-in tariffs rather than ROCs, while three requested an increase in ROCs in England to match the regime in Scotland.
- Only one of the individuals we interviewed favoured **tax breaks** for the VC sector, with the rest seemingly ambivalent. One individual mentioned that the tax regime for EIS schemes should be revised to incentivise investment.
- When discussing **track records**, most investors would be grateful to see a record of operational performance at the very least, and do not anticipate seeing a track record of pricing and exits for some time to come.

**“Funding and technology** – I think right now what we have not seen is the availability of both capital and technical know-how to get things into the pre-commercialisation or the full-blown commercialisation stage. This space is not being eschewed because of the low return – it’s more the risks, the technology risk and how to properly transition to commercialisation. Regarding the **economic climate**, I would say it has made things difficult, both in terms of availability and cost of funds. Resources are also being allocated to projects and/or regions where it’s either technologically less risky or where governments are giving an absolute guarantee on everything. So people are still lending to wind and solar, where the technology is less risky, or they’re making huge project loans to places such as India where the government is backstopping everything.” Bank

“Greater **corporate venturing** would certainly help. EON and Scottish & Southern are working on this sector and to see that being effective would certainly give us a degree of confidence. The main thing for me is to see projects that are ready to be financed, that’s why I like what I see what’s happening in the Pentland Firth scheme.” Bank

**“Pricing structure** – some of the developers favour revenue support, with a government guarantee to buy power at a set price per unit so that investors are guaranteed a profit. But **political stability** alongside this is essential – there has to be long term support. The system won’t work if incentives are withdrawn or cancelled by future governments. Even ROCs are not rock solid!” Corporate

“The government says that renewables have a special strategic place for the nation, so it therefore makes sense to give the sector specific **tax breaks**. Given that investors are only prepared to put forward small amounts, the EIS should be strengthened to further incentivise groups of business angels, sophisticated and knowledgeable investors to be rewarded with tax breaks. This would create more push on the research side, allowing a small company to raise £2-3m. It would be a cheap way for the government to increase investment. I understand that the EIS has a £1m ceiling – this could be raised higher to help facilitate that first round of funding that would then unlock the next stage.” Corporate

“The **support mechanism** – feed-in tariffs would make it more attractive.” Corporate

“The government’s **support mechanism** – ROCs need to go up. In Scotland there is a will – hopefully the industry will take off there. In England, it’s not as sure. The RO review process is too far off. We called for an emergency review – this really needs to happen. I don’t think the desire is strong enough in UK government. If they don’t get backing, this will cause problems in England and Wales. On the positive side, the MRPF is there now to pick up other projects, projects that are 10MW and beyond. It has the scope to be a good scheme if done properly.” Corporate

“The sector will remain relatively unattractive for private money, sadly. But if there were a **long-term consistency of government policy** then there may be a chance. This applies to many environmental projects dependent on government pricing regimes. In some cases the regulatory regime will have to last 15 years. Long-term stability is therefore critical.” VC

**“Corporate venturing** is certainly occurring, but I don’t know how you nail financial stability to the wall. The government **support mechanisms** are significant – yes it would have to be 5 ROCs certainly. Providing grid connections would also be an important government step.” VC

*“The **economic climate** – I can’t speak for wave and tidal in particular, but I can speak generally. The current funding climate is an absolute nightmare. This stuff is all very early stage, very high risk and people don’t have much appetite for risk.” VC*

*“**Corporate venturing** is viable provided that it’s with an attractive partner (an EDF or a Shell), because if it does take off you’ve then got the infrastructure and the national/international spread of that organisation. But that does not mean that the project will be a sure-fire success. I know someone in Shell who readily admits they take a scatter-gun approach.” VC*

*“**Relaxing VC rules, more corporate venturing and an improved track record** would all help, and a **stable long term financial support mechanism** is vital. The other issues are less important. In terms of the **economic climate**, investors are more sceptical and the lack of capital has meant that the focus has been on larger projects in a more secure technologies. Utilities should be the ones looking at the sector, as is starting to happen. In my view, until we see big names looking at wave and tidal, investors will not even consider it. At present, most wave and tidal companies only sustain themselves through grants from DECC, so they are very close to bankruptcy. Don’t get me wrong, I would love wave and tidal to happen, but right now it’s way too expensive and the technology is too complicated and in many cases is clearly not working. That definitely puts people off. Consolidation of the sector might help – there are too many options out there in terms of companies. We need fewer, utility backed strong companies to increase investment in the space.” VC*

*“Anyone considering a project will assess whether there is a commercial model. [Regarding government **support mechanisms**] we need more ROCs – tidal doesn’t have enough compared to wind. The sector needs bigger carrots downstream to persuade people to go into this sector, otherwise all early stage investment will be siphoned off into wind. There needs to be recognition that there is a greater risk in this sector when compared to other more developed renewables. An improved **track record** would certainly help, but this will only emerge over time.” Angel Investor*

*“Looking at the list, government **relaxing the rules on VC investing** won’t make any difference. VCs have shorter time spans, so they don’t generally want to invest anyway. A more stable **financial climate** may help. An improved **track record** would certainly help, but it won’t exist for the next 5, 6 or 7 years. What hasn’t helped are the high profile failures. The government can’t help here – there have been lots of bad ideas. We hope that many companies survive, but many of them won’t. As for **stability of long term funding**, the government has definitely provided stability through the ROCs system. It’s very important in particular that the 5 ROC regime for Scottish wave projects is maintained. **Tax incentives** are not so important because we need to make profits first! But **grants and matched funding** is a good and fair system. We’ve found the process good.” Angel Investor*

## 7. Co-investment

### Is co-investment a prerequisite for investment deals in marine renewable energy?

One respondent, a major corporate, commented that they do not need to have any co-investors in sector projects. Another corporate added that it was not necessarily a pre-requisite (although in fact they are co-investors in a marine project), while for the remainder, it is clearly essential.

*“We are generally big enough to go it alone, and we prefer to maintain a level of control.”  
Corporate*

*“Co-investment is not necessarily a prerequisite, although we only have one marine investment and we are in it as a minority. We did this deliberately as we don’t want to be the major shareholder in a technology company. We just want to help with the funding and with advice. They in exchange give us access to information about the device.” Corporate*

*“Yes, we are invested with a lot of different partners and this is vital for the sector, especially with the issues around the credit crunch.” Corporate*

*“It’s almost a certainty that you end up with a whole group of investors. The big utility companies are loath to commit themselves at this stage, playing wait and see. When some promising technology emerges they’ll step in and scoop up. They’re letting dog eat dog until the biggest dog is left standing. That’s unhelpful. The utilities are, however, trying to corner the infrastructure into which these devices will be deployed – control of the site is more important than control of the technology.” Corporate*

*“Many people will say yes, simply due to the lack of adequate funding at present, but this is a by-product of other problems.” VC*

*“In reality it’s difficult to align agendas because of the different objectives. You have to be careful how you pull together a consortium.” VC*

*“Yes, we work with a number of different partners.” VC*

*“The key thing for us is whether there’s someone else with money – and for us it has to be private money (venture fund or a corporate) – we can’t go in alongside public research money.” VC*

*“Yes, it’s definitely a pre-requisite – each deal so far had to receive pound for pound matching.” Angel Investor*

*“Yes, partners are essential.” Angel Investor*

## 8. Partners

**Do you have specific preference as to who you partner with? For example, other VCs rather than large industrials or institutional investors as they have other motives? Can this become a dealbreaker?**

Only two direct responses were received to this question, although preferences are to some extent revealed elsewhere in the survey. Several individuals mentioned the importance – and inevitability – of the major utilities becoming involved, both to provide balance-sheet financing and the necessary skills and reach for device production and commercial roll-out. Indeed, five respondents (all venture capitalists) mentioned that the utilities' involvement is vital to promote long-term progress in the sector. No mention was made during the survey of any particular partners' involvement being a potential dealbreaker.

*“We have a preference for partnering up with like-minded groups. The large industrial companies can be very useful co-investors but you're talking very long timescales, and their strategic interests will vary over these timescales.” VC*

*“Having industrial partners is vital – they can help with design, construction, assembly and maintenance. The next commercial partnerships might be with electricity utility companies. Specialist companies may emerge as per the wind industry, as well as specialist sector investors (Ventus for example). Partnerships are easily put together since there are large companies with technology and budgets.” Angel Investor*

## 9. Comparisons with other sectors & markets

**Are investors trying to compare marine start-ups with investment opportunities in more advanced and developed markets? If so, why?**

All but one of the respondents answering this question believe that comparisons between marine start-ups and other investment opportunities are inevitable. Comparisons are made with all other renewable technologies (and in some cases a wider spectrum including oil and gas) and, for some, on a country-by-country basis. As for why, it is simply a case of spreading investment risk. For many investors, wave and tidal represents a diversification play within the cleantech sector.

The one exception amongst our interviews was a major corporate, investing for strategic reasons. For them, the usual risk/return comparative analysis does not apply.

*“Yes, this will always be the case. At present, in this sector, it comes back to questions of deployment and scalability and the overall return perspective. Technologies are compared within a country – for a dollar of renewable capital am I better off investing in onshore wind, ground-source heat-pumps, waste to energy, offshore wind or tidal? Then from country by country, when we’re investing for our portfolio we will assume, for wave and tidal, that the technology risks are the same, but we’ll look at which tariff regime offers the best risk mitigation or highest return to offset those risks. This applies across all renewable technologies across Europe because there really is a country-by-country competition going on. Overall, though, we wouldn’t avoid wave and tidal. It is acknowledged as a viable area along the renewable energy value chain, whether you rank it below or above things like geothermal, and how you differentiate between wave and tidal all comes down to the eyes of the beholder.” Bank*

*“Yes they are really. Investors with funds to place are looking at a number of technologies. They’re not going to be looking at this sector as a pure play. They want for diversification purposes to have something in this area.” Bank*

*“Investors see themselves as renewable or green investors, therefore they are comparing all sectors on a like-for-like basis, looking at whether wave is better than tidal, wind better than solar, and where they can get the best bang for their buck.” Corporate*

*“Investment is going into oil and gas as well as offshore wind. So if one of the three options seems less attractive then resources will be focused towards the other two.” Corporate*

*“We just benchmark it against any other investments we would make in the sector, and of course review it from a finance and strategic point of view.” Corporate*

*“Definitely, which is why funding falls down.” VC*

*“Yes, but no one is going to set up a specialist fund exclusively for marine renewables. Investors might make a wave or tidal investment as a risk spreader in the cleantech space.” VC*

*“We can invest in any of them or all of them. If something is expensive or if there are regulatory changes coming up that would be negative and would change what we invest in. We do compare relative costs. For instance we favour wind over solar because of the operating costs. At the same time, there are other factors, such as offshore wind being*

*particularly useful to the UK market. There are particular applications for particular markets. We also go for some spread, to spread the risk. But the bottom line is if I don't like marine, I won't invest in marine – there's no obligation to have a set percentage of each technology, for instance.” VC*

*“Yes, along with other more developed sectors there is an array of choice for investment. With wave and tidal there are very few outstanding investment role models, and those that are there are not particularly encouraging.” Angel Investor*

*“We don't really compare this sector with others, no. We are in this as a strategic interest for the long term. We want to get in and learn.” Corporate*

## 10. IRR

**As a result do you think investors are applying an unrealistic percentage IRR for marine renewable technologies? What percentage IRR would you look for from this sector now at demonstration stage? What about at commercial deployment stage? And at the 10MW farm stage?**

Seven individuals answered this question. For the majority, it appears that IRR is not viewed as a particularly relevant measure of performance for start-ups – they are more concerned with assessing the basic likelihood of success or failure, and beyond that the potential cash multiples achievable. Only one respondent – an angel investor – gave a specific figure, looking for IRRs in excess of 20%. No participants had any comments to make on IRRs at the various stages of deployment.

*“No. People of any experience who invest in early stage projects probably don’t believe in IRR calculations or their accuracy. I have a very jaundiced view of that. We would tend to look at whether we believe a business is worth a big multiple of where they started. IRR is too sensitive an instrument for this task.” VC*

*“Each renewable sector is on a different point in its trajectory of development. Making a scientific assessment of this is often beyond the capability of investors. It’s important to explain the technology with simple clarity.” Corporate*

*“It’s not uncommon for people to be seeking returns of 10 times their money on an investment. Looking at any portfolio, over its life there will be a number of losers, and for the earlier stage and the more risky we assume a 60% failure rate because there’ll be things that you can’t foresee. Every investment needs to have the potential to make 10 times the cash within the ten year life of the fund.” VC*

*“We don’t assign specific IRRs.” VC*

*“I don’t think so, there’ll be some people looking for some very high IRRs, but it’s more a question of the unrealistic timescale of projects coming through. It’s a very long time to be making investments without seeing any actual working projects. Aquamarine Power did a range of fund-raising last year where they said we’ve now got this level of funding and we’ll need another level in two years’ time to get the first project to be deployed. That’s four years before you’ll see any cash back – that’s unrealistic, people just aren’t going to hang around that long. Timescales are crucial.” Bank*

*“People can get into a vicious cycle of seeking higher returns for having taken on higher risks – you hear in meetings or discussions where people say that in order to compensate investors for their risk, they’re going to need 20-30% returns, which is just not feasible. What that then means is that governments, corporates, universities and other players should be brought in to de-risk the situation, to lower that return threshold.” Bank*

*“Given the risks being taken by our being such an early investor, we’d want to see IRRs above 20%. This is not for the faint-hearted.” Angel Investor*

## 11. Government actions

**Do you think that government could be doing more to promote the sector and remove the hurdles to deployment?**

Firstly, it is important to point out that government was spontaneously mentioned by five of the respondents as doing a good job, while the support given by Carbon Trust funding was also praised. Several are also aware of the work currently being undertaken by DECC to develop the Marine Action Plan.

In terms of what the government could be doing going forwards to promote the sector and remove hurdles to deployment, these were the issues raised:

- Increase levels of funding (10 spontaneous mentions)
- Increase ROCs in England & Wales (mentioned both here and elsewhere in the survey) (3)
- Ensure grid connections are ready for commercial deployment (3)
- Enhance test sites – provide more locations / ensure sites are grid connected / make it easier to deal with EMEC (2)
- Facilitate site access and development (2)
- Facilitate planning rules (2)
- Promote involvement of utilities and major industrials (2)
- Work to assess relative attractiveness of marine versus other technologies (1)
- Reduce Ofgem charges (1)
- Provide help with test rigs & installation (1)
- Help pick sector winners on technical merit (1)
- Provide clarity around long-term leases (1)

*“There’s been a lot of good activity. The support regime is attractive, the OFTO and offshore transmission scheme is evolving, some of the noise around the Crown Estate and offshore leases should help, although a little more clarity there could be helpful. No, I think the catalysts needed are the endowment channels, universities, or large corporates (whether it’s GE or Rolls Royce) to help the good technologies rise to the top. In the early stages, this sector has attracted a fair amount of capital in the UK alone. Many companies have attracted seed money over the years from private investors and endowments from universities, although this has led to a rather diffuse offering of technologies and applications. I think there is a need to winnow that down. You have to have some form of competition; with too many technologies you lose all the rationality and economies of scale. Facing a myriad of technologies is a daunting task, especially sitting there as an investor meeting multiple teams and trying to prioritise the best ones. This may be why the capital flows to different onshore choices and offshore wind, where it’s a bit more defined and a bit more discrete.” Bank*

*The government is doing everything it can in terms of setting targets and issuing exaltations to the private sector, but is not parting with enough government funding. Having said that, the Carbon Trust is prepared to provide matched funding.” Corporate*

*“The best course which government can take is a sort of is wet-nurse role – take the infant just that little bit further until it can be handed over to a point where can be picked up by the*

*market. I'm very supportive of the work carried out by the Carbon Trust, since it has the capability to screen and pick some winners. The real test needs to be whether particular companies are worthy of further development to get them closer to market. As for funding, the Marine Renewables Proving Fund at £22m is so small that it will only benefit a small number of devices. It also seems to me that money is not awarded on any technical merit but simply on a who is highest in the queue basis.” Corporate*

*“Yes, government could do more, but they are trying to address the issues. The Marine Action Plan is being produced for the Spring and the whole industry is contributing, us included. Overall, increased ROCs will drive the market.” Corporate*

*“It's a good question, the answer is yes, but what more can they do? DECC are trying to identify the barriers, but there's going to have to be somebody who helps to takes measures to try to remove the barriers.” Corporate*

*“In general, I think DECC is well placed, but with wave and tidal we need more grants and we need ROCs to be higher. We need the market signal – now.” Corporate*

*“I'm not one for fiddling with tax breaks, all that does for us in the investment community is to make things very complicated. We just need to find a good piece of technology and hope that it will work. The big gap is going to be funding the research. If government were to do one thing, they could allocate more money into the research institutes. We are often approached with a drawing and a belief that it will have higher performance than the next one – and can we please have £5m to prove it in the water! That's a big ask for us. Someone else has to fund the first part to semi-prove it works!” VC*

*“No, it seems like they are already doing everything they can – there is plenty of support out there.” VC*

*“They could be encouraging people to build more projects by bringing on more test sites like the Orkneys and the Wave Hub site off the coast of Cornwall. Apparently that hasn't even been grid-connected yet. And they could provide more funding to the technologies themselves.” Bank*

*“Yes, they should focus on easing access and of course planning. The less difficult they make it the easier these technologies can move forward. The next issue in our view will be the connection to the grid.” Corporate*

*“I think the ROC component could be increased in the UK, increasing the support would help, I guess. More operating data is the key thing needed though. We need a few years' data. R&D and university funding could help too, although this is something that other types, more early-stage, investors would be able to comment on.” VC*

*“Something special needs to be done. You wouldn't need that many MW or projects just to bring companies down the cost curve. MCT's point is that it is no more capital intensive than other technologies – it's just much earlier stage. In terms of despatchable, baseload power, we need tidal for baseload. If something could happen to get the likes of EDF, EON or npower to do a project now and get on with it, this would make a difference. People are waiting for a utility to make a decision. We're only talking about 50MW projects – they're not huge – it's only a tenth of a power plant. Could government promote utilities' involvement?” VC*

*“Could the government encourage utilities and major industrials to more easily partner with marine companies? Could they support the big companies to get involved? For example, if a company like ABB were to invest £5m in an approved wave or tidal company, could the government provide matched funding? The bids would obviously have to be from large qualified companies which could make a real contribution to the sector, but it might make all the difference.” VC*

*“It’s almost nuts that government is only offering people money once they start to sell. You need the funding at the start to enable you to get to that stage. Prove the technologies to decrease the risk, and if they work the market will take care of the returns.” VC*

*“There is a clear need for the government to direct its efforts into wave and tidal. There is one other important issue – Ofgem charges are putting some serious pressure on the development of wave and tidal projects. Take the Pentland Firth project – around 20 firms have said that they may withdraw in protest at the charges imposed by Ofgem there. This is the the craziest policy they have made!” Corporate*

*“Other ideas would be to increase the availability of intermediate size test rigs (if there are any economies of scale) and help with installation through dedicated vessels with experienced crew.” VC*

*“The government could assist with planning and site development. In terms of access to grid connections, the Humber project (which we’re involved in) was lucky since it connected into a chemical company and then into the grid. Government has developed sites for demonstration projects, and likewise there is an £18m fund for demonstrator projects. But what if the projects are pre-commercial viability and prototypes are not yet proven? In my view the government has gone too far downstream, too quickly – there are not enough companies who qualify yet.” Angel Investor*

*“Yes, the government could make more direct investment in the sector in the form of grants. I don’t think manipulating the tariffs, as with wind and solar, is going to work. Wave and tidal are not scaleable, whereas wind and solar especially are. The market for tidal is actually relatively small. It’s something that makes sense for the UK so the government should be making it happen for the UK.” Angel Investor*

*“There are certainly many hurdles. I do have one practical idea – the government could make it easier to deal with EMEC and enable them to work in a more commercial fashion. They need more resources and are not commercial. By contrast, we find dealing with the Crown Estate very straightforward and are quite happy with that. But EMEC should be easier – we shouldn’t need to spend as much time dealing with them as we do with the Crown Estate.” Angel Investor*

*“There may be fantastic strategic thinking on the part of government on energy policy. I may be blissfully unaware of it. I would like to see or believe there was a greater clarity of energy policy. I don’t know whether enough work is done in comparing the attractiveness of wave versus wind. I hear many announcements of huge investments for wind. If it were me I would spend some money analysing the relative attractiveness of different types of technologies for different parts of the UK. I don’t believe wind will always be as attractive as made out. If wave is that attractive, government should fund the early years.” VC*

## 12. Support mechanisms

**What is your view of the existing support mechanisms, both in England & Wales and Scotland? How important is the ROC regime and any potential re-banding that might happen?**

**What would your response be to an early review of the ROC level banding? Would investors find it encouraging for the sector or would they find the changing of the levels unsettling for their investments and be detrimental for levels of confidence?**

Of the 16 individuals who answered this question, nine expressed spontaneous support for the ROC regime. A small minority would support a feed-in tariff for the early stages of deployment. In terms of a potential ROC rebanding, five respondents spontaneously mentioned that the regime should be the same throughout the UK, rather than operating at a preferential rate in Scotland. Three individuals believe a review could be unsettling while three do not, and a further three think a review would only be detrimental to confidence if the banding was revised downwards.

*“I’m starting to like ROCs generally, I haven’t for a long time – but in this instance where there are two sets of competing devices such as in wave and tidal, it’s going to be hard to work out the level of ROCs they should be getting. It may be best for the first ones just to have a straight negotiated tariff. Once you’ve got the first few projects up and running and you getting an idea of what the prices can be, then you can start introducing ROCs. Until the sector starts to get more mature and become more of a commodity, this may be the best approach. There isn’t any established technology or equipment for these sectors. With solar you have a series of technologies and it’s possible to establish a benchmark, but here you don’t know if the technology will bob like a buoy or float like a snake or close like an oyster, they’re all very different. As regards a review of banding, that’s the trouble, it can be unsettling. People may expect a downward revision. Even upward is not great. People start to think why do it now when you could wait and get an upward one later?” Bank*

*“When you talk to the large corporates (who are the ones writing £2bn cheques to build a project), these corporates committed a long time ago to the ROC regime and find it eminently manageable. To smaller investors, private capital and private equity, the ROC regime is a challenge. But when you look at offshore wind, and at how many MW are being installed in the UK, yes the regime is not airtight but it is enabling corporates to get the job done. Is the government’s plan meeting the objectives? Well, it might be falling short a bit, but it must be working as companies are still planning to invest billions of pounds.” Bank*

*“ROCs have been successful - they have certainly got offshore wind going.” Corporate*

*“There is currently confusion for marine renewables. 5 ROCs are available in Scotland while 2 ROCs are available in England. The UK should be viewed as a contiguous market. A review here would certainly help. In general, the ROC device is ingenious, but complicated and not very transparent. Investors will have to assess the future state of the ROC market and make a judgement call. The German system seems to be much clearer with the subsidy up front. As for rebanding, investors would not find a review unsettling. Overall, ROCs are becoming better understood and it seems they will have longevity.” Corporate*

*“The difference between England and Scotland should be narrowed, since Scotland is by far the most preferable regime. Incentives should be focused on the UK as a whole – there are good resources in England too.” Corporate*

*“I’ve only just got my head around the ROC regime recently, and it seems to be fairly positive. But I have not had enough experience to be able to give a qualitative view. As for a review, I would only be concerned if a review led to a potential reduction – if ROCs were to be increased in certain areas that would be viewed as positive.” Corporate*

*“The ROC is definitely vital. A potential up-banding might also be necessary, although that may impact consumers down the line.” Corporate*

*“The question is will the RO be there in 10-15 years time, and if there’s to be a hiatus before every election that points to their weakness. If we could move towards things being enshrined in legislation that would be more helpful. Any announcement of a review would be likely to be unsettling, because if a review of ROCs is announced then people will pause and wait for the outcome. I think the belief that there’s a long-term secure policy is the fundamental issue.” VC*

*“If a new regime were more supportive than the old one then that would be positive. If it introduced significant insecurity then that would not be helpful. It’s not down to how it’s handled. When you look at the electric vehicle space, where funding was mooted but then delayed for a number of years, this was perceived very negatively and has really put a spanner in the works. If marine renewables is a strategic sector, you would obviously want to ensure that you create a level of certainty.” VC*

*“I don’t actually know much about ROCs, I’m not a specialist in renewables and the whole system is rather complex. Would a review of banding levels have much impact? I think not. Government is guilty of introducing a string of schemes which are sector specific and only if you’re experts in that sector will you have a good grasp of the intricacies. So tweaking this or that measure will likely have little impact on spurring early stage investment.” VC*

*“Projects will have to stand on their own two feet or be very close to doing so, as there is always the risk that the support mechanisms are suddenly no longer available. Up front funding is the only way to provide peace of mind for the investment community.” VC*

*“The ROC regime is a necessity and we will need to see about a potential rebanding.” VC*

*“What we need is for ROCs to provide a higher return. We need something to sweeten revenues. The Scottish model is obviously better. Government should just up the amount of ROCs – there are gigawatts of definable, despatchable power. The ROC level should be 4 or 5 at least for the first 2 years. The government needs to decide what’s important – it’s a no brainer if the subsidy is there, but the whole sector is just getting crowded out by offshore wind. The government could transform the sector overnight – it’s just a matter of increasing the return. Rebanding would be the easiest thing – it’s just a decision and that’s it!” VC*

*“ROCs are not sufficient in any way, they need to be quite a bit more to entice people in. Serious investors look at the investment, look at the risk, and say they’re not doing it. The government needs to massively increase the carrots downstream to get the punters in – otherwise we won’t get them. As regards a review, if you stack the gold coins high enough, investors will come in. All it takes is one or two and the rest will follow. Investors are pragmatic enough and no, they won’t be unsettled.” Angel Investor*

*“The ROC in Scotland is very important. We need this to remain stable. In my view, we should also get more ROCs for tidal.” Angel Investor*

*“No – what we need is grants. I don’t think ROCs will have much of an influence on wave and tidal.” Angel Investor*

### 13. Government efforts

**With regard to Government policy and regulation, is it a case of directing efforts in the wrong place or wrong stage of business?**

**If there is a problem, what do you specifically suggest the government does to stimulate investment in marine renewable energy?**

Although similar to Question 11, this question deals more with how the government can specifically stimulate investment.

Increased funding came out as the most significant issue, being mentioned by nine individuals, several of whom volunteered specific ideas. These included setting up a sector-focused fund and/or green bank to kick start the sector, looking more closely at how to fill the gap between very early stage and VC investment, and promoting inward investment. Elsewhere in the survey, the importance of sector consolidation and rationalisation of devices has been mentioned, and the suggestion was made here that the Carbon Trust should prioritise getting devices to market, which would whittle the sector down. Clear government policy going forwards was requested by two individuals and, for those who are aware of it, the Marine Action Plan is eagerly awaited. Finally one respondent was highly negative and believes that the government should abandon support for the sector.

*"I can't quite believe that CCS, which no one had heard of a couple of years ago, is suddenly being given billions, while this sector is still receiving 10 or 20 million. It's a different order of magnitude. There's not been much policy directed towards really helping this sector. And what there has been has been aimed at the very early stage. We need a bit more focus on the gap from here to achieving venture capital." Bank*

*"I think they should set up a sector focused fund, and they've been doing this in some renewable areas recently. For sums of £150-200m, government puts in X and tries to raise the rest from the private sector. Initially, the government perhaps puts in 100% funding, but then you make it available for private sector investment and you can take the public money out. If you try to arrange a pure private fund at the moment you'll be lucky to get £20 million." Bank*

*"What could the government do better? In terms of incentives, the more the better and the earlier the better. I like the idea of a Government Green Bank to execute project financing, a set-up with rules on the ratio of debt to equity, leveraging private sector money with public sector funding. Co-investment through a government bank would be the way to approach this. It wouldn't replace other sources of funding, but would supplement the market." VC*

*"The government focus has been right. The message has been driven home to the public. We have to move to the next phase, which is to deliver. The Carbon Trust could actually focus some spending on hardware and get at least one device to market. It's very capital intensive sector and it takes a long time." Corporate*

*"I can't really comment. DECC seems to be doing a good job." Corporate*

*“Some help is available at a very early stage, then there’s a big gap, and then some is available at the later stage. There’s a need for a more holistic funding approach.” VC*

*“The government been focused on the demonstration/commercial viability stage. They’ve taken the State Aid rules too literally, saying they can’t get involved in the R&D side so they’ll go downstream and wait for projects to emerge. In this country we tend to be too risk averse with regard to the early stage projects.” Angel Investor*

*“I think one way forward would be to improve policies to attract inwards investment. At the moment, investors don’t think about the UK for wave and tidal. The policy has to go down the international route to get the commitment its needs. Also of course, government support is very very important.” Corporate*

*“We would welcome a clear strategy and a clear plan. Over the past few years government has sponsored various facilities, such as NaREC and EMEC – both were good investments but not particularly strategic. Once the Marine Action Plan is in place there should be a better framework to work from. At the moment, action runs the risk of becoming a bit fragmented.” Corporate*

*“It’s a question of coherence of longer-term energy policy. Why is there so much emphasis on offshore wind? Maybe people have figured out that it’s the best solution, but I don’t believe it is. Announcements precede its judgement. It has to prove itself in absolute and relative merit terms. I could imagine tidal may be very attractive compared to wind, from a predictability point of view, and there is a huge amount of power available. I’d like to see clarity of a progressive policy rather than chopping and changing. I’d advocate putting more funding into early stage trials, which are still nearer to world of academic research and nowhere near commercial exploitation. The alternative is a lot of little amateur attempts.” VC*

*“Wave Power hasn’t proved itself so what is the point of encouraging it? Cost estimates keep appreciating, just like nuclear power in the 60s and 70s. The take-away for investors is let’s go and prospect somewhere else.” Corporate*

## 14. Government rules on VC investment

**Do you think changes to the government's rules on VC investment would make it more attractive for organisations to invest in marine?**

**If so, what changes do you suggest could be made (such as tax incentives)?**

The consensus view of those who answered this question (seven in all, and a mixture of corporates, angel investors and VCs themselves) was that changes to VC rules would not make the sector more attractive. The major issue at present is a function of the current economic climate, namely the lack of money going into VCT funds. Two individuals, however, made a practical suggestion – that tax incentives should be aimed at EIS schemes.

*"The VCs' philosophy is that they take high risk therefore they can demand a high return. The trouble is the VCs are now saying that they can't afford to take the high risks, but they still demand the high return. The rules of the game are now distorted, so government should not be seeking to underwrite VCs' risk! Tax incentives should now be aimed at the EIS scheme."* Corporate

*"Honestly, no."* VC

*"Not really. There's a huge challenge to the likes of the VCTs and the EIS funds because regardless of the tax breaks you are seeing fewer and fewer people with money to put in those funds anyway because of the recession. The VCT funds are really struggling and some of the rules are slightly bizarre, such as having to invest all of the fund within 2 years, which leads to money being thrown out the door and deals being done because of the time pressure not because they're commercially good deals to do. VCT performance over the last ten years has been unspectacular if not disastrous."* VC

*"There have been adverse changes to EIS through the capital banding change – the 10% changed to 18%. So the government could change this. It was a massive tax hike that will make all areas more attractive if withdrawn."* VC

*"Yes and no. If VCs can get free money, they would consider the investment option. I admire the stamina that the wave and tidal companies have, but I don't think that anyone will get overly excited about wave and tidal as an investment opportunity."* VC

*"VCTs have been cut back. For private investors there's EIS tax relief. But for private investors 8 to 9 years is a long time to be rolling over losses."* Angel Investor

*"No, they can't do anything practical."* Angel Investor

## 15. Views of public sector support and the UKIIF

**If a business that has already secured some sort of public sector financial support, does this increase the likelihood of investment? If so, how? If not, why not?**

**If companies are not influenced by public sector financial support then do you think the government should be questioning the suitability of their new UK Innovation Investment Fund?**

Of the 12 individuals who answered this question, eight respondents believe that public sector support will increase the likelihood of achieving further investment. This is especially true of Carbon Trust support, but with the caveat that it can then be disastrous if the CT turns down applications for the next stage of funding (or indeed says no at the outset). Two believe that public sector support makes no difference.

In terms of the UKIIF, it is clearly early days. Two individuals believe it would be good if funds can be accessed, two have already had experience of finding it difficult to access, while three believe that the UKIIF will focus on other technologies.

*"I think for some private investors public sector support does help – it acts like a seal of approval that it's been checked out. I don't think that's really the case for the more experienced investors, who are a bit more cynical about public sector reviews of emerging technology." Bank*

*"I can see how public sector financial support could be attractive. There are currently 160 different competing technologies being worked on at different stages of maturity. If a project has got government support, then that shows that the project has passed muster and emerged successful." Corporate*

*"I think amongst small enterprises it's certainly important, small acorns can grow. Small enterprises will depend on that type of financing – it's only when it gets to a certain stage of development that the larger investors come along and take the business a stage further." Corporate*

*"Yes, of course it helps as we see the government is committed to the wave and tidal sector." Corporate*

*"Yes, it does have a leverage effect. It reduces the private funding required. It's a statement of confidence in the technology. Also, the process of awarding public finance is quite similar to our due diligence process. Finally, I would say that with so many technologies, there will be some consolidation but we also need a sufficient number of them to get to full size in the water. Without government support, we could just get a valley of death in terms of failures if only a few companies get through." Corporate*

*"Investors say that if you've run through the Carbon Trust sifting then that saves them the initial due diligence." Corporate*

*“Yes. The Carbon Trust does provide a very valuable first project screening facility. If they can give the green light that is a huge advantage to an early stage project. Conversely if CT says no, then a project can be stopped dead in its tracks.” Corporate*

*“Yes, if the Carbon Trust has given official support then that’s definitely a useful signalling effect. But the Carbon Trust has a grant funding facility as well as an equity investment facility. If a company receives one but doesn’t make it through to the equity investment stage, then this represents significant reputational damage for the project.” VC*

*“FP7 funding is fairly neutral, although FP7 money counts for a lot in itself. If you win Carbon Trust Accelerator funding then this can certainly be worn as a badge of honour, although some say that it may not be such a great endorsement if the project does not go on to get equity support. The Carbon Trust has got a bit of mission creep – it started with early stage accelerator projects, then equity, and now it has an investment fund run by a private company. They get access to all the information – they can pick and choose and if they turn you down, then others won’t touch the project. So there’s potential here for skewing the market.” Angel Investor*

*“Not necessarily, no. It shouldn’t make a difference – it should be a rational appraisal. Trying to make everything succeed is not a good idea. Public money should be there to allow enough experimentation, and shouldn’t be concerned about failure. Encourage early failure – it’s much cheaper!” VC*

*“Not necessarily. The fact that a project has had government money doesn’t mean that the technology is going to work. We will still look at it closely, and at the potential returns and to see if we can get someone to co-invest with us.” VC*

*“I’m uncertain about the UKIIF. Is there is a problem with the business model? If the disbursement VC firm for the UKIIF is simply going to scout around looking for the higher IRR projects, if they don’t find them then they may not invest. There are none out there since there aren’t the timescales to deliver for a reasonable IRR – sectoral IRR is low. But the disciplines and the rigour that the VC approach brings is of course welcome.” Corporate*

*“In terms of the UKIIF, yes it would be good if people can gain access to it. These funds are very difficult to avail yourself of. But if you can take the money and use it for actual working projects, then that’s great. I think a differentiation has to be made between the test-bed centre projects and the real projects of actually putting your machine into a river or offshore. More should be done at a practical level to get things into the water, that will generate cash, more learning and a healthier reputation for these projects.” Bank*

*“The UKIIF won’t encourage lots of people to invest in wave and tidal. The UK has many interesting young technologies that create great environmental benefits. Often funding ends up in other areas such as green materials, energy efficiency and green manufacturing where the return on capital employed is measurably far far better. We could make a far bigger environmental impact with far less money if we focused on energy efficiency and materials projects. The UKIIF could have a major impact in this area, but not in the area of wave and tidal.” VC*

*“Re the UKIIF – this is difficult to access.” VC*

*“On the UKIIF, my understanding is no, it will not help. We have spoken to them and the response was that they will not invest alongside our fund because it is so early stage. They’re going to invest in less risky, up the curve investment funds. Our understanding is that they’re*

*not doing what they were set up to do – to tackle the early stage high risk projects, despite the public pronouncements. That's hugely disappointing.” VC*

*“On the UKIIF, we have nothing against a government co-investment fund. The only trouble is if it is badged and put on a pedestal as the pinnacle of the screening process, then if it turns you down you're dead.” Angel Investor*

## 16. Critical showstoppers

**In your view, what are the critical showstoppers for the industry moving forward?**

Answers to the question about critical showstoppers elicited a wide range of responses, some already well aired and some new. Two individuals believe there are no showstoppers and one commented that the show has not yet started! For the remainder, the key issues included:

- Competitive price of marine energy (2)
- Grid connections (2)
- Consistent & reliable technology (2)
- Lack of funding, capital intensity & rates of return (2)
- Getting devices into the water (1)
- Too many failures (1)
- Experience of existing developers – all have spent more than expected (1)
- Environmental opposition (1)
- Removal of ROC support(1)

*“There are many issues where progress can be made to move the industry forward. Grid connections, planning consent, supply chain, training. But the main challenge is for the technology to demonstrate that it can provide electricity to the grid for a certain price. It needs government support at the start to provide stability around subsidies, and then around pricing as the electricity comes to market.” Corporate*

*“There’s clearly one showstopper, which is whether the fundamental maths of the ability to extract and transmit the energy is ever going to be as attractive when compared to other sources. The benchmark probably isn’t the price of oil. Going beyond five years it might be price of energy from photovoltaics or concentrated solar power from the Sahara. But what will be the benchmark price – I don’t think that anyone really knows.” VC*

*“We need to build machines that will demonstrate adequately that reliable and consistent electricity can be produced. That’s up to us; it’s the same in any sector. The other potential showstopper is the determination of the sites by the Crown Estate. Environmental opposition could scupper the whole project.” Angel Investor*

*“The lack of money is definitely one. Investors can look at more proven, higher return types of investments now in the space rather than pour money into trials that don’t even prove anything.” Corporate*

*“The real showstopper is running out of money, particularly if the government stops the grant schemes and/or the big utilities and major investors discontinue their involvement. No other investors are likely to come forward with c £50m of support. We really need more big industrials to get involved. The other big showstopper would be removal of ROC support, which would lead to the collapse of the UK sector. It would just go elsewhere.” Angel Investor*

*“The key thing is this – is the technology going to work? Lots of stuff is coming out, lots of people are trying to do innovative things in wave and tidal energy. But these are very harsh environments that you are exposing the technology to, and it’s pretty sensitive technology.”*  
VC

*“Distribution is the single biggest issue – given that the biggest wave and tidal resource exists on the west and the north coasts of British Isles, then this presents a grid capacity problem. The recent headlines from the Beaulieu Denny link are illustrative. The timescale and the capital investment period may mean that there’s more capacity in the water than grid capacity to connect by 2016. We must get to grips with this in order to allow the sector to take off.”*  
Corporate

*“The show hasn’t really started. My enthusiasm of course lies in getting things into the water, but if there’s too much of a rush and there are too many bad luck stories people will start to have doubts about the credibility of the industry, so there’s a fine balance. Too many failures could be damaging – for instance Pelamis with their problems in Portugal.”* Bank

*“The experience of existing developers is a showstopper – they’ve all had to spend significantly more than initially indicated.”* Corporate

*“The critical showstopper is the capital intensity of wave and tidal projects, and thus their rate of return.”* VC

*“There are hurdles, but nothing I don’t think that can’t be overcome with the right level of support and drive. But there are no critical showstoppers that I can identify as such.”*  
Corporate

*“There are no showstoppers, but there’s a certain natural limitation to a niche sector like this. I should draw attention to the geothermal field – there’s some comparability there. It’s a natural occurring resource, on a cost per MW basis it’s \$3-4m per MW installed, and takes 2-3 years to build. It’s capital intensive, but through deployment by large corporates the technology is more mature and is a bit more bankable.”* Bank

## 17. Future meetings

**Would you be interested in meeting the wave & tidal team at DECC to discuss your views? Would it be useful for you to receive more information from the team at DECC?**

Answers to this question will be provided directly to the department.

## Appendix 1

### Questionnaire

1. What are your current perceptions of the wave & tidal sector in the UK? Is it a potentially interesting sector for you?
2. What are the most important factors influencing an investment in marine renewable energy?
3. Looking specifically at your own investment, what issues have you encountered to date?
4. Are you able to talk to us about your investment in terms of desired returns and timescale?
5. In relation to market timing and opportunity – are your concerns related to marine energy being such an innovative technology or more that it does not fit in with your own timescales and life of the fund?
6. What would make an investment in marine renewable energy more attractive? Do you agree with the suggestions below:
  - Government relaxing the rules on VC investment
  - Greater corporate venturing
  - A more stable financial climate
  - A greater track record of pricings and exits
  - A clearer and more visible funding path for companies
  - Stability of long term funding
  - Government guaranteeing some sort of price structure
  - Definition & longevity of government policy & regulation
  - Increased government support (eg matched funding & tax incentives)
  - More government support on policies and standards in the sector?
7. Is co-investment a prerequisite for investment deals in marine renewable energy?
8. Do you have specific preference as to who you partner with? For example, other VCs rather than large industrials or institutional investors as they have other motives? Can this become a dealbreaker?
9. Are investors trying to compare marine start-ups with investment opportunities in more advanced and developed markets? If so, why?
10. As a result do you think investors are applying an unrealistic percentage IRR for marine renewable technologies? What percentage IRR would you look for from this sector now at demonstration stage? What about at commercial deployment stage? And at the 10MW farm stage?
11. Do you think that government could be doing more to promote the sector and remove the hurdles to deployment?
12. What is your view of the existing support mechanisms, both in England & Wales and Scotland? How important is the ROC regime and any potential re-banding that might happen? What would your response be to an early review of the ROC level banding? Would investors find it encouraging for the sector or would they find the changing of the levels unsettling for their investments and be detrimental for levels of confidence?

13. With regard to Government policy and regulation, is it a case of directing efforts in the wrong place or wrong stage of business? If there is a problem, what do you specifically suggest the government does to stimulate investment in marine renewable energy?
14. Do you think changes to the government's rules on VC investment would make it more attractive for organisations to invest in marine? If so, what changes do you suggest could be made (such as tax incentives)?
15. If a business that has already secured some sort of public sector financial support, does this increase the likelihood of investment? If so, how? If not, why not? If companies are not influenced by public sector financial support then do you think the government should be questioning the suitability of their new UK Innovation Investment Fund?
16. In your view, what are the critical showstoppers for the industry moving forward?
17. Would you be interested in meeting the wave & tidal team at DECC to discuss your views? Would it be useful for you to receive more information from the team at DECC?