A COORDINATED AGENDA FOR MARINE, ENVIRONMENT AND RURAL AFFAIRS SCIENCE (CAMERAS) (2011-2016)

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INTRODUCTION

The Scottish Salmon Producers' Organisation (SSPO) is pleased to respond to this consultation on behalf of Scotland's salmon farmers in mainland Scotland, Orkney, Shetland and the Western Isles.

The salmon farming industry is a major contributor to the Scottish rural economy and a key player in Scotland's food industry, accounting for approaching 40% of Scottish food exports. The industry is centred on the north-west coast and islands where the high quality marine environment meets the requirements for the industry's successful operation. Scottish Farmed Salmon has been awarded EU PGI status, marking its quality and distinctive origins. SSPO members account for some 95% of all salmon produced in Scotland, so in quantitative terms SSPO provides the collective voice of the industry.

CONTEXT

As the representative industry body for Scottish salmon SSPO has specific interests in the science relating to marine and freshwater resources, to environmental science, to food production and to related policy matters. However, as a major employer in many of Scotland's more remote rural areas SSPO members also have a major role and deep interest in Scotland's rural policies.

OVERVIEW OF THE CONSULTATION PAPER

There are some aspects of the Coordinated Agenda for Marine, Environment and Rural Affairs Science (CAMERAS) (2011-2016) of which we are very supportive, but there are other aspects about which we have substantial concern. On balance, our view is that the Coordinated Agenda will not play a key role in achieving the single purpose of the Scottish Government – that is '*creating a more successful country, with opportunities for all Scotland to flourish, through increasing sustainable economic growth'.* Rather, we think that for many stakeholders, the Coordinated Agenda will appear rather incidental to the government's single purpose and lacking the sense of Scottish ambition and opportunity that the Government has been seeking to create.

On the positive side, we strongly endorse the conceptual approach of planning the work of the MERA family on a more coordinated and better integrated basis and of presenting the MERA agencies and the MRPs as a national research and science resource with potential capability for addressing the main purpose of Government, working with the Universities where joint initiatives will strengthen the resource base.

On the negative side, we are greatly disappointed that the primary focus of the Coordinated Agenda is on the contribution of research and science to the government's internalised policy development and regulatory framework and that there is an absence of connection (or much recognition of the need for connection) to ensure the effective contribution of research and science to the development of Scottish industries and businesses. It is these industries and businesses which will provide the drivers for sustainable economic growth in Scotland. Furthermore, and particularly in the context of Scotland's food production sector, primary producers and processors will clearly be expected to play a vital role in the delivery of policy on the ground and it is difficult to understand why industry has not been asked to contribute in a material way to the formation of policy, other than through being asked to contribute thoughts after much of the fundamental ground work has already been done.

In our view, the consultation document has a major omission in that it fails to address the need for a close link between the Coordinated Agenda and the key sectors of the Scottish economy highlighted in the Government's Economic Strategy. Some such linkages may occur incidentally as the Agenda is rolled out, particularly through the Main Research Providers (MRPs), which are more industry-aware than the government agencies. However, the Coordinated Agenda does not provide the same sharp focus and clear sense of purpose for research and science as does the Government's own well-articulated single purpose agenda. We believe that this represents a huge missed opportunity.

It is not our role, nor have we been able to devote the time and resources, to fully consider the whole of the wider research and science requirements of the Scottish economy. However, we feel that in principle it is possible to define about six high level issues (HLI) where the application of research and scientific knowledge is going to be crucial over the next 20 years. When combined with the government's Wealthier and Fairer; Smarter; Healthier; Safer and Stronger; and Greener objectives these HLI could provide a matrix diagram for each of Scotland's identified key sectors for economic development i.e. Creative Industries; Energy; Financial and Business Services; Food and Drink; Life Sciences; and Tourism. This seems to us a good starting point for setting out the needs for the Coordinated Agenda; it would help to identify where Scotland has true scientific strength; it would serve as a basis for a gap analysis; and it would highlight areas where the present science system needs to be further developed and reshaped to meet the challenges that lie ahead.

No doubt, views on the six HLI will vary amongst different stakeholder groups – and there might be a good case for bringing a group of informed

stakeholders together in a seminar to explore the range of views that exists. From our perception, it might be discovered that there is a surprising degree of consensus. Our tentative list of six HLI would probably include: food supply and security; sustainable use of Scotland's natural resources; energy supply and use; impact of global environment; development of rural communities; and scientific innovation and knowledge exchange (including education and training).

CONSULTATION QUESTIONS

Our responses to the specific consultations questions are given in the numbered sections that follow. Our responses are inevitably coloured by our own particular interests and experiences and should be interpreted in that light. However, in the spirit of the consultation, we have also sought to take a wider view, on the basis that we believe that the Scottish economy needs to be successful across a range of industry sectors, including our own.

Headline Themes

1. Do you agree that the two broad categories of "Local Responses to Global Change" and "Optimising the Potential of Scotland's Natural Assets" are helpful in providing an overlying structure to the Co-ordinated Agenda?

Not really. In the way that they are expressed we find neither of the themes particularly effective in providing a proper focus for the Coordinated Agenda.

(a) Firstly, 'Local responses to Global Change' begs the question of what is meant by local – does this mean Scottish or is the agenda focused on village-level activity. Secondly, 'responding' seems to imply being defensive and reactive to events elsewhere. Our view is that the vision in the Coordinated Agenda needs to be proactive and forward looking. We would therefore favour a wording such as 'Identifying and Grasping the Opportunities of Global Change'.

(b) We are equally uncertain what the phrase 'Optimising the Potential of Scotland's Natural Assets' means. We would prefer greater clarity – we think 'Optimising the (Economic, Social and Environmental) Benefits of Scotland's Natural Assets' is what is probably intended. Certainly we would prefer that type of clear and precise wording.

2. Are the descriptions of these set out in Section 3 (and Annex 3) comprehensive?

No, and largely because of the reasons already been expressed in our overview comments (above). The descriptions lack clarity and a positive sense of purpose – and they have a significant disconnection with the main purpose of the Government. 'Local responses to Global Change' seems to reflect a vision of a hesitant and inward looking country struggling to adapt to being buffeted by global factors beyond its control. We would favour a much

greater sense of ambition and drive for innovation. Likewise, 'Optimising the Potential of Scotland's Assets' seems almost entirely focused on the limited vision of preserving the status quo. We believe that there is substantial opportunity for creating greater benefits from Scotland's natural assets, without putting them at ecological or environmental risk – the Coordinated Agenda should be focusing on supporting that objective.

3. Do these cover the major policy challenges where science can contribute as you see them?

No. We believe the major policy challenge which Scotland faces relates to the (long-standing) objective of developing a country with a thriving and flourishing economy where achievement of the Government's five strategic themes becomes a reality because the national economy can afford the level of investment that will allow them to be delivered.

4. Are they likely to remain broadly relevant over the longer time horizon (well beyond the 2016 focus of this Coordinated Agenda)?

We have difficulty in helpfully responding to this question since we believe the themes themselves need to be revisited and revised.

5. Do you agree with the description of support for the National Capability Theme set out in Section 3 (and Annex 3)?

We support the illustrative themes that are set out in Section 3 and so far as it goes in section on 'Support for Nationally Important Rural, Environmental and Marine Capability and Resource' in Annex 3. Our general view is that Scotland has a clear and continuing need for a multi-dimensional provider base for its R&D and science. We believe that a system based both on broad-based research expertise, mainly in the universities, and on specialist centres of expertise in MRPs and government agencies (and in some cases as specialist centres within the university sector) has genuine benefits and reduces the risk of inflexibility in meeting the challenge of scientific change. Based on our observation and experience we believe there is a greater risk of scientific conservatism and inertia in government agencies that are mainly engaged in the provision of policy advice (than in the MRPs for example); we believe that such agencies face a particular challenge in keeping their work relevant and at the cutting edge of science. They also appear to face difficulties in introducing new science knowledge into practice in their own operations and are sometimes much slower to innovate than would be the case elsewhere, in industry for example. There are well acknowledged areas of research development in which SEPA, for example, has found it difficult to introduce the new science into its business practice.

6. What facilities, resources and data do you think are important for Scotland to maintain?

We think that at the detailed level this is a too specific a question to be addressed in a general-view consultation of this type. But the question is

important and deserves a careful evaluation. One of the most obvious gaps in Scotland's research provision is a specialist research centre for value added food processing and manufacturing, a position that was exacerbated by the Scottish Government decision to close the one MRP with expertise in this area. At present, there are some initiatives to address food manufacturing training needs through the nascent National Skills Academy for Scotland, but this does not address the fundamental limitations of the Scottish research and science base.

Additionally, in aquaculture-related research there is substantial public under-investment given the scale, economic importance and potential for growth of the Scottish industry. Additionally, much FRS work lacks any industry relevance (a point that has been recognised and which we are jointly addressing with FRS). Also the specialist research institutes in the university sector are poorly coordinated (although some moves have been made to address this through the Funding Council pooling programmes).

7. Are there other resources that Scotland needs to acquire to support future policy development?

Please see comments under item 6.

Policy Issues

8. Have we correctly identified the key policy issues and the associated scientific opportunities in Section 3?

Please see comments under item 3.

9. Are there additional issues that should be included?

It is crucial that the focus and the programmes of the government agencies (and their related strategies) under the Coordinated Agenda begin explicitly to address the stated main purpose of Government to deliver 'sustainable economic development' in Scotland. In particular, SEPA, FRS, SNH, FCS and SG Rural and Environmental Strategies need explicitly to recognise that they have a remit in supporting sustainable economic development (we should note that SNH has recently made this more explicit in its corporate plans).

10. What do you think will be the most important influences on Scotland's future in the Marine, Environment, Rural Affairs and related areas?

In this context it is important to say that a major influence can come from the organisations and strategic planning frameworks of the institutions that are at the heart of this consultation: the challenge is to identify and seize the science-based opportunities that are presented in a world that is subject to substantial and rapid global change. Key to this is the confidence and ambition to grasp the opportunities. There is a huge opportunity for Scotland

to gain sustainable benefits from its coastal and marine resources in terms of food production, energy generation and in other ways.

11. Why do you think these are important?

See comments under item 2. Scotland has very substantial coastal and marine potential. The coastal shelf around Scotland is twice the area of Scotland's land mass.

12. Are there other scientific opportunities which should be highlighted?

Scotland has a range of areas where it is or has been a leading international force. This applies to the biological sciences generally – where it still punches well above its population weight in science citations and other measures of research output. The country has also been a major technological innovator – it has led the way in many areas of farming and food production and in the aquaculture it has been a global pioneer.

There is no reason why these historic successes cannot be continued and extended – there are still huge opportunities for relevant science-based technologies to be developed and applied with economic, social and environmental benefits in Scotland and beyond. However, that objective – which is closely aligned with the Government's primary purpose of 'sustainable economic development' – requires a confident and receptive national (governmental) approach to investing in the systems supporting R&D and scientific innovation, and a willingness to promote and adopt the beneficial outputs from that science. Currently, Scotland's national approach to science and technology development tends too often to be rather hesitant and over-precautionary, with a tendency for over-precautionary regulation and related barriers to rapid industry innovation.

The Science

13. What existing areas of Scottish based scientific expertise should be maintained to contribute evidence to key policy issues?

Please see item 6.

We believe that Scotland needs to maintain its strength in biological science and biotechnology if it is to meet its aspirations in regard to 'sustainable economic development.' We also strongly believe that there is need for additional investment and better coordination of Scotland's aquaculture and marine R&D. Relative to its national importance as an industry sector, and its wider importance as a UK and EU source of farmed fish and shell fish, Scottish aquaculture is underinvested in terms of public-funded science.

14. How clear is the relationship between the scientific areas and the key policy issues?

As they are expressed in the paper, the relationship between the scientific areas and key policy issues could be described as ‘broadly aligned’. However, we think much of the consideration of alignment is a ‘second-order issue’. Our more fundamental concern is with the lack of clarity in any connection between the scientific issues and the Government’s main objective of ‘sustainable economic development’.

15. In which areas of science can we continue to make use of expertise supported elsewhere e.g. at the UK, EU and international levels?

Please see item 18.

More than 80% of UK finfish and shellfish farming is located in Scotland. Therefore there is clearly a need for a strong Scottish-based research and science support for aquaculture. The key sector-related agencies are FRS (Marine Scotland), SEPA and SNH but much of the R&D base is in the university sector (Stirling, St Andrews, Herriot Watt, Aberdeen and UHI, through SAMS). Outside the UK there are important research collaborators both in the EU and in EU-aligned countries, particularly Norway.

16. In the time frame for CAMERAS (2011-2016) what new emerging areas of science are likely to mature and become available for more general use or application?

This question warrants a Technology Foresight exercise in its own right. In our specific areas of marine interest we see biology-related science and technology as a major growth point – including potential developments in genetics and breeding, diagnostics, disease prevention and treatment and other areas, as key. However, there will also be important developments in IT-related technologies, including measuring and monitoring technologies, modelling and GIS based technologies, etc. There will also be developments in nutrition and health (relating to both fish & animals and to humans).

17. Do we have the expertise available to be able to use these new opportunities?

We have identified weaknesses in public investment and in coordination of research and scientific support for the aquaculture (and the more general marine sector). There is an opportunity to begin to address these through the Marine Bill, which will be presented to the Scottish Parliament in 2009.

18. In which areas does Scotland need to be self reliant?

In the context of modern global science being ‘self-reliant’ is an almost outmoded concept. There is a rapid and continuous transfer of knowledge and expertise from one global research arena to another. However, for any country to engage in this interactive process it must have the R&D base and the knowledge and expertise to find a seat as a contributor at the main international tables. Through the happenstance of history and the commitment and foresight of government investment in the period 1930-1980 Scotland has

had a strong base in Marine, Environment and Rural Affairs. However, this has been reduced since the mid-1980s and now is at a level where further reduction will damage its utility.

Delivery

19. Knowledge Exchange is essential for scientific activity to achieve impact. Do you agree that KE should be an explicit and integral aspect of the delivery of this Coordinated Agenda?

Yes, but we would broaden our response. Without relevant technology development and knowledge exchange there is only limited purpose in Scotland's investment in scientific research. Research and science must be regarded as an engine for economic, social and environmental development.

20. How can we continue to improve the integration of evidence from a diverse range of sources into forms that are accessible to end users?

In a narrow technical sense of improved communication, this task has become easier with the development of modern web-based communication systems. However, fundamental to the process is a core of skilled technologists who are able to translate research discoveries into useful knowledge and useful technology and to facilitate the process of transfer to end-users. There are very few of these technologists about generally and where they occur they are more likely to be found in institutions that have a close dialogue with industry, for example in the MRP or in a very few instances in specialist university units.

21. How can we reconcile the requirement for science to be responsive and flexible to short term demands while at the same time ensuring that longer term strategic research continues to progress our knowledge and understanding?

Please see Item 5.

A key consideration is to maintain a significant element of diversity in the research and science system and to avoid the establishment of inflexible structures which are slow to respond to change. This is one of the major risks in over-aggregation and a one-stop approach. As always, in policy terms, it is a matter of striking the right balance.

22. How can we ensure that the 2 way flow of knowledge from science to policy and from policy to the academic community is optimised?

This question entirely misses out the third corner of the knowledge flow triangle. It is <u>essential</u> that both policy and the science base have an intimate communications with industry and business to appreciate their needs and requirements. The two-way flow of knowledge highlighted in the question is a

recipe for policy development and science development to become distant from and less relevant to the economic development needs of the country.

23. Are there alternative structures/systems or new approaches/organisations that could enhance these flows?

Yes. Please see item 22.

24. Are there science delivery models which could provide examples of good practice for Scotland to follow?

Scotland has a highly successful historic model for science and KE in the agricultural and rural sector through the operation of the MRP and SAC. This model has been envied and copied in many other countries throughout the world, and less extensively its principles have been used as a basis for initiatives in other industry sectors.

Key the process is a 'mission-orientated' approach based on the research community recognising the issues and problems that faced industry (or policy makers). This allows the science and research focus to be targeted at the critical control points of emerging or existing problems or needs. This approach when coupled with good technology development and KE practice works very effectively. It is a model that needs to be reinvented or re-invigorated rather than engaging in a search for some other approach.

As a specific recommendation we believe that policy makers and the research community must seek a close relationship with the bodies representing major sectors of Scottish industry, since they can provide an aggregated view of the science and research requirements and priorities for their sector.

General Comments

25. We would also welcome any other general comments you may have on any of the issues raised in this document.

We note the absence in the document of any mention of wider linked scientific structures e.g. JNCC, SNIFFER, SARF, etc. For completeness of the picture we think some reference to these might be made.