Comparative Report from the Respondents of Two Regional Studies Task D4.2.4 of WP4 from the EU MERiFIC Project

A report prepared as part of the MERiFIC Project "Marine Energy in Far Peripheral and Island Communities"

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The MERiFIC Project

MERiFIC is an EU project linking Cornwall and Finistère through the ERDF INTERREG IVa France (Manche) England programme. The project seeks to advance the adoption of marine energy in Cornwall and Finistère, with particular focus on the island communities of the Parc naturel marin d'Iroise and the Isles of Scilly. Project partners include Cornwall Council, University of Exeter, University of Plymouth and Cornwall Marine Network from the UK, and Conseil général du Finistère, Pôle Mer Bretagne, Technôpole Brest-Iroise, Parc naturel marin d'Iroise, IFREMER and Bretagne Développement Innovation from France.
MERiFIC was launched on 13th September 2011 at the National Maritime Museum Cornwall and runs until June 2014. During this time, the partners aim to:

- Develop and share a common understanding of existing marine energy resource assessment techniques and terminology;
- Identify significant marine energy resource 'hot spots' across the common area, focussing on the island communities of the Isles of Scilly and Parc naturel marin d'Iroise;
- Define infrastructure issues and requirements for the deployment of marine energy technologies between island and mainland communities;
- Identify, share and implement best practice policies to encourage and support the deployment of marine renewables;
- Identify best practice case studies and opportunities for businesses across the two regions to participate in supply chains for the marine energy sector;
- Share best practices and trial new methods of stakeholder engagement, in order to secure wider understanding and acceptance of the marine renewables agenda;
- Develop and deliver a range of case studies, tool kits and resources that will assist other regions.

To facilitate this, the project is broken down into a series of work packages:

WP1: Project Preparation
WP2: Project Management
WP3: Technology Support
WP4: Policy Issues
WP5: Sustainable Economic Development
WP6: Stakeholder Engagement
WP7: Communication and Dissemination

This Report

This report provides a final combined assessment of two nationally centred strands of research that has been undertaken within the marine energy policy stream of the MERiFIC project. This research consisted of a two stage stakeholder consultation carried out in both the regions central to the project: the South West region of England and Brittany in France. This document analyses and attempts to draw out conclusions for cross border learning in relation to the stakeholder questionnaire (task 4.2.2) and the follow up qualitative stakeholder workshops (task 4.2.3) which were carried out in 2012 and which have been reported on thoroughly at the project website and elsewhere. This document draws its conclusions primarily through comparative analysis of the output documentation for both deliverables, namely the synthesis reports on stakeholder consultation of marine renewable energy policy measures documents and the minutes of MERiFIC stakeholder workshop documents. Additionally, it draws upon the comparison of national policy frameworks for marine renewable energy within the United Kingdom and France that were prepared for each country and region before the stakeholder consultation was carried out. These are used to provide contextual backing for the findings within.

1. Background to the Comparative Report

1.1 Objectives

This comparative report from the respondents to the two regional studies is a later stage report within Work Package 4 of the MERIFIC project, researching policy aspects related to marine renewable energy and the potential for growing industrial opportunities in the two regions that are the subject of the project. Based upon work already carried out (Vantoch-Wood, 2013, Kablan, 2013, Kablan, 2012, Vantoch-Wood, 2012c, Vantoch-Wood, 2012b) this document attempts to assimilate and contrast the many policy findings between the two regions in a format that provides comparative insight and from which overriding thematic similarities and differences can be identified. Ultimately, the conclusions in this document will feed into subsequent MERIFIC outputs, including the final Policy Application Report, which will identify opportunities where cross-border learning may be possible (Vantoch-Wood et al., 2013.

1.2 Thematic Overview and Caveats

Cornwall and Finistère as well as the regions of the South West UK and Brittany, France share a wide range of similarities in both geographic and demographic make-up. These similarities have given natural rise to the possibility that there are strong opportunities for collaborative research and learning to occur between the two regions with both regions seeking to assist and capitalise upon the potential commercialisation of marine renewable energy (MRE) within their borders.

The findings of this report show that there are clearly strong opportunities for this collaboration to occur and a range of potential development pathways that regional policy makers could explore in trying to maximise this potential, (although this is not discussed heavily within this document as it is left to the Policy Application Report to identify these opportunities explicitly) (Vantoch-Wood et al., 2013).

Two distinctive dilemmas arise however when compiling this comparative report for which caveats must be made. Firstly, although the initial scale of the study was to focus specifically on opportunities between on one side, Cornwall and the Isles of Scilly, and on the other, Finistère, there were strong limitations of insight from such a tight geographic focus. From an early stage it was identified that practically, including a wider catchment in terms of geography and policy (e.g. national policies and non-Cornish stakeholders such as Regen SW or Plymouth University) would provide much stronger insight and direction than simply limiting the scope to that outlined initially. This is specifically true in case of the Isles of Scilly where there has to date been very little attempted development of MRE and the outstanding natural sensitivity of the region means that even small scales of MRE deployment are not likely to occur within the medium term future, (i.e. until 2020). At the same time, it has become apparent from the work already carried out that although both Brittany and the South West present some internal homogeneity of culture and industry, there are also high levels of diversity internal to them, for example in terms of infrastructural, population and RE resources.

Additionally, 'regional governance' within the UK has historically been much less significant than within France, something which has been exacerbated since the scrapping of the Regional Development Agencies (RDAs), many of which had taken a role in renewable energy projects linked to economic development. As such, rather than specifically attempting to focus on the distinction of 'Cornwall/Finistère' or the 'South West/Brittany', this report has attempted to hold a flexible and generalised perspective of the 'region' than has for the most part been closer to 'the west of the South West, England' or 'the West of Brittany' where more identifiable industrial development blocks (as defined by Carlsson and Stankiewicz, 1991) focussing upon MRE have emerged. The stakeholder questionnaire was regionally accurate (i.e. identifying Brittany and the South West as the highest level of regional resolution) however the findings were discussed within a more locally accurate context, (i.e. Cornwall and Finistère) although nationally, international and MRE relevant representatives were present.

The second specific dilemma encountered with regards to the 'comparative' element of the study (and also identified by Bailey et al., 2012) was that the framework of governance within both countries (and regions) was clearly very different. Although generalised findings (based upon stakeholder feedback as to which has or is perceived to be more successful) are included, there are obviously limitations to the insights that can be gained in comparing policy instruments that themselves sit or, in the case of recommendations, would have to sit within a wider and highly different system of governance. Nonetheless, having a broader overview as to the difficulties that have been identified within the regions does assist policy makers to understand both the opportunities and constraints that may exist for cooperation as well as the potential for policy adaptation and facsimile.

1.3 Target Group and Responses

The responses from which these findings are derived from have come from two primary sources: Firstly, the online stakeholder questionnaires which were run within the first quarter of 2012 and included a total of 52 and 51 respondents from the UK and France respectively. From this, 32 and 28 respondents identified themselves as coming from the South West of England, and Brittany respectively. Although there was a multitude of stakeholder industry types, the dominant respondents were small to medium enterprises (SMEs) employing fewer than 250 people (and in most cases between 11 and 50 people) working within service and consultancy provision. These respondents also make up the generalised demographic within the regions, however regional and stakeholder type variations are identified where clearly evident. From the surveys, results were discussed within two separate workshops within the latter half of 2012 to add a stronger qualitative and narrative insight to the findings. These workshops were locally held within Brest, Finistère and Delabole, Cornwall although attendees, (although predominantly local) came from a regional catchment. The French workshop attracted a total of 20 attendees (representing a wide range of MRE stakeholders) while there were 24 attendees for the UK workshop. Again, workshop attendees came from a wide range stakeholder types however demographics were not recorded.

2. Results

Many of the synthesised findings of this work package outlined within this document support those found within the earlier project documents (specifically Bailey et al., 2012). However a noticeable addition to these arise from the highly relevant operational perspective of policies/operational systems that different stakeholders (SMEs/universities etc.), have upon the state of the current MRE landscape within the two regions. These are rooted in practical experience and a strong working knowledge of the sector's needs. These add value to the narrative and arose (in most cases) from either the stakeholder workshop or within the qualitative 'extras' field within the online survey however are only included if they are indicative of a general theme or trend that emerged from the results (i.e. rather than singular outlier opinions). Thematic trends and patterns of comparative difference between the two regions have been identified and (where considered relevant), explored based upon prior MERIFIC documentation.

2.1 Technology and Supply Chain Perceptions

As a national overview, it is clear that the United Kingdom, (and in particular Scotland) has a longer pedigree of research into the ´wet´ marine energy technologies dating back to the mid-70s as well as a more developed and diverse, if still fragmented sector (i.e. more device developers at different stages of maturity, more universities involved and a larger set of international companies now currently engaged with developing new projects). The development and support for wet technologies has been more prevalent within Scotland in recent years as a result of the devolved government's ambition for the sector. However within England, the South West, and particularly Cornwall and Devon have worked hard to promote and develop their own marine renewable energy industry within wave energy technology (which supports the predominate resource of the area). This push was initially championed by the now defunct South West Regional Development Agency, (SWRDA) however since the dismantling of the RDAs in early 2012; it has been championed more by a range of relevant private, public and academic stakeholders as well as the remaining regional renewable energy support body (Regen SW). Many of these stakeholders have joined the umbrella group known as the South West Marine Energy Park (or South West MEP) and collectively account for a strong and diverse range of technical, environmental and political services to support the sector. The largest problem to date however facing the region's ambitions is the lack of devolved funding for support of this network.

Despite the construction of the Rance tidal current power station in 1966, France has had a much shorter history of involvement within MRE however have begun within recent years to focus heavily on marine technologies (and in particular fixed wind and tidal technology), committing a structured (and much higher) level of financial support towards marine energy technologies as well as developing test sites and beginning the higher levels of specific engineering and project management training that the French government sees as being necessary for their future deployment ambitions (see pages 14 and 39 respectively of Kablan et al., 2012 for more information). This focus has for obvious reasons fallen heavily upon coastal regions and within them the optimal sites of resource (and specifically Brittany).

2.1.1 Tidal Regional and Company Involvement

As a result of the devolved French government's ambition, and more fundamentally the difference within regional primary resource availability, the French national focus of industrial development effort has been towards tidal technology development (as opposed to wave energy) and has been devolved primarily towards the public private partnership, France Energies Marines (FEM). FEM is a research institute with a membership of about 15 public and 25 private entities (companies, clusters and associations).This public-private partnership represent all the key players of the MRE sector across the different coastal regions mainland and in France's overseas territories and has its headquarters within Brittany in Brest. These support programmes are discussed in more length within section 2.2.2.

The French nationally agreed Pact Électrique Breton, includes an ambition for tidal deployment is 10MW by 2020 and there is no ambition for wave. This statement of ambition is also borne out plainly within the survey and workshop results where 81.6% of French survey respondents had prior experience within tidal technology and 40.5% of which believed it had a positive future potential for their region. This figure was particularly high within the Brittany region (compared with only 22% believing wave energy showed opportunities).

From a national perspective within the UK, tidal technology is also beginning to be seen as more commercially viable. There is evidence that it is beginning to commercially advance ahead of wave energy, with a higher level of projects in planning, increased large company ownership, lower expected costs and more technology convergence (see page 48 of Vantoch-Wood et al., 2012 for more information).

At the more easterly borders of the South West there is the Bristol Tidal Energy Forum (focussing upon the long term development of tidal energy within the Bristol Channel) as well as the leading tidal technology developer Marine Current Turbines who have already deployed at full scale (within Ireland) and are now in the planning stage of two array deployments within Scotland and Wales. Planned South West deployments at the moment are still limited however. The only current project being Yorkshire based developers, Pulse Tidal who recently announced that they have secured an agreement for lease (AFL) from the Crown Estate to place a 1.2MW tidal device at Lynmouth off the coast of North Devon in 2014.

2.1.2 Wave Regional and Company Involvement

The French PPI report suggest that up to 200MW of French wave energy deployment could be realised by 2020 (Ministère de l'Écologie, 2009). This report itself drew upon the now somewhat dated 2007 IFREMER report from which there was a suggestion that approximately half of the deployment would be expected within overseas French territorial waters (Ifremer, 2007). This and the current lack of any national deployment makes it clear that wave energy provides far less potential for regional economic development. There are currently no major commercial wave energy research projects at present within Brittany except for the DCNS led Waveroller which, as of April 2013, is still in a very early stage of planning. There is also the relatively small but recently commissioned SEM-REV wave energy test site. This ECN run 1km^2 site has been operational since 2012 providing a facility for four berths as well as including the necessary instrumentation, zoning and cabling (for up to 8MW) to the shore.
A study led by IFREMER and Futuribles groupsuggested that up to 200MW of French wave energy deployment could be realised by 2020 (Ministère de l'Écologie,

2009). This report suggests that half of the deployment would be expected within overseas French territorial waters. Combined with the current lack of any national deployment, it is clear that wave energy provides far less potential for regional economic development.

Within the UK survey, wave and tidal technology was compiled however 72% of respondents reported positive future company expectations within this category.
The regional focus of industrial development however within the South West more generally (and again, as a rational borne from the primary resource availability) is much more focussed upon research and development of wave energy technology than Brittany and indeed the rest of England (although slightly less than Scotland). This higher level of expectation was validated by the much higher level of company wave energy experience as well as future regional and company involvement in wet technologies found within the South West survey respondents (see pages 8 and 11 of Vantoch-Wood, 2012c). Unfortunately, the closing of the Regional Development Agencies within England, the more disaggregated (and Scottish-centric perceived) marine innovation support landscape within the UK, as well as the larger financial concerns since the economic crash of 2008 has left many Cornish and South Western stakeholders (from both the questionnaire as well as the follow-up workshop) with strong concerns regarding appropriate funding opportunities. This is also as a result of the different financing regimes of the region discussed further within section 2.3.3 and 2.3.5.

This overall disparity in technology research between Brittany and the South West UK (i.e. one focussing more on wave while the other focuses more on tidal) does not eliminate the opportunities for cross boarder collaboration and learning however there is a clear difference in technology focus and thus opportunities may be more available within cross-cutting and more novel technology fields as discussed further within the Policy Application Report.

2.1.3 Offshore Wind Regional and Company Involvement

Offshore wind is by far the most developed of marine renewable energies and within the UK, has seen large scale deployment with around 1.8GW of capacity currently installed and a further 40GW or so of capacity within the development pipeline (mostly within the design stage of Round 3 deployments). Offshore fixed wind energy is therefore at a far more commercially mature stage than any other marine RE technology. Although none of the current deployment sites are within Cornwall, the South West does include the 1.5GW Bristol Channel site (Atlantic Array) as well as bordering upon the 1.2GW West of Wight (Navitus Bay Wind Park) Round 3 sites that are still at an early development stage. As a result of this, there are likely to be opportunities in Cornwall for supply chain entry for non-geographically constrained commercial organisations, (i.e. not ports etc.) supporting these deployments.

Within the UK, 50% of respondents perceived offshore wind as promising for future company involvement, (however this figure was far lower within the South West region due to the relatively low levels of deployment within this region). Likewise, regional perceptions of future offshore wind involvement for the South West were markedly lower than the national average. Interestingly however, more South West UK companies perceived the future of their company involvement within the offshore wind industry as being more promising than their regional perception for the future of the offshore wind industry showing that there was a clear willingness of regional businesses to seek national (and international) contracts. Over 57% of UK respondents said that they had an international operational catchment.

The Breton Electric Pact within France created a national level agreement to work towards an offshore wind (fixed and floating) deployment target within Brittany of 1GW by 2020, (of a total 6GW offshore wind by 2020 as a goal within the Grenelle I Act). Within France however, only 35% of respondents perceive fixed offshore wind as having positive potential for their company in Brittany (despite some 75% of respondents claiming to have had experience within this industry). Since the waters off Brittany's coast quickly become deep this may complicate the installation of offshore wind farms in certain areas. Nevertheless, within the qualitative workshop discussions it became clear that the offshore fixed wind industry has begun to organize itself.

After announcing that their factories would be located in St Nazaire, Cherbourg and Le Havre, prime contractors are now seeking partnerships in the territories of the Great West (an area including both Brittany and the Pays de la Loire regions).

One of the problems of investing in regional offshore wind projects (for ports and local manufactures etc.) is that the project workload is front heavy and time limited (during construction then ramping down to O&M). By increasing project opportunities across the two regions to both the St Brieuc site, and later the Atlantic Array and Navitus Bay wind farms, companies within both regions could gain a far greater return on skills and capability investment. Many other project specific activities (both ad hoc and permanent) could also be carried out within Britain. The level of activity created thus depends upon implementation choices made by both the consortia of major contractor companies for the St Brieuc farm on the one hand and the adaptability and competitiveness of regional firms on the other. There is however currently an overriding perception that the UK is much further ahead within the commercialisation of fixed offshore wind, both in terms of pure deployment capacity, planning and institutional refinement, industrial development capacity (including supply chain creation) and public acceptability.

There are similar opportunities for supply chain entry within the French region, as with Cornwall and the South West UK (and in comparison to the areas such as the North Sea) both coastal regions see their waters become relatively deep, relatively close to shore. Since the Breton Electric Pact focusses upon deployment within this region specifically this tends to rule out fixed offshore wind in the region. However, there is a general belief that deployment will come from both deep-fixed wind and floating wind technology.

Opinion on offshore wind therefore saw something of a split view between nations from the survey and workshop results. For more generic support companies within the UK (such as offshore electrical and construction works, environmental consultants, support transfer vessels etc.) the offshore wind industry is generally seen as an important technological stepping stone before the ramping up of large scale wave and tidal deployments. It is also much more likely to both pay dividends in the coming years of Round 2 and early Round 3 deployment as well as provide complementary experience from which to diversify into these wet technologies. Although this was also seen to be the case within France (and indeed the potential for technology and project development learning from the fixed wind industry was bought up within the French workshop), it was generally more perceived to be one in which company diversification into was harder as a result of already established supply chains.

2.1.4 Floating Wind

Following on from these respective technologies, floating wind, although clearly less mature is something currently perceive within both regions as having a promising future potential.

Within France 43% of survey respondents perceived the regional opportunities for floating wind within their region as promising (more than any other technology: 40% tidal, 35% fixed wind and 22% wave). Again, this figure was more positively skewed when looking at respondents from the Brittany region. This is not only due to the ambitious deep-water deployment targets for wind energy within the region but also as a result of the high profile floating wind R&D project WINFLO and other offshore wind projects (see page 13 and 14 of Kablan et al., 2012 for further details).

Although there are no directly comparable figures for the UK, (since floating wind was not initially part of the technologies surveyed), the UK has recently launched several large floating wind R&D projects, most prominently the ETI's £25m Offshore Wind Floating System Demonstrator. Although the tension leg platform being used for this project is being designed by US company; Glosten Associates, the turbine itself is intended to utilise French Alstom´s Haliade 150-6MW offshore wind turbine. Additionally, the currently preferred 2016 deployment site for this project is envisioned to be the WaveHub site in Cornwall (Energy Technologies Institute, 2013). Further, one of the UK's prior R&D projects investigating the technical and economic feasibility of floating wind deployments, (namely Project Deepwater) included the participation of French national utility company EDF (Energy Technologies Institute, 2010).

Both regions seem similarly well placed therefore within this technology group due to the early stage of technical maturity, similar scope and level of early R&D work and similar physical geographies of the regions (remote deep-water coastlines). Additionally, expectations of future deep offshore wind deployments within or close to both regions (both within the Atlantic Array and as a result of the as-yet un-decided deployment location of the Breton Electric Pact's 1GW of offshore wind), suggest a high level of future compatibility for collaborative efforts.

2.1.5 Supply Chain Summary

Nationally, it is clear that the UK has a stronger market for all marine renewable technologies - with the possible exception of floating wind - due to its long (if sometimes sporadic) historical pedigree of research. This has resulted in a high number of device developers, research universities and companies that have for the most part moved laterally into the field from complimentary sectors, (mainly offshore hydrocarbons). France by contrast has pushed towards marine renewable energy mainly since their own 'renaissance' of investment and interest that has occurred over the past decade. Nonetheless, it now holds strong research and engineering groups working within the field both nationally and internationally such as; Alstom, AREVA and (more specifically to marine energy), IFREMER, DCNS and EDF, all of whom are members of France Energies Marines. Additionally, the business incentives arising from the potential for 6GW of marine energy deployment by 2020 (as outlined by the Grenelle I Act), support investment and development from all stakeholders (commercial and academic alike) into MRE at a national scale. This is supported further by the forthcoming second call for tenders from the French government currently being run (that involves the deployment of offshore wind farms

off le Tréport and one in between the two islands of Yeu and Noirmoutier), which will themselves enable the deployment of 1GW of capacity. Combining these factors, it is clear that France is planning a large ramping up of its marine energy capabilities in the coming years.

Comparing the regions, there is a distinct variation in technology preference with Cornwall focussing heavily on wave energy led by the presence of the £42m Wave Hub test site while Brittany has the (similarly priced) 2MW Paimpol–Bréhat tidal farm, (of which the first turbine is due for installation in autumn 2013). Likewise, with the exception of minor testing and several companies (within the further east reaches of the South West this includes Pulse Tidal, MCT and the Tidal developers forum) neither region has a strong level of development within the other wet marine technology. One thing the regions have in common is their current interest in floating wind as described in 2.1.4 above. Although this is at a very preliminary stage within Cornwall, the deployment of the £25m Offshore Wind Floating System Demonstrator project at the site Wave Hub by 2015 clearly presents opportunities for regional suppliers and service companies.

These levels of technology and supply chain development and opportunity are broadly summarised graphically within Figure 1 below.

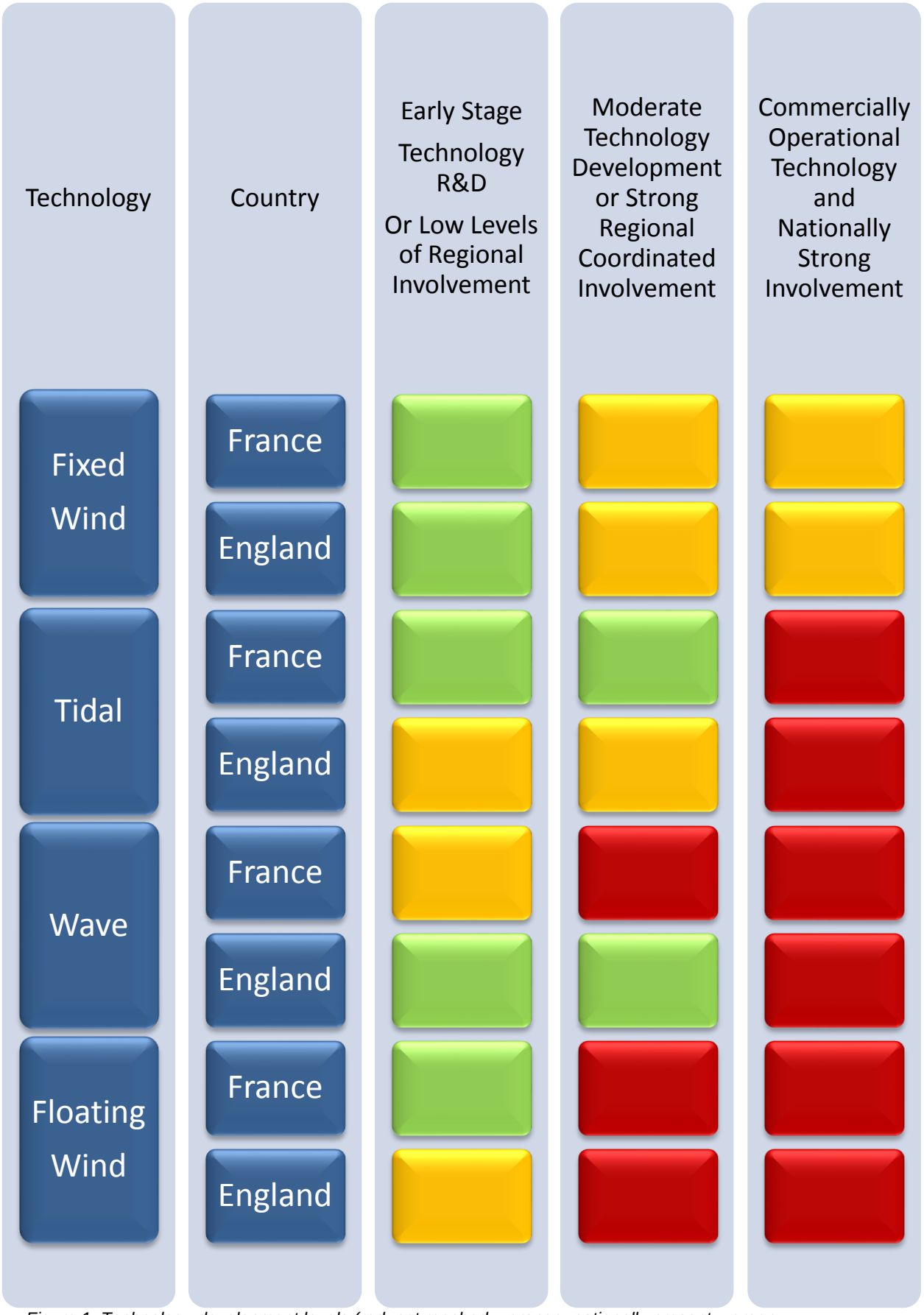

Figure 1: Technology development levels (red: not reached – orange: nationally present – green: regionally present (South West of England/Brittany))

2.2 National Policy and Law

2.2.1 Environmental & Planning Regulations & Laws

Findings from the survey work and workshop relating to environmental planning and regulation laws found some obvious geographical similarities between the two regions. Both regions have (relatively) sparse coastal based population densities, large areas of protected coast, (either SSIs, or other marine protected designations) and there is a high reliance upon tourism within the regions.

As such, it was noted, (within both workshops separately) that there was a higher level of sensitivity to potentially intrusive deployment of new technology that would need to be accounted for within the regions, (particularly in the areas of Cornwall, Devon and Finistère) due to the high amenity value placed upon the natural landscape, (i.e. for tourism, second home owners etc.). Although this may help to favour less visible ´wet´ marine technologies which are often either submerged or surface floating, (as opposed to offshore wind technologies that are more prominently visible from both the coast and to mariners) it also suggests that onshore works must be considered with some sensitivity.

Whether from experience or simply future anticipation, this concern for onshore planning regulations was shown within the UK survey results related to Town and Country Planning laws, (for onshore works) which were rated least appropriate in assisting with the commercialisation of the MRE sector within the UK environmental and planning legislation (22% rating it totally or fairly inappropriate). This was even more evident within the South West where 30% of respondents felt it was particularly inappropriate. This was not the case in Scotland (see page 15 of Vantoch-Wood, 2012c). Higher levels of uncertainty were also reported from survey respondents within regard to both the T&C planning laws and the operation of the Infrastructural Planning Commission (the national public sector body responsible for appraisal and approval of large offshore developments). This is not unexpected due to limited levels of experience, especially for the IPC which only concerns deployments of over 100MW for which there have been very few nationally.

Aside from these findings, the overall UK response regarding existing national environmental and planning regulations and laws were fairly positive, with 64% of all respondents rating all laws as either fairly or totally appropriate. This was especially true for European EIA regulations which were perceived favourably by UK respondents (see figure 11 on page 16 of Vantoch-Wood, 2012c).

Finally, with regards to electricity laws, within the UK only 5% of respondents perceived the Electricity Act 1989 (the primary legislation covering electrical connectivity and operation) as inappropriate. Within France however, 39.5% of respondents said that electricity laws were restrictive.

The last of these findings echoes the overall responses within France which were found to be somewhat less favourable: 56% and 55% of respondents perceived planning and environmental laws as being restrictive respectively. It was generally perceived that French marine spatial planning (MSP) is some way behind the UKs and that the French ‘land urbanism framework’ is also inadequate for the task of planning at sea for a number of reasons. Although French MSP is moving towards a more cohesive policy regards MRE, there is currently no “single point of entry” organisation (such as the MMO within the UK), no clearly defined laws for MSP

beyond the 12 nautical mile limit (i.e. within the EEZ limits) and many see the administrative process as unwieldy (despite the introduction of the Grenelle II Act). Many French respondents saw the refinement of these aspects as being necessity (Kablan, 2013, pp11-12).

One other rationale suggested for the low rating of French environmental and planning laws was due to the overriding 'technocratic culture' present within the MRE stakeholder community within France. This is to say, the predominant sector stakeholders are SME engineering based companies, (such as device developers) who potentially underestimated the regulatory requirements of MSP and lacked the resource of large and dedicated teams required to navigate these laws (unlike for example large consultancy companies). This may be evidently the case within the UK also where device developers were shown to have lower favourability of all environmental planning laws than other stakeholder groups (Vantoch-Wood, 2012c, pp17).

Despite this overall perception of an environmental regulatory advantage within the UK, France does have an active policy of monitoring MRE projects among its environmental consultation stakeholder bodies (such as the Marine protected areas). This is evidenced to some extent by the involvement of Parc naturel marin d'Iroise, (PNMI) as acting project partners within the MERIFIC project. Also, rather than working against marine renewable energy (as large offshore industrial developments) marine nature parks (although keeping a wider neutral perspective upon singular project developments) provide a benefit for project development and, as a part of their broader remit (than simply assessing project planning developments within the park) to promote environmental protection, acknowledge the threat of climate change and the role of renewable energy in mitigating against it. Since the national parks authorities are publicly funded their data is publicly available to assist in the formulation of recommendations to developers, including information on mapping, species habitats, baseline data and human activity. This information assists developers not only to reduce project development costs but also helping to ensure that there are less problems during the consenting process (assuming of course that this is done in a competent manner).

One suggestion in the French stakeholder workshop was that compensation policies were a good way to help mitigate opposition to planned projects from other stakeholders such as fishermen. This and further stakeholder issues will be examined in much greater detail within Work Package 6 of MERiFIC, which is concerned with stakeholder engagement. However since this is an issue of shared concern between the two regions, there may be opportunity for collaborative learning and problem solving within this field.

2.2.1a Environmental & Planning Regulations & Laws Summary

The environmental concerns faced within both regions are similar in terms of a need for high environmental sensitivity. However, there is a generally perceived inadequacy of existing environmental and planning laws reported within these regions (with respect to provision for MRE development rather than environmental protection). This perception, it was suggested within the workshops, may in fact be skewed both by geography and sector, given the high number of engineering focussed SME companies with little planning experience that must navigate them (Vantoch-Wood, 2012b). This is opposed to for example Scottish offshore wind deployments where there are a higher number of large and well experienced engineering companies working to deploy.

The UK is clearly seen as having a more comprehensive and up-to date regulatory environment as a result of the introduction of the MMO and most likely on the tail of extensive offshore planning for marine energy as a result of high levels of offshore wind deployment. Although onshore planning is still seen as the least appropriate legislation, the overall view of environmental and planning regulation was generally more positive.

Within France, the system of MSP is clearly less developed although there is a favourable public sector perspective towards MRE which actively supports developers to plan sustainably within national parks. Other environmental and planning legislation as well as electricity regulations are generally seen less positively.

2.2.2 Innovation Policy

The French system of innovation support is one that applies innovation policy via a nationally coordinated "top down" approach. This model has been typified through the €32bn national Programme of Investment fund, (or PIA, *Programme d'Investissements d'Avenir*). The fund has supported both France Energies Marines (€34 million) as well as the ADEME for Research Demonstration in Energy New Technologies (about €60 million): Marine Energy calls (Kablan et al., 2012). Additionally, supportive funding for the sector has included the large port works within the region including both €160m (for mixed usage including offshore wind) investment into the development of the Port of Brest and a dedicated €60m of investment in tidal technology facilities for the nearby Port of Cherbourg (Bretagne Développement Innovation, 2012). This scale of investment dwarfs almost all UK renewable innovation support programmes, (with the possible exception of DECC's now complete £102m Offshore Wind Capital Grant Scheme) and shows the more Keynesian economic policy (i.e. increasing targeted public spending) that France has shown towards the financial crisis.

The French Environment and Energy Management Agency (ADEME, *Agence de l'Environnement et de la Maîtrise de l'Énergie*) funds the CEI R&D research projects. These funds, awarded upon successful "expressions of interest", are aimed towards stimulating industry to advance technology in later stages of development including demonstration and deployment. They are somewhat equivalent to the UK's Carbon Trust and DECC funding programmes in that they are nationally led ´later stage´ innovation programmes focussing upon commercial application. 80% of French survey respondents approved of the ADEME funding call for tenders system due to the fact that it is the primary French technology push support mechanism (with a fairly wide scope of funding remit) and consists of around €400m. Some French workshop feedback however that suggested the fund was being distributed too cautiously and was not therefore providing an adequate flow of research funding into the sector.

In addition, the French Single Inter-Ministerial Fund (*Fonds Unique Interministériel*, FUI) was considered appropriate by 72% of French workshop respondents. This fund, which focusses upon market innovation within the short to medium term supports R&D collaborative projects (academic – company partnership).

From an industry perspective, survey and workshop respondents suggested that French firms were not particularly pro-active regarding the availability of existing funding. It was mentioned that there was an overriding expectation/perception within French industry that it is the state's "responsibility" to engage with the sector to push forwards marine renewable industrial development goals (Kablan, 2013, pp8).

This is mirrored with EU funding, with many French stakeholders reporting that they were not aware of many of the support options available and that there was a requirement for further promotion of this support. French workshop respondents also suggested that there was a need for EU funding to support greater investment levels in SMEs (Kablan, 2013, pp9).

This overall image is starkly different within the UK (and particularly within Cornwall and the South West region) where the strong market competitive innovation support system, operating under what Mitchell described as the regulatory state paradigm (Mitchell, 2008) is far more bricolage in its support effort, relying upon an array of disaggregated non-departmental public bodies (NDPBs) to coordinate innovation, renewable energy and business support between themselves.

The UK marine energy sector is strongly driven through industrial and academic collaborations competitively tendering for funds from these NDPBs and directing the public sector and government (through reactive policy measures) along with it. A clear difference in who is ¨leading" the commercialisation of MRE technologies is therefore evident. Within the UK, the private sector is both expected to contribute the bulk of investment and work to commercialise devices while government ambition is expressed through the setting of deployment targets and policies to incentivise industry towards reaching this goal, (it is then seen as the role of industry to deliver these targets). Although within France there is strong competition for French funding opportunities, the public sector provides both a fiscal and sector development lead with the onus upon them not to "fail to deploy". In addition, French workshop attendees also noted that collaborative approaches to research and work should be sought out as soon as public funding was is received. This difference in findings may be a product of the fact that France can be considered a coordinated market economy (i.e. promotes strategic interactions and collaborations among companies as well as encourages knowledge sharing) as opposed to the UK which is a liberal market economy (i.e. promotes competition and hierarchal relations among companies and generally supports an 'anti-trust' position) (For more information see section 2.1.1a of Vantoch-Wood, 2012a, and Hall and Soskice, 2001).

In this respect there is a higher requirement of trust within the UK between industry and government to ensure that correct and stable support systems will be in place to allow industry to take the initiative and invest. Some would argue that this is not always present and workshop attendees identified a "catch 22" scenario that has historically been present within the UK MRE sector: device developers require both private and public sector funding support. They therefore *oversell* the performance and readiness of their technology in order to obtain private investment. This suggests to government that the correct (reactive) target of funding support for the sector is at a *higher stage of technology readiness* than is actually the case, (e.g. supporting full scale deployments rather than scale models etc.). This in turn leads to funding being un-accessed (since developers have not reached milestone requirements) and results in device developers relying more on private finance. This in turn leads them to oversell their technology performance level (Vantoch-Wood, 2012b, pp16). This has occurred before with UK support policies such as the expired £52m Marine Renewable Demonstration Fund (MRDF) and the banded Renewables Obligation.

Within the UK, the Carbon Trust was one of the most highly approved of innovation funding bodies (with similar approval ratings to the French ADEME) showing that this type of support, nationally led, commercially applied R&D funding (for various stages of technology maturity) is perceived more positively within both countries. This is in contrast to other types of support available within both countries (i.e. Regional/European) (see Figure 14 on page 20 of Vantoch-Wood, 2012c). Regional innovation support within the UK was seen as lacking since the remit of regional funding was seen as almost always for short term job and regional economic support creation, (whereas technology innovation support often has 10+ year payback periods and may be more nationally realised than any one particular region). Some workshop respondents suggested that this lack of regional and bespoke innovation support was itself one of the major factors holding up the commercialisation process of the MRE industry.

2.2.2a Innovation Policy Summary

Generally speaking, national, later stage (commercially applied) innovation support was perceived as better within both regions. Notably however, this support was specifically devolved down from a national level within France whereas within the UK, it is coordinated nationally through a range of innovation support bodies who individually focus upon different levels of technology maturity, (i.e. DECC, the Carbon Trust, the ETI and the TSB). European support innovation was often not very well understood; there was a perception within the UK that regional 'innovation´ support was not readily available since the remit of local governance (since the devolvement of the RDAs) has been focussed more on short term job and economic opportunity creation.

A clear distinction between the countries was also identified around the issue of ´who was leading´, as regards both innovation and renewable energy policy. Within the UK, catalysing innovation and deployment is seen to be the role of industry and academic collaboration while government sets the goals and long term support regime under which the industry operates. It is therefore necessary that the state provides a strong, stable and predictable policy environment from which industry can confidently invest in. This in turn requires higher levels of trust between industry and government (since it is industry who both are providing the short term innovation and early deployment financing and investment of time/research in which risks are high).

Within France, although there is also strong competition for public funding, failure of deployment/innovation is seen as a failure of policy and governance rather than industry. In this respect, there is a burden on government to proactively ensure that industry is being directed and guided to achieve innovation/deployment targets.

2.2.3 Renewable Energy Policy

Many of the ´technology push´ renewable energy policy problems faced (and identified within the questionnaires and workshops) by both subject regions are identified within the above innovation policy section and cross between immature/early stage market renewable energy technology push support policies and future market technology innovation support policy. The more ´market pull´ MRE technology support mechanisms however are discussed further below:

The two principle systems of RE support within England and France are the Renewables Obligation (RO) and the Call for Tenders system respectively. These are very different operating systems. The RO works through a 'green certificate' system in which electricity suppliers have the obligation to submit green certificates corresponding to a percentage of their overall electricity sales for the year. This effectively means that the supply of electricity is separated from the requirement for renewable energy, since any electricity supplier can simply purchase certificates to submit with their electricity regardless of their generation profile. The RO has been criticised within academia for exposing investors to higher risk (than alternative forms such as feed-in-tariffs) and thus failing to incentivise smaller and independent stakeholders (Mitchell et al., 2006, Woodman and Mitchell, 2011). It has also been criticised for failing to focus on innovation system capacity building (i.e. skills, knowledge development) and thus failing to assist early stage technologies along the innovation chain (where both costs and risks are higher than can be accounted for through the current RO as a market-pull mechanism) (Foxon and Pearson, 2007). By contrast, the French call for tenders asks companies to bid for the contracts to build and supply renewable energy into the grid at a certain price. Assuming quality assurance checks are a given, this would in most cases simply go to the lowest bidder.

French questionnaire respondents stated that although the tender system was appropriate for industrial development without a 'price notion' it only supported mature technologies and thus was not appropriate or relevant for the MRE sector yet (Kablan, 2012, pp16). It was also mentioned by some workshop attendees that the RO mechanism allows for faster levels of deployment (presumably since tendering rounds and feedback are not required). Overall though, the French call for tenders system was approved of by 75% of stakeholders since respondents reported that the policy meant low risk, was "long term" focussed and gave developers a more secure framework to operate within.

Within the UK, the RO mechanism was (perhaps surprisingly) also approved of in general among stakeholders (with 73% of questionnaire respondents rating all RE policies positively while 86% rated the RO mechanism positively). This approval was weighted more within Scotland where the RO at the time of survey provided 5ROC/MWh rather than just 2 as was the case within the UK, (although this has now changed).

One identifiable concern however was that the regular rate at which support mechanisms were altered and replaced proved inhibitive since it showed a lack of both persistence and predictability within the policy support environment, (two out of the three prerequisites highlighted as important by Jacobsson *et al.*, the other being *powerful* (Jacobsson and Bergek, 2004). The literature suggests that this tends to imply higher risk for a number of reasons and this drives up capital cost, thus reducing the attractiveness of the technology as an investment opportunity and inhibiting deployment.

2.3 Regional Factor Conditions

2.3.1 Regional Human Resources

Ensuring an adequate supply of appropriate human resources was something that was hard to gauge within the UK as some respondents suggested that as the market develops and money begins to enter into the sector, people will naturally diversify into it. Others however argued that the opposite was true; that without enough skilled

personnel, the industry would not be able to develop to a commercial level. From the survey result, nationally 56% of respondents answered that there were either good or excellent human resources within their specific region. Outside of the South West, none of the respondents perceived their human resources to be below average. Within the South West however 25% suggested that there were poor or terrible human resources within the region (Vantoch-Wood, 2012c).

The general perspective within the UK workshop was that there were three broad reasons why HR recruiting was problematic within the South West, (and particularly Cornwall and more remote regions such as the Isles of Scilly)

Firstly, one point agreed on by UK workshop attendees was that the South West had a harder time recruiting, relocation and (importantly) retaining suitably skilled workers due to the more isolated nature of the area and potentially also higher relocation fees. Additionally, there was a perception that greater MRE industry opportunities were available within Scotland for those with the experience (both in renewables and other marine engineering occupations such as the hydrocarbon sector).

Secondly, the sporadic, (if at all present) availability of work in the MRE sector meant that for companies who were either wholly dedicated to renewables (such as device developers or some consultancies) as well as for SME companies employing staff as dedicated workers within the MRE sector, job security and thus retention within this field deterred potential employees and employer investment into skilled personnel.

Finally, there was a general acknowledgement that there was nationally an overriding skills shortage within the fields which were themselves required for the MRE sector. Specifically this includes skilled marine engineers and offshore experienced project managers. This therefore compounded the problems of recruitment and retention.

These problems are shown graphically in below (Vantoch-Wood, 2012b, pp14 for further details):

Figure 2: Three way problems of human resource recruitment within the South West of England

Although this makes it harder for dedicated MRE companies to work within the South West, it was suggested that there is still the opportunity for companies to diversify

laterally into the sector from complementary trades (such as shipbuilding, diving etc.) to assist in at least partially addressing this. It was also mentioned that building the skills capacity could provide for export market potential to mitigate the intermittency of demand.

Interestingly, human resources within France were not bought up as an impending problem (despite Brittany and Finistère having a lower population density than the South West and Cornwall respectively). French survey respondents suggested simply that as the industry does expand, this may become a future concern. Engineering and project management skills were the most highly needed specialisms to support the growth of the MRE sector followed by port jobs and finally operational workforce (see Figure 12 Kablan, 2012, pp18).

2.3.2 Regional Knowledge Resources

72% of French questionnaire respondents said that there were good or excellent university research teams within their region. Within the UK (polled under 'regional knowledge resources') there was a similar response, (70%) with Scotland being slightly more favourable at 80%.

Both the South West and Brittany region have institutes that run several of their own masters' courses in Marine Renewable Energy. The primary South West courses being at the University of Exeter (who run BSc and M.Eng undergraduate programmes in Renewable Energy with a strong focus on marine renewable energy) and University of Plymouth (who run a BEng in Marine Technology as well as a dedicated MSc in Marine Renewable Energy). Other institutes include Cornwall Collage and the Falmouth Marine School who also offer complementary courses related to marine energy.

Within Brittany there are several institutes that run marine energy specific courses (or ones in which marine energy modules can be taken) including the University of Brittany and Ensta Bretagne (the French state graduate and post graduate engineering research institute), based in Brest.

Other than the survey level responses, the availability of higher level courses were not mentioned and given the overall positive rating, it can be surmised that there is adequate provision for MRE graduates within the regions.

2.3.3 Regional Capital Resources

Although there was a relatively low response rate (60%), 30% of French stakeholders who expressed an opinion approved of the regional investment funding system. Although this may seem low, it was far higher than within the UK where only 17% of respondents approved of the regional capital resource availability. The rationale for this response rate is primarily due to the more decentralised system of governance and ´top down´ geographic support that is present within France, (discussed further within section 2.2.2 related to innovation policy above). Additionally (and most likely as a result of their higher levels of financial capability) the overall mandate of regional governance within France has focussed upon a wider range of socio-economic factors than has occurred within the UK since the abolition of the RDAs.

French workshop attendees noted that regional devolution has helped France greatly and Brittany has undertaken strongly proactive policies to anticipate the changes in an emerging MRE sector. This has included financial mobilisation (delegated by the State as part of the decentralisation process) in the fields of: economic development, land-use planning, integrated coastal zone management, occupational training and secondary education. Central government funding has also often been distributed down through regional governance bodies as opposed to ´subject specific´ national NDPBs as is the case within the UK.

Within the UK, the primary role of regional governance bodies (i.e. primarily councils) has been to provide support financing for more immediate and short term goals such as job creation. What funding does emerge at the regional level was also criticised for being 'erratic' (with one respondent suggesting that regional bodies tended to support what was 'fashionable' at the time rather than having a strong long-term strategy). The UK also lacked the devolved authority to assist with other key regional issues of support such as regulatory or planning support.

Since the abolition of the RDAs, the Government has established the (private-sector led) Local Enterprise Partnerships (LEPs) one of which covers Cornwall and the Isles of Scilly. The primary sources of national funding available to LEPs are the Regional Growth Fund (RGF) and the Growing Places Fund. Additionally, EU Convergence funding is provided to Cornwall and the Isles of Scilly divided into the EU Regional Development and Structural Funds (ERDF and ESF). These European funds are considerable investment sums (£415m invested in Cornwall between 2007 and 2013) and have worked to promote four specific goals within the region: Innovation research and development, enterprise and innovation, transformational infrastructure, and the unlocking of economic potential (Cornwall Council, 2013).

Although the 2007-2013 round is now ending, its legacy of support has included large transport projects within the region (road and air projects), broadband internet roll-out, innovation centres, investment within the Combined Universities of Cornwall (CUC), at which the Universities of Falmouth and Exeter have campuses and the Wave Hub project (Cornwall and the Isles of Scilly LEP, 2013). Although this funding has been long-term focussed (with regards to economic development) it has tended towards infrastructural building projects rather than direct technology innovation support. Although Cornwall's economy has grown significantly as a result of this investment, the regional GDP still falls just below 75% of EU average which has enabled the region to secure convergence funding for 2014-2020 (with the amount unconfirmed at time of writing).

The RGF is a competitive bid fund held in rounds by central government. Although SMEs can apply directly for RGF funding, Cornwall LEP has secured £12m of funding which is intended as leverage finance to facilitate economic development goals within the region. Marine renewable energy is considered among these and the Cornwall LEP's Economic Growth Strategy for 2012-2020 (unpublished at the time of the workshop) states that the LEP wants to see the region's reputation as 'green and marine' grow while aiming to attract investment into the sector (Cornwall and the Isles of Scilly LEP, 2012). Cornwall has also been awarded £4.2m under the Growing Places Fund however its remit is limited primarily to short term infrastructural needs (with immediate economic returns) and as a "revolving fund" it is expected to be paid back with similar interest to current market loans (Communities and Local Government, 2012).

Neither of these funds were fully defined at the time of the UK workshop and attendees stated that there are as yet, strong uncertainties and concerns as to

mechanics of LEPs operation, governance and funding as well as the general changing of governance system overall. Additionally, there was a (possibly unfounded) concern that LEPs would primarily favour and support larger institutions (universities and utility companies for example). One positive note in relation to this was that, at least with public sector funding, workshop attendees assumed there would finally be some overall savings to businesses that engaged with regional governance, specifically since most regional funding is provided as leverage funding for business capacity development.

2.3.4 Regional Infrastructural Conditions

There is a clear regional preference regarding the two wet technologies, with Brittany favouring tidal technologies and the South West favouring wave energy technologies in keeping with their respective natural resources. Unsurprisingly therefore, the main specific fixed and planned future infrastructural assets within the regions broadly mirror these technology preferences.

The advanced maturity of tidal technology led UK stakeholders to state that the urgency of deployment within the South West is more limited until more commercially ready devices are refined. Currently however, using infrastructural conditions as the key proxy indicator, 49% of UK questionnaire respondents considered their regional infrastructural conditions to be good or excellent while only 17% rated negatively. This finding was slightly skewed in favour of Scotland where none of the respondents rated infrastructural conditions negatively.

France, (although some way behind in its infrastructural development) has a strong future development plan including the recently announced the €60 million investment for adaptation of the Cherbourg port specifically to facilitate the manufacturing and development of tidal devices. Additionally there is a more broadly invested €200m of dedicated investment into the development of Brest Port for both increased cargo capacity, the specific facilitation of offshore wind deployment, (in keeping with the national deployment goals for offshore wind) and for the deployment of other sub-sea tidal devices. French survey respondents rated their regional port and infrastructural facilities roughly similar to those of the UK with 49% of respondents rating good or above (For more information on research and test facilities see MERIFIC, 2012).

As mentioned in section 2.2.1, the overarching UK valuation of landscape and tourism was cited by attendees as enforcing a strong requirement for ‘sympathetic development’ to alleviate what people considered to be the fear of deterring tourism as a broader concern for future deployment.

As a final point on regional infrastructural conditions, many of the different infrastructural elements which make up the whole ‘package’ of resources available to each region (such as the DMAC/FABTEST/SWMTF.in Cornwall) are cross-technology facilities and thus support the opportunity for creating a supportive wider profile of assets between the two regions that both assist in developing the different industrial focusses of the region, (i.e. using the DMAC facility within Cornwall for tidal technology research within France) and yet are non-competing (since there is limited tidal deployment opportunity within Cornwall). These options will be discussed further within the document that will follow this one; the Combined Policy Applications Report, which will draw together all the work carried out within the policy side of the Merific project.

2.3.5 Regional Business and Renewable Energy Support

Within both Cornwall and the Finistère as well as the South West UK and Brittany, although there are clearly port authorities, universities and large consultancies, the predominant company size involved within the MRE sector are SMEs, and the respondents to both the questionnaires and workshops reflected this. These companies tended to be specialist service/consultancy providers, (e.g. specialist divers or high voltage electrical works) who saw their market as international (or at the least, national).

Regional business support within the South West was generally considered average (45%) however there was a fairly wide spread of opinions, (with a further 22.5% and 15% rating it positively and negatively respectively). Within Scotland there was a strong level if uncertainty as to the business support availability options (4 out of 5 respondents from this region rating it as 'unsure'). There was however a higher overall rating for regional renewable energy specific support, with 35% rating it positively with most others rating it either 'average' or 'not sure'.

The workshop feedback makes apparent the overriding business constraints for these companies were not so much related to their specialist trade but were somewhat more generic within both regions. The primary needs of these SMEs included assistance with the 'day-to-day' business activities including: business planning, accountancy, management, IT support and administration. This finding echoes one of the findings from the recent DECC commissioned 'Wave and Tidal investor survey' in which respondents cited a 'lack of strong management teams' as one issue that affected the attractiveness of the sector from an investor perspective (Kreab Gavin Anderson, 2010). There was also some feedback suggesting that further investment for business growth and support with offshore planning would be of help to some specialist companies.

Cornwall Marine Network, one business support organisation who provides these services, stated in the SW workshop that these were generic cross-sector business support skills that they had found were required for all their supported SME businesses within the region, 70% or so of which were active within the leisure industry (see Vantoch-Wood, 2012b, pp20).

One of the key criticisms of the South West's regional business support was the lack of 'one-stop shop' cohesion between the different asset/infrastructure holders. This lack of client-focussed access to the SW - and specifically within Cornwall - was highlighted as a lost opportunity to create a stronger unified brand image and ease potential investor's entry into the region. Although this is something that respondents felt was the natural role of the SWMEP and (within Falmouth) the Marine Offshore Renewables (MOR) group, there was general opinion that the lack of funding for these initiatives has left them unable to fulfil this role. It was also suggested that the SWMEP should provide more MRE specific networking activities.

The additional dilemma identified for the recently formed SWMEP was that it could suffer from being too broad as a representation body: This statement was given with an acknowledgement that there is a dilemma of representation for Cornwall and regional businesses in general, while the wider South West region, as the largest geographic regions within the UK, has a highly diverse profile of both opportunities and needs. Bristol within the furthest north east corner of the region being a relatively large city of 430,000, (around 100,000 less than the whole of Cornwall), is over

300km from the furthest Cornish town of Penzance. The opportunities therefore for both renewable energy deployments (based upon natural resources and industrial presence) as well as support and infrastructure requirements (e.g. transport facilities, electrical infrastructure) are seen as very different. It was suggested that a representative body with a narrower geographical focus could provide more targeted and bespoke support for the western part of the region than one with such a wide scope of representation. The acknowledged problem with this arrangement would be that, as a representation body, it would have a far stronger political voice (with respect to lobbying power) if it were to represent a larger geographical section of stakeholders (see Vantoch-Wood, 2012b, pp17, 21).

Due to the Breton Electric Pact within France, as well as the stronger devolved system of governance, there is a greater sense of ownership for electricity supply sourcing within the region despite the relatively short timeframe for capacity goals of 2020 (see page 9 of Kablan et al., 2012 for further details). Although greater support for SMEs was also mentioned within the French stakeholder workshop, a number of other points specific to the French situation were also raised as being more significant: Firstly, there was a perception that there should be greater promotion of discussion and collaboration between the various research laboratories within the region to try and optimise activity. Secondly, it was noted that an important cornerstone of project development was acquiring insurance. This is seen as a prerequisite for attracting investment and financial support and as such, assistance within this field would be beneficial (Kablan, 2013, pp11-12).

2.3.6 Regionally Specific Networking and Sector Development News

Around half of UK questionnaire respondents (52%) had a positive perception of the networking events related to their marine renewable activities within the sector. As stated within section 2.3.5 above however, UK workshop attendees stated that there should be a higher number of local MRE specific networking events. Due to the number of SMEs involved and the Cornish specific profile of the workshop attendees, it was suggested that these could be done in a less formal ‘business breakfast’ style so as to allow attendees to attend while saving business working hours.

This was in contrast to the French workshop, where there was a feeling that overall, there were too many workshop events occurring in relation to the amount of concrete activity that was happening within the field. There was however a general belief that a collaborative approach to research and work should be sought when possible from publicly funded projects. As mentioned in section 2.3.5, there was also seen as a requirement to improve inter-laboratory communications within the region (this does not seem to be the case within the UK though it may be due to the low number of public and independent laboratories that have a focus on MRE within the region).

Finally, with regards to the value of different networking opportunities, respondents from the French workshop identified an industrial necessity to provide feedback and experience sharing from the more mature fixed wind industry to other MREs to prevent unforeseen difficulties of scaling up deployment.

3. Conclusions

This document has attempted to compare and contrast the findings from both regional studies so as to highlight opportunities for potential future collaborative work

between them. Although specifically identifiable opportunities for such collaboration are left to the final deliverable within this work package, the below section shall highlight some of these obvious comparative findings and therefore give indicative support for future collaboration opportunities explicitly discussed within the final report (se Kablan, 2013, pp11-12).

It is clear on review that there are wide political framework and operational differences between the two regions as well as multiple geographic non-congruent scales of governance and industrial collaboration within the regions that makes direct comparison between the two regions something more of a heuristic operation. With this said, there are some clear similarities with regards to geographic and demographic aspects such as population densities and business types engaged within the MRE sector etc. It was found that the requirements and stakeholder perceptions of these similarities matched well in many cases. For example; there were strong concerns for stakeholders within both regions regarding the anticipated difficulties for onshore planning, due to the high amenity value placed on the landscape within the two regions. For the (predominantly SME) businesses, there was a vocal requirement within both regions for more generalised business and operational support (in areas such as IT, accounting, administration and logistical planning).

Following on from directly similar attributes/needs, there were suggestions from one region that could potentially be transposed as a beneficial suggestion for the other. One suggestion, following on from the requirement for additional SME business support, was the proposed value of having some form of information exchange mechanism from those working within the offshore (fixed) wind industry, to try and help maximise business involvement opportunities as well as anticipate and avoid/mitigate potential project development or business engagement pitfalls that could potentially occur within the emerging sector.

Additionally, there are similar approval ratings for certain themes taken directly from the questionnaires from which overriding similarities can be drawn. For example, in both France and the UK, the main national RE support mechanism as well as the primary later stage technology innovation support mechanisms (i.e. the RO/Call for Tenders system and DECC, CT/ADEME support) were rated highly by all stakeholders. Although the operational mechanics within both countries for these policies are very different, it suggests that there is a higher level of overall approval for the process by which the latter stage commercialisation assistance is being provided. This in turn could suggest that there is either a stronger industry appetite for this type of support within both regions or indeed that there is something potentially problematic with earlier stage support financing. This finding is certainly interesting with respect to the UK given both the negative perceptions of the RO to promote new RE technologies among academia (discussed further within section 2.2.3) as well as the practical lack of commercially developed (i.e. based on RO revenue) projects that UK marine energy sector (and specifically wet technologies) has delivered to date.

Generally, what separates the two regions across the many policy fields (public sector support, business attitudes, infrastructural assets, governance framework etc.) is perhaps striking. These differences may well also be more informative in providing insight into what *is* (or *has*) worked within a region as well as how opportunities for collaborative research/development/learning could be operationalized and what the practical limitations for this collaboration may be.

The French political system of innovation, and RE support more generally, was considered to be 'top down' and well-structured by respondents, (as well as generally far better financed). The primary French regions (around a similar size to the nine English regions) are given guidance lines and financially devolved responsibility (somewhat similar to the now defunct UK RDAs but with more autonomy and funding). These regions work to develop and adapt all aspects within the region to support MRE from education and skills, early stage innovation support and regional spatial planning. This top-down funding has also been focussed upon key public-private partnerships (such as France Energies Marines and Pôle Mer Bretagne) This has resulted in the French system being much more state led, with direct government engagement in local RE capacity targets and strongly proactive, public sector promotion of the MRE sector (as is the case with French national parks for example).

Regarding industrial development policy, it is more generally perceived as the government's 'responsibility' to realise MRE ambitions and thus is again, public sector led in attempting to develop test and demonstration projects.

There is therefore a strong sense of coordinated regional activity focussing upon optimisation of regional opportunities and looking at all levels of technology maturity within that region. It should be noted however that there is a strong level of competitive tendering for public sector research contracts.

France is also considered a 'coordinated market economy' with a stronger strategic and collaborative approach towards commercial development and R&D (both nationally and regionally) (see Hall and Soskice, 2001). This was shown to be apparent within both the questionnaire findings and the stakeholder workshop where French stakeholders, despite suggesting that there was too many 'networking' activities in relation to the amount of actual industry activity occurring, suggested that stronger research collaboration (particularly between research laboratories) was required.

The goal of realising UK regional marine energy capacity targets within England (and especially within the South West and Cornwall) is led much more by industry. This is done through a competitive search for commercial opportunities and limited public sector funding awards (with aspirations based upon central government doctrine). There is an acknowledgement within the SW industry that collaborative representation and 'branding' is essential to assist in both attracting development as well as supporting public investment opportunities unfortunately there is also perceived to be a lack of funding available for these ambitions (specifically with regards to the remits of the SWMEP who are the strongest contender for this unifying role).

Nationally, the modus operandi for innovation support is through a wide range of both departmental and non-departmental public bodies (NDPBs) that each support different (although somewhat overlapping) stages of technology innovation. These range from early stage concept/R&D work (through the various UK research councils) through to full scale commercial device deployment (through DECC).
Additionally, responsibilities for skills and labour, business support and regional economic support are also handled by separate (and national in all but the regional economic support) bodies. The goal of this structure is to provide a fertile innovation support environment at the national level where entrepreneurial innovators approach the different NDPBs for support at different lateral levels of technology maturity.

Lack of centralised MRE support coordination has been criticised and it is hoped that the recent establishment of the Low Carbon Innovation Coordination Group may

assist this however the effectiveness of this is still to be seen. Somewhat as a side note to this (although clearly relevant in relation to project development opportunities and competition), based on the survey findings, it is clear that Scotland is considered by UK stakeholders to have the advantage across a range of factors related to MRE development including regional innovation support, infrastructural factors, HR availabilities and indeed planning.

The exception to this top-down structure verses lateral bricolage approach to public sector support occurs within the marine environmental and planning regulation. Here the UK, although considered still to be somewhat overly onerous from the perspectives of many stakeholders, has the MMO which coordinates almost all MSP, with exception of hydrocarbon and military aspects. This compares well with the French equivalent where, stakeholders reportedly suffered from a non-cohesive, overly represented and non-comprehensive (in that it does not currently cover territories outside of the 12nm territorial waters) marine spatial planning system.

Provided below is a traffic light summary of perceived performance and appropriateness for a wide range of policy factors that affect the two regions within the study. Clearly, stakeholder perceptions and approval of the various policy fields shown is more complex than simple ‘good/moderate/bad’ ratings and there is usually a narrative of understanding that is the summary provided. For example; ‘orange’ rated fields may have some very good aspects counteracted by poorly perceived elements or simply may be considered of average performance all-round.

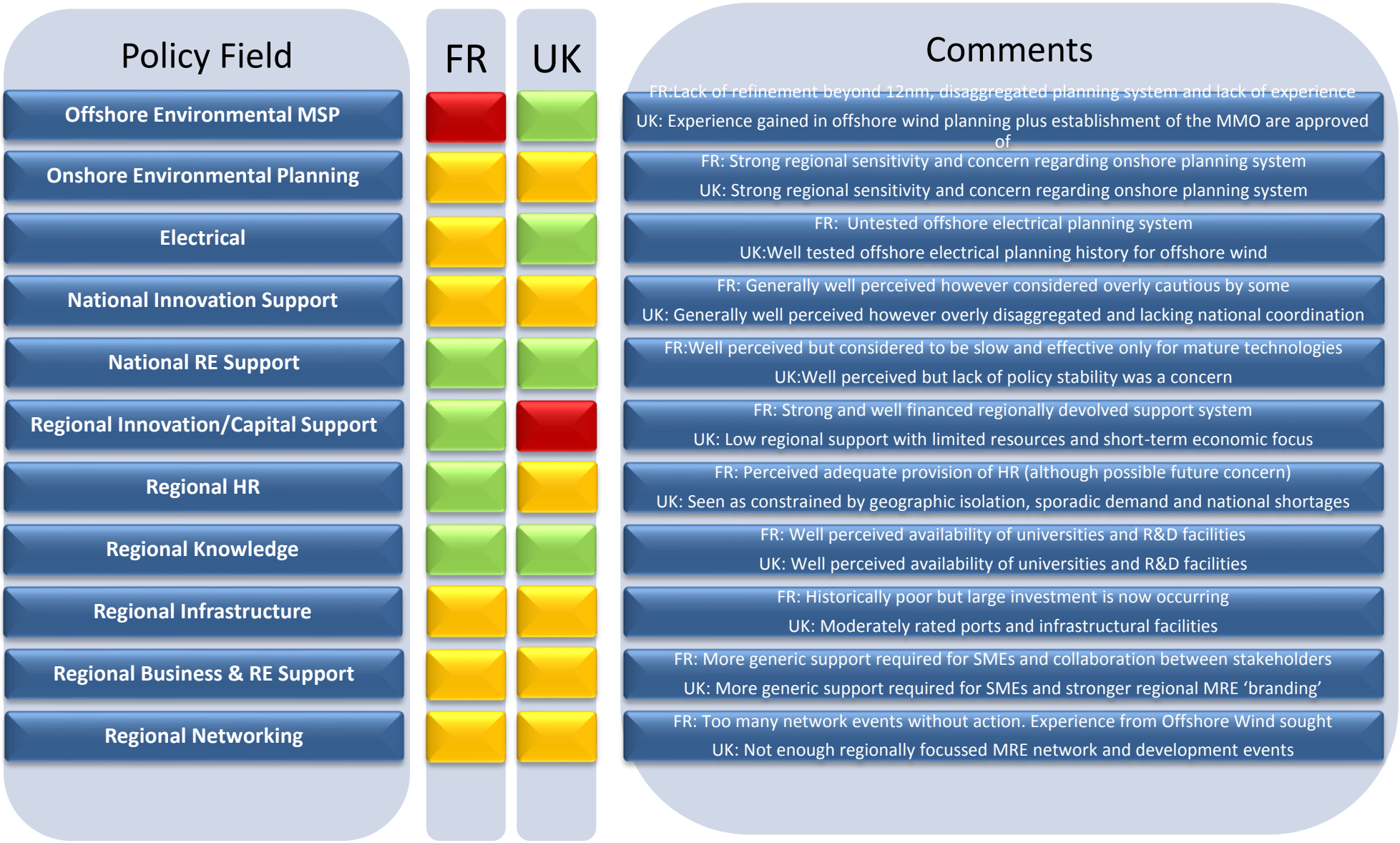

Figure 3: Summative findings from the comparison report

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