TRANSPORT AND THE ENVIRONMENT COMMITTEE

Monday 25 March 2002
(*Afternoon*)

Session 1

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TRANSPORT AND THE ENVIRONMENT COMMITTEE
10th Meeting 2002, Session 1

CONVENER

*Bristow Muldoon (Livingston) (Lab)

DEPUTY CONVENER

*Nora Radcliffe (Gordon) (LD)

COMMITTEE MEMBERS

Robin Harper (Lothians) (Green)
Mr Adam Ingram (South of Scotland) (SNP)
Angus MacKay (Edinburgh South) (Lab)
*Fiona McLeod (West of Scotland) (SNP)
*Maureen Macmillan (Highlands and Islands) (Lab)
Des McNulty (Clydebank and Milngavie) (Lab)
*John Scott (Ayr) (Con)

*attended

THE FOLLOWING ALSO ATTENDED:

Mr Jamie McGrigor (Highlands and Islands) (Con)
John Farquhar Munro (Ross, Skye and Inverness West) (LD)

WITNESSES

Dr Kenneth Black
Dr Graeme Dear (Scottish Quality Salmon)
Malcolm Gillespie (Sea Fish Industry Authority)
Lord Jamie Lindsay (Scottish Quality Salmon)
Douglas MacDiarmid (Highlands and Islands Enterprise)
Doug McLeod (Association of Scottish Shellfish Growers)
Dennis Overton (Aquascot)
Professor Randolph Richards
Dr Dick Shelton
Mr Richard Slaski (British Marine Finfish Association)
Iain Sutherland (Highlands and Islands Enterprise)
Councillor David Webster (Argyll and Bute Council)

CLERK TO THE COMMITTEE

Callum Thomson

SENIOR ASSISTANT CLERK

Tracey Hawe

ASSISTANT CLERK

Alastair Macfie

LOCATION

Corran Halls, Oban

Scottish Parliament

Transport and the Environment Committee

Monday 25 March 2002

(*Afternoon*)

[THE CONVENER *opened the meeting in private at 13:49*]

14:01

Meeting continued in public.

The Convener (Bristow Muldoon): I welcome members of the press and public to this meeting of the Transport and the Environment Committee. I also welcome MSPs who are not members of the committee but who have joined us today: John Farquhar Munro and Jamie McGrigor. I understand that George Lyon may attend part of the meeting. I record apologies on behalf of four committee members who are not able to be here today: Des McNulty, Angus MacKay, Robin Harper and Adam Ingram.

I am pleased that the Transport and the Environment Committee has chosen to come to Oban for today's meeting. The level of interest in the meeting is shown by the number of people who have turned out for it. I think that this is the record for public attendance at one of our meetings, so we will probably come back to Oban on a regular basis. Perhaps we should have established the Scottish Parliament in Oban rather than in Edinburgh.

Before we come to the main business of today's committee meeting, I offer Councillor David Webster of Argyll and Bute Council the opportunity to say a few words of welcome.

Councillor David Webster (Argyll and Bute Council): On behalf of the area committee for Oban, Lorn and the Isles, I welcome you all here. I whole-heartedly agree that this is where you should have had the Scottish Parliament. We will always try to turn on hospitality and good weather when you come back, which we hope you will frequently. I wish you success in your discussions today.

The Convener: Thank you, Councillor Webster. We appreciate the hospitality that Argyll and Bute Council has afforded us. I record my thanks to you for arranging for the rain to stop before I visited a fish farm this morning.

This morning, committee members visited Kames Fish Farming Ltd in Kilmelford and Cadderlie Mussels in Loch Etive and we were given a tour of the internationally important Scottish Association for Marine Science Dunstaffnage marine laboratory. In addition, Maureen Macmillan and our adviser, Professor Paul Read of Napier University, met Dr Kenny Black, who is carrying out research on fin fish aquaculture and its environmental impact on behalf of the committee and the Executive.

Aquaculture Inquiry

The Convener: Our main item of business is to take evidence as part of phase 2 of our aquaculture inquiry. I inform members of the public that this phase of the inquiry will involve the committee investigating issues such as the respective roles of the Executive and the aquaculture industry in taking forward aquaculture in Scotland, how the aquaculture industry can increase its competitiveness in the international marketplace and how the industry can best achieve environmental sustainability in the future. Those matters will be of considerable interest to people on the west coast of Scotland. That is why the committee was keen that it should hold one of its evidence-taking sessions in Oban, which is one of the communities that will be most affected by the way in which the aquaculture industry develops.

We will hear from three panels of witnesses. The first group comprises producers from the aquaculture industry, the second group comprises representatives from the development bodies that are involved in the aquaculture industry and the third group includes several scientists with specialist knowledge of aquaculture. I invite the first group of witnesses to come forward. They are Lord Jamie Lindsay and Dr Graeme Dear of Scottish Quality Salmon, Mr Richard Slaski of the British Marine Finfish Association, Dennis Overton of Aquascot and Doug McLeod of the Association of Scottish Shellfish Growers.

Welcome to the committee. We are looking forward to the evidence that you will give. As there are five witnesses on the panel, I ask you to refrain from expressing agreement with a view that another member of the panel has already put forward, because we have a lot of evidence to get through today. Obviously, when members of the panel have substantially differing views on an issue, we want those views to be drawn out in the questioning. We have structured the questions so that we cover the main areas into which we want to inquire. Members of the committee will lead the questioning on those areas. John Farquhar Munro and Jamie McGrigor are welcome to ask any questions that they see fit at any stage. They should indicate to me that they want to speak.

The first matter that we will investigate is the respective roles of the Scottish Executive and the aquaculture industry in taking forward the industry in Scotland.

Maureen Macmillan (Highlands and Islands) (Lab): Gentlemen, I want to ask about the future of Scottish aquaculture and how the demand for fish should be met. What should the Executive do to ensure that an holistic approach to strategy and governance is taken? What cost-benefit considerations need to be taken into account to determine the balance between economic, social and environmental needs?

Lord Jamie Lindsay (Scottish Quality Salmon): On the holistic nature of the Executive strategy, I believe that the Executive should recognise the immense rural and national potential in the aquaculture industry in Scotland. The potential in Scotland is for an industry that is quality led, commercially sustainable, environmentally responsible and competitive. In order to realise that potential and to reap all the benefits for the rural and national economy that stem from the industry, we badly need a governance and regulatory structure that is more co-ordinated, coherent and flexible and that enables more options to be chosen, depending on the circumstances. We also need a regulatory system that more intelligently weighs up solutions to problems and that anticipates and finds solutions to problems before they arise.

I strongly recommend that the Scottish Executive examine closely the system that the Norwegians have developed. The Norwegians recognise that their aquaculture industry is probably one of the most important ingredients in their rural economy's future. They recognise the importance of sustainability and of a market-led industry that delivers the right product to the right consumer. They have developed a governance and regulatory system that is robust yet streamlined and that allows statutory bodies and special interests to participate in a single decision-making process. That should at least be one option that the Scottish Executive scrutinises before making any final decisions.

Maureen Macmillan: Thank you.

The Convener: Perhaps we should let some other panel members speak.

Maureen Macmillan: Yes. I would like to tease out the panel's views about the balance between socioeconomic and environmental issues.

Mr Richard Slaski (British Marine Finfish Association): As we all know, the importance of aquaculture in local authorities' decision making is increasing. I hope that what might be called local framework plans will be developed for all stakeholders that use the environment in the areas that are involved. At a national, visionary level, a lead role from the Scottish Executive would underpin such plans and provide guidance and the vision for the nation. Local democracy would kick into action with local framework plans, which would consider all stakeholders.

Doug McLeod (Association of Scottish Shellfish Growers): I think that everyone here has heard me say this before, but I will say it again anyway. To identify the correct balance between

socioeconomic and environmental issues, we need a planning or management tool. The obvious tool is modelling of what the committee in its phase 1 report called "assimilative capacity" or what I, in my neanderthal way, still call carrying capacity. That could assist all sectors of the aquaculture industry, because it could bring them together and create synergy. It could also give planners a tool for balancing economic and environmental issues locally and nationally. I encourage the committee in the strongest terms to follow me and to continue to repeat that that is the way forward. Without such a tool, we will always struggle in the dark. I think that that is the tool that Maureen Macmillan seeks.

Maureen Macmillan: That is obviously what you consider to be the priority for research and technological development. I wonder whether other panel members agree or whether they have other priorities. Who should undertake research and development and who should fund it? What are the respective roles of the public and private sectors, including the Fisheries Research Services?

Dennis Overton (Aquascot): Future research divides into two clear categories, one of which is near-market work to develop husbandry and methods for measuring the environmental impact of what goes on around our sites. That work should be undertaken largely by the industry. If the European Union and other bodies can help to fund such work, that is all well and good and applications should be made for such funding.

As for longer-term blue-skies research, some matters of interest—particularly the nitrogen cycle, understanding more effectively what is happening in the marine environment, understanding novel diseases and parasites and broader ecosystem modelling, which picks up Doug McLeod's point—are better suited to publicly co-ordinated research programmes. Those areas of inquiry sit more comfortably under a co-ordinated system of research. The type of approach that was adopted in the LINK aquaculture programme, which has worked fairly effectively, might be a way of taking that forward. Given that we are discussing a part of Scotland's food industry, all the research should be linked in some way to the Scottish food and drink strategy, to which the Executive is committed. Achieving cohesion right the way through in research and development involves good co-ordination between the various research bodies and institutes in Scotland.

14:15

Dr Graeme Dear (Scottish Quality Salmon): As Dennis Overton said, the LINK aquaculture programme, which has been in operation for several years, has been very successful. It was successful in bringing together the various partners—Government, academia and industry—on several key issues and its research output has often featured in SQS technical seminars. Although that work is coming to an end, ideally we would like it to continue in some form, perhaps through a Scottish LINK scheme that is managed via a joint industry-Government working group. That would benefit Scottish aquaculture as a whole.

Maureen Macmillan: The Executive has given a commitment to develop a strategy for aquaculture. Should the LINK idea be a key feature of the strategy? What key aims and objectives should the strategy have?

Dr Dear: There has been a lot of comment about the sustainability of the industry, as is evident in the submissions that have been made to the committee. We should not forget that the industry is already sustainable. It produces salmon and other products of the highest quality, delivering high standards of environmental management and fish welfare and bringing economic wealth to remote and fragile communities. We ask the committee to recognise that.

That does not mean that we cannot do better in each of those areas. The strategy should determine the key factors that are used to determine the size of the industry, which relates, ultimately, to the assimilative or carrying capacity for each sea loch. From a business perspective, the strategy should provide a clear framework within which to plan investments and to enact the appropriate strategies. It should also provide all the stakeholders with a statement of expectations and limits. For example, a farm might be deemed unsuitable for salmon but good for halibut, cod or shellfish. The strategy should remove much of the conflict that can arise between the farmed and wild sectors of the industry and between communities and regulators, each of which has their own goals. A well-developed and detailed plan will result in a lot less conflict.

In our opinion, the Scottish Executive should be the lead body in determining the aquaculture development plan. No more than two bodies should be charged with implementing and monitoring the plan. There must be a balance between enterprise—if we want economic wealth, there must be an enterprise element—and environment. As yet, there is no one body that can manage that successfully.

The key deliverables will be economic wealth for Scotland, the maintenance of high-quality jobs in remote areas, the production of high-quality, health-enhancing Scottish salmon or other species and an agreed position on industry size that leaves opportunities for the development of

alternative species. We hope that the end result will be a world-leading planning mechanism for all stakeholders.

Doug McLeod: An overriding requirement for the success not just of the shellfish sector, but of the aquaculture industry as a whole is that the water quality in Scotland's inshore waters is maintained at the highest possible level in relation to the physical impact from bacteria, viruses and chemicals, not to mention aesthetics and recreational use. Without high water quality, our industry is dead. That applies to shellfish farming in particular, but also to the farming of salmon and other fin fish. The Executive and the scientific community should be encouraged to bend their greatest efforts to see what has been done to the environment over the past 20 years and to ameliorate what happens as a result of any future developments.

Surprisingly, that ties in with my comment that carrying capacity is the important area to consider. We must know what has been done to the environment and we must know what we can do in the future without causing irreversible damage. That is the starting point for all our sectors, but it is particularly close to the heart of the shellfish sector. Being at the bottom of the food chain, we are stood on by more people than are the other sectors that are represented here today.

Mr Slaski: The European water framework directive is coming to our shores and we have the water environment and water services bill ahead of us. Industry is supportive of the bill because, for the first time, we will have an all-encompassing act that will control inputs to the environment much more sharply than the Control of Pollution Act 1974 ever did. The bill will enable us to begin to see what all the other contributors to our aquatic environment—whether freshwater or marine—are doing. I endorse what my colleagues say—we need to see what is out there in the environment and we need to determine assimilative or carrying capacity. That is fundamental and the bill will help us to do it.

Dennis Overton: I have a couple of points on the objectives and key features of the strategy. We should develop a strategy that the majority of Scots who are thinking about this matter can endorse. We need to ensure that Scotland is regarded as a place where innovative entrepreneurs in the aquaculture sector from around the world will be welcomed and that we have an environment in which that is possible. Linked to that, we must ensure that the major companies in the sector worldwide recognise Scotland—because of the effectiveness of the strategy—as an area that is worthy of long-term investment. In many other sectors in the economy, a great deal of thought is given to encouraging international investment. That encouragement is as important in this sector as in any other.

Another key objective is to ensure that consumers associate Scottish aquaculture—both fish and shellfish—with top-quality output, with the highest quality of environmental conditions and with good value. If the strategy can achieve those objectives, it will have moved the debate on a long way.

Nora Radcliffe (Gordon) (LD): Some of what I was going to ask has been answered, but you might want to pull things together and present them slightly differently. How should the strategy be implemented and by whom? How should it be underpinned and what should be the key deliverables, measures of success and time scales?

Lord Jamie Lindsay: As you say, the different components of your question have been touched on. I suggest that, before inventing the wheel, we should find out whether other people have achieved systems that would, perhaps with some variation, be suitable to Scotland. The concept of a lead department that can corral the other statutory interests and ensure that the public interests and other special interests are involved is already being delivered. I believe that, in Norway, the different interests are broadly satisfied that the multiple agenda is being robustly delivered.

If the public sector in Scotland is clever, its strategy will motivate the industry to deliver on the same goals. Currently, one deficiency is the lack of recognition for operators who are committed to high standards, to good environmental management systems and to high product specifications. The public sector treats everyone the same, irrespective of whether they are investing in a long-term outturn. The Scottish public sector would be shrewd to find a delivery mechanism that motivates members of the industry and rewards them for signing up to the long-term strategic objectives that have been identified.

Graeme Dear and Dennis Overton have covered some of the key points on deliverables, of which there are several obvious categories: the headline economic deliverables; the value of the output as it leaves the west Highland farm, putting money into the communities around that farm; the value of the product as it goes through the chain—the value increases and creates jobs as it goes—to the point of retail, where it may be two and a half or three times more valuable than it was on leaving the farm; and the value of the export to Scotland. Taking the example of salmon, if we can continue to deliver 40 per cent of Scotland's food exports, the west coast, the islands and the northern isles will make a huge macroeconomic contribution to Scotland. Those are key economic deliverables.

The socioeconomic and social deliverables are critical. Are we creating jobs in local communities? Are we underpinning the fabric of local communities? Can we continue to put more than £100 million a year back into local communities? What sort of training is associated with the industry? Are we increasing the ability of young entrants to the industry? To what extent are we working in partnership with community interests and other local interests? We can now measure that, as we have partnerships in place with parallel coastal interests. The ability to work with parallel interests has to be a component of an industry that is prosperous in the long term. We have developed that ability so well that we can at last sit down and empirically measure the extent to which we are succeeding.

Another deliverable has been suggested to us by Gillian Kynoch, the food health tsar for Scotland. In Scotland—with all the species and, indeed, with the wild aquaculture product—we have an extraordinary ability to deliver a healthy, nutritious and popular range of products. Despite that, the Scottish diet is poor by European standards and is doing nothing for the health of the nation. Given that we can deliver such quality in health and nutrition, why do we have such a miserable national diet? To echo one of Gillian Kynoch's points, we should surely be able to produce the product and to persuade Scots to eat more of it. That would be another welcome deliverable, the effects of which would be felt for a long time to come.

Mr Slaski: I would like to build on the idea of making progress in partnership. I repeat that we welcome the fact that the Scottish Executive is the lead body. However, various arrangements that have emerged over the past few years, such as joint industry-Government working bodies, have functioned extremely effectively. The prime example at the moment is the aquaculture health joint working group, with which we are all involved. The group works hard and it achieves things—it is an extremely positive development, because we have to deal with a complex raft of European and national legislation on fish health.

The industry is looking to expand on that significant work, which has real vision behind it. We are considering establishing two more groups, which would bolt on to that working group and inform all our work. A science and environment working group might consider scientific aspects of the industry, research priorities and who will do what to unlock some of the mysteries that lie ahead of us. An economic joint working group might consider competitiveness and market issues. One always tries to avoid creating more talking shops, but I think that those two working groups would be particularly beneficial to Scotland plc.

Nora Radcliffe: What do you see as the industry's share of responsibility for the future of aquaculture? What should be the specific responsibilities and roles of the industry? What are your priorities and how should the industry take forward that agenda? You have answered that question in part, but perhaps you could expand on your earlier comments.

14:30

Doug McLeod: It is essential that the role of the Executive is kept at the highest strategic level. We do not want to get involved in Stalinist-type five-year plans. It is up to the industry to take its role seriously and move forward the agenda. Within the envelope of Executive-determined areas of co-operation, collaboration and joint polycultural activity, it must be left to the industry to decide how it should proceed.

In a commercial context, I find it bizarre that the industry seems to be pressing for even more salmon production when every salmon farm in the country appears to be losing money and we know that the global surplus will be even larger in the next two or three years. The shellfish side of the industry is making a profit. We should take the opportunity to open the eyes of the aquaculturists. If the agenda is to be industry driven, let it be driven by profitability. People should say not "I'm a salmon farmer" or "I'm a halibut farmer", but "I'm an aquaculturist". We must ask where there is money to be made over the next five to 10 years. If we do that, there will be far less confrontation and the sector can move forward much more positively—it will be making money, rather than losing it.

We must develop our role in integrated coastal zone management, and to do that we must form alliances—indeed, climb into bed—with people whom previously we would have crossed the road to avoid. Only by forming alliances with other interest groups in coastal waters will we survive. That is why the industry must speak as aquaculture, rather than as individual species associations or groups. There are many problems and we need to work together and create a joint agenda to tackle them. If that can be encouraged through an overarching strategy and an envelope of guidance from the Executive, we will have a success story. If that role is too far down the ladder from Holyrood or Pentland House, more problems will be created.

Dr Dear: I agree with Doug McLeod's comments. We have made a plea to the committee that, as an industry, we want clear direction on where we can go and what we can do for Scotland. That is why we are here. Our role is to take your message out and deliver high-quality products for the Scottish economy. I hear what

Doug McLeod says about people wanting to produce more salmon, but the fact remains that the salmon market is growing at 10 per cent a year. Aquaculture is the fastest growing sector in the market.

As an industry we will consider the picture that has been painted and then take a market-led approach. We will listen to the market and be driven by it, as we should be. As an industry, we accept that we must deliver all the environmentally responsible bits. If that means going into other species, polyculture, or added value, so be it. However, the market will drive that process. The Executive and the Parliament should expect that to be the case.

Fiona McLeod (West of Scotland) (SNP): I want to pick up on a couple of points that were made by Dr Dear and Doug McLeod. Graeme Dear finished by saying that the producers' future is market driven. However, Doug McLeod made the interesting point that the Transport and the Environment Committee is inclined towards polyculture. We know now that that is also the Executive's position. The polyculture approach has environmental—and, I presume—economic advantages. Is Dr Dear saying that producers will adopt polyculture only if an aquaculture strategy pushes them into that process? Do producers consider it to be in their economic and environmental interests to work together on polyculture?

Dr Dear: Can you clarify your definition of polyculture? It means different things to different people.

Fiona McLeod: I do not know about the rest of the committee, but my understanding is that polyculture means the symbiotic growing of shellfish and fin fish in a local environment. Would that be the right way to describe polyculture?

Dr Dear: As a representative of SQS, I can tell you that one of our members is working with a member of Doug McLeod's organisation towards conducting a trial of a polyculture system. Doing such joint trials should not be regarded as a hindrance, because they might bring mutual benefits. As a fin fish farmer, I would happily get involved in such a project.

Fiona McLeod: You said that polyculture is being considered by two producers.

Dr Dear: Yes.

Fiona McLeod: Could an aquaculture strategy help develop that process?

Dr Dear: First, it must be confirmed that polyculture will deliver its expected benefits. Until that has been done, I doubt whether a strategy can be built on polyculture. However, if it seems that polyculture could be successful, perhaps an aquaculture strategy could help develop it. There is a risk, however, of the industry becoming prescriptive and producing, for example, thousands of tons of mussels for which there is no market.

We must consider what is happening at the market end of the value chain. For example, if there is a market for X thousand tonnes of mussels, we should decide how best to fulfil such a market. A single operator could do that today, but in the future it could be done either in conjunction with another operator, or with an operator getting involved in two sides of the market. However, there must be some market influence.

The Convener: I think that Mr Slaski wants to come in on this point.

Mr Slaski: First, I think that the committee visited Kames Fish Farming, which is owned by Stuart Cannon, and which farms mussels and halibut as discrete business operations. That operation, however, could be called a business-led polyculture. As a good aquaculturist and farmer of the seas, one should consider such opportunities.

Secondly, I reiterate Graeme Dear's point that we have not discussed the issue of seaweed possibly being grown to absorb nutrients. As a nation, we must consider carefully whether we should adopt such a process. What does one do with the seaweed once it has been grown? We must consider whether such production processes would create more problems for us. I am not saying that growing seaweed would cause problems, but we must consider such proposals carefully. Producers are considering polyculture from an aquaculture viewpoint; it is a hot issue for us.

Mr Jamie McGrigor (Highlands and Islands) (Con): I have two questions, the first of which is general. I always considered that a department of agriculture and fisheries was, in some ways, a silly combination, because one is a farming operation and the other is a hunter-gathering one. To me, aquaculture is a farming operation. Do you agree that the Government should consider aquaculture more in the way that it considers terrestrial agriculture? We should have a department of agriculture and aquaculture, if you like. That would create a level playing field for the regulation and promotion of products in both areas. I take it that your view is that there is no proper recognition of the fact that your industry produces so many exports.

My second question is basic and direct. There are many complaints about the muck or detritus that comes from fish cages. It has always occurred to me that it should be possible, in this day and age, to get rid of that waste by pumping it out. Why is it impossible to do so?

The Convener: I do not know whether Jamie McGrigor is making a plea for another Government department and minister—you may leave that question to one side.

Lord Jamie Lindsay: I will answer Mr McGrigor's first question, not least because I have had experience of both sides of the fence, so to speak.

Mr McGrigor is right: a closer affinity exists between aquaculture and agriculture than exists between aquaculture and the sea fish industry. In Scotland, we are fortunate that a single Government department, based at Pentland House, covers all three subjects. There is a lot of contact and dialogue between the agriculture officials and the aquaculture officials, and some officials have worked in both areas. Mr McGrigor made a good point in principle that the practice in Scotland has happened to answer.

It is worth pointing out the vital relationship that exists between aquaculture and sea fish, as far as the survival of marine stocks is concerned. As more of our commercially fished marine stocks suffer catastrophic decline of one sort or another, how will the market meet the increasing consumer demand for fisheries products? It is recognised in Scotland and by almost every national and international body that aquaculture is vital because it is the only solution to filling the fish gap. It is projected that up to around 30 million tonnes of additional fisheries products will be required by 2010. Anyone who expects wild-caught fish to meet that additional demand does our marine biodiversity a great disservice. One could argue that aquaculture could sit just as comfortably alongside the sea fish industry. Mr McGrigor's point raises issues about aquaculture's affinity with agriculture and the sea fish industry and about the strategic benefit that aquaculture brings to the fisheries market.

Dr Dear: Perhaps I can answer Mr McGrigor's second question. In a freshwater tank farm, it is quite possible to dispose of the waste. In fact, farms manage to collect the waste in the manner that he suggested and the waste may then be used as a fertiliser.

The problem of disposing of the waste that is found at the bottom of the sea is much more difficult technically. As the industry body, we have considered many different solutions to that problem. Although it might be possible to vacuum up the waste, what would we do with it? We are not allowed to dump it at sea and it is difficult to envisage what we could do with it if we brought it ashore, as it has such a high salt content. Where would we put it? Would it be taken to a landfill site or used for injection? The waste has to go somewhere.

One of our member companies suggests in its submission to the committee that the issue of sea bed regeneration could be addressed once and for all if each farm had a duplicate sea bed area—where possible—and rotated the cages every four years or so. That would allow the sea bed to regenerate and is probably the best way forward, given the technology that is available today.

Mr Slaski: I will make a comment about Mr McGrigor's first question. My trade association has argued for the separation of fisheries and aquaculture in Government—Mr McGrigor's point was well made. As far as finding a broader market for quality Scottish seafood is concerned, I find that we are getting closer to the position of those who are involved in the capture sector. For example, Seafood Scotland is trying to improve the quality of the capture that comes from our fishing vessels and our work on the aquaculture of marine species ties into that. There is synergy in the vision of quality seafood from Scotland going into the wider market. My view on the splitting of responsibility is equivocal.

The Convener: I am aware that John Munro and Maureen Macmillan want to ask questions, but we should make progress on the issues that I outlined to the committee. Perhaps we will return to the issues that they want to ask about. John Scott wants to focus on the economics of the industry in the international context.

14:45

John Scott (Ayr) (Con): It has been suggested that Scotland should pursue the high-quality end of the market by developing niche-market products—such as premium, organic or environmentally sustainable products—rather than competing in the high-volume market. Which way should the Scottish industry go? Should it try to produce a niche-market product or should it compete with the volume producers? Should it try a combination of the two options?

Dennis Overton: That question has been discussed before in the committee's inquiry. The question involves an oversimplification of the marketplace, because it assumes that there can be a single approach and that the Scottish aquaculture industry will adopt a single approach. That is like saying that we will produce only one breed of sheep in Scotland—clearly, it is not possible. Even in the single-species sector, for example with salmon, a diverse approach will be taken in Scotland.

The key is that whatever category of product that I, as a business operator, choose, I should produce it in the most cost-effective way, measured in world terms. That does not mean that I will produce the same product that is being

produced in, for example, Chile. I envisage that, as the industry develops, it will access a number of markets in the UK, Europe and further afield. The market is a complex place. We have competitive advantages in some areas of the marketplace, which we should exploit because we know that our international competitors cannot do so effectively. However, our competitors might be better suited to other areas. Scotland will not produce a single product block; our produce will be more diverse.

Dr Dear: The question has often been put to me as an either/or question, but that is not necessarily the case. We can produce as many tonnes of high-quality fish or other products as our system allows. The industry already produces superior quality Scottish salmon, which commands a premium over Norwegian salmon in the UK and in France. Last weekend was the 10th anniversary of the Label Rouge accreditation for Scottish Quality Salmon. It is the only non-French product that has achieved that. The industry and the country should be proud of that accolade.

I found a quote from Monsieur Michel Blanchet, who is the chairman of master chefs of France. He said:

> "It was not by chance that the top chefs—who constitute the 'most highly starred' group in the world—have formed an association with Label Rouge Scottish salmon".

That is what we produce today. There is no reason that we cannot continue to produce it tomorrow, because that is what the market wants.

John Scott: So the point is to identify your markets and then to target them.

Dr Dear: Yes.

John Scott: What key management practices should the industry take responsibility for to increase its competitiveness in the marketplace? How should those practices be addressed?

Dennis Overton: It is for each business to decide on its own key set of management practices. However, one must aim to be the least-cost producer for whatever category of product one is seeking to produce. As fish farmers in Scotland, we have no right to expect that we will be able to operate long term with a high-cost structure that does not stand international comparison. We require the appliance of good science and efficient delivery of the environmental regulatory framework within which we operate. A range of management practices will flow from that set of understandings. That is not incompatible with taking a broad view of the marketplace, which is complex.

Mr Slaski: The new marine fin fish species sector is very small at this stage, but we are able to build on the experience of the salmon farming sector and, to a degree, of the trout farming sector in Scotland. We have some pretty sophisticated economic modelling and market studies. We have a good idea of why we are pitching our target production at a certain level, where niches in the market exist. The management aspects of the economics of production have to be designed to make that work. After setting themselves a business plan, people have to adjust as they go along, to deal with issues such as economy of scale. The issue of sustainability is intertwined with that. As a trade association, we are already beginning to consider environmental management systems, such as ISO 14001 and codes of best practice for farming cod, haddock and halibut. We are doing that at the start because it is an important part of the joined-up vision.

Lord Jamie Lindsay: The question could be asked: what competitive management practices are needed to ensure that Scottish strategic objectives are delivered? As Richard Slaski will know, and as Scottish Quality Salmon knows, it is possible to adopt the best possible environmental practices—involving independent inspection, accreditation to international disciplines such as ISO 14001 and the adoption of parallel disciplines for the product and for product qualities, under an international regime called EN 45011.

Such a regime requires the operator not only to improve his practices and operation in order to meet higher standards, but to pay for an independent inspector to check whether he is meeting those standards. That is in addition to all the statutory inspections that take place. One might argue, as we do, that such an approach to production and the product will give Scotland the best long-term prosperity, by ensuring that we have a quality product, a quality production system and quality environmental management. However, all that costs money and raises the cost of producing the product. Management practices of the sort that I have described should be welcomed, but currently they threaten to decrease competitiveness. By raising standards, operators are raising costs per kilo of output.

Once the minister has decided on a strategy, the Scottish Executive and the public sector in all its manifestations—and there are many—need to ensure that, wherever they engage with the industry, they encourage management practices that will deliver the strategy's objectives. The easiest thing to do would be to reward better management practices in such a way as to make operators more competitive. At the moment, good management threatens the operators' competitiveness. Operators who adopt good management practices get no more recognition than their competitors with poorer management practices next door.

The Convener: What sort of rewards or recognition do you have in mind?

Lord Jamie Lindsay: Various strengths arise from our being as regulated as we are. One is that we can maintain our robust record. There are, however, many disadvantages to the extent of regulation that we have. The 10 statutory bodies that control our operations could align the decisions that they make about licensing—such as the amount of activity or biomass that is allowed at a certain site, consents for various treatments that might be allowed at a certain site and grants that might be made available to a certain site—with the strategic objective of encouraging good management. That applies particularly to three or four of those bodies.

An applicant who, under the new system, seeks planning permission for a certain level of biomass might, because of his commitment to an ISO 14001-accredited environmental management system, be given permission for 100 per cent of his application, not least because the leading environmental management systems truly address issues such as the precautionary principle and some of the water quality issues that Doug McLeod raised. A similar application from an operator who does not want to embrace good modern disciplines might not be given 100 per cent permission because he proposes an operation that includes less risk management. One could apply that same principle to, for example, consents to access to therapies and to grant applications. That would send a very clear and motivating signal from the public sector to the industry about where it would like commitments to good practice to be made.

John Scott: Another way of dealing with what you are talking about is quality assurance or, better, gold plating of quality assurance so that those who get awards such as Label Rouge get their return from the marketplace. They get their reward by producing fish that are reared to the highest quality and standards. Do you accept that that is another way in which to reward best practice?

Lord Jamie Lindsay: I hope that the marketplace will always recognise quality to an extent. In our case, Label Rouge is an extremely significant reward for the reasons that Dr Graeme Dear read out. The modern marketplace is a ruthless economic jungle. Although in some weeks or months some of one's supply chain will be prepared to give some reward for a higher-quality product, we know from our members' experience that there are other long periods when one's supply chain is not able to give a straight, tangible reward for one's having adopted the best possible practices.

That is relevant—and irrelevant—in that, if the strategy determines that Scotland's national objectives and long-term interests for the industry are aligned in a certain way, similar signals should be sent to the industry to encourage the industry to adopt practices that will help to deliver national strategic objectives.

Mr Slaski: I will build on that concept. It is about competitiveness at the production-cost end as well as at the market end. When growing fin fish, we are concerned with the metabolic by-product nitrogen, which is an enriching if not natural nutrient.

If farmers measurably improve feeding efficiency, which in effect means food conversion, the percentage of nitrogen that will pass into the environment from the process will be halved. The industry is approaching the issue by trying to search for a vision on the regulatory front. We want to encourage farmers to seek improvements such as those that can be made in biological processes. It is true to say that that is in farmers' interests, but the way forward for us all is to sharpen farmers' interest in the issue.

15:00

Doug McLeod: I would hate to think that one outcome of the strategic review would be a lessening of encouragement to all fish farmers to strive for the highest quality. I would also hate to think that the review would avoid the issue of who pays for the environmental impact. In terrestrial farming or development of any kind, controls are in place that mean that the farmer or developer pays for their impact on the environment.

The fin fish industry in particular and, to a lesser degree, the shellfish industry have an impact on the environment. At the moment, all the costs of that impact are externalised—they are not taken on by farmers as a balance-sheet cost. It has been estimated that the cost of removing excess nutrients that disappear downstream would add about US$100,000 per 100 tonnes of salmon to production costs. If, as a result of Government strategy, the industry was forced to internalise the costs of impact, it would be highly motivated to re-consider its practices. Higher quality husbandry would be rewarded by a charge being made to farmers of less than the full amount of the internalised cost in, for example, their licence to operate.

The system could be reviewed in a cycle of four or five years. Such a strategy could be used to improve the efficiency of the industry in a market-led way. The Government could say to farmers, "Okay, if you do not want to pay to improve your practices, you will pay us through the licence and we will clean up the environment." Why should society pick up the tab, as happens at the moment?

Dr Dear: As someone who takes a farming perspective, I take a rather more pragmatic view of the question. We face a situation in which, whether we like it or not, our farms are less competitive than are those of our competitors and we must be able to address that. Numerous publications can be found in which that fact is indicated. I have selected one from 1999, which is published by Kontali Analyse AS, which indicates that there is a 20 per cent difference between Scottish and Norwegian farms in the cost of their impact on the environment. How is that difference accounted for in the market place? It is true that we get a premium but, as I am sure Dennis Overton would agree, the premium does not amount to a 20 per cent difference. That means that there is a bit of a shortfall.

There are two key reasons for that. First, it is difficult for a Scottish farm that has 300,000 or 400,000 smolts to compete with a Norwegian farm that has 800,000 smolts. The economics of the situation mean that the Norwegian farmer will also produce a high-quality product, but will do so cheaper. I believe that we need, as a country, fundamentally to shift to assimilative carrying capacity. If a farmer were given approval to produce 200,000 or 300,000 smolts from a loch in three locations instead of five—as some of our members and others have suggested—each unit would become much more competitive. That would not have a net impact on the sea loch, but it would allow each unit to become competitive.

Secondly, my background is in fish health. As they should, issues that affect human and animal health have great precedence at the Parliament, but I am surprised that fish health is put on the back burner almost as if fish should not get sick. I am sorry to say that fish get sick and always will—we can do nothing to prevent that. However, we can through good husbandry minimise the amount of sickness in fish—Lord Jamie Lindsay alluded to those practices—and we can develop vaccines.

If we examine the amount of comment—from all and sundry—that has been published on the impact of sea lice, the bottom line is that we should not have had a sea lice problem. Fish health care products exist and if our industry had access to them—as our competitors do—not only could we improve the welfare of the fish that we are in charge of, we could also markedly improve our competitiveness.

John Scott: You have touched on conflicts between the fin fish and shellfish industries. How should those be resolved so that one sector does not benefit at the expense of the other, or of another?

Dr Dear: I am sometimes surprised that there is perceived to be conflict. Generally, we have very good relations with shellfish farmers. In some cases—I know this from my company's case—we share the same shore bases. Sometimes we help them out; sometimes they help us out. Some shellfish farmers provide services to the fin fish sector. In many respects, such conflicts are not such great issues as they might be made out to be. That has been our experience, as a salmon farming company that has a number of farms on the west coast.

Mr Slaski: I can back that up from my experience. Kames Fish Farming has been mentioned and I could mention my dialogues with some of the larger, more progressive shellfish farming companies. I am thinking in particular of producers of rope-grown mussels, whose product is very good and has a good market premium in a growing sector. I welcome that, because mussel production is an important sector for Scotland. The relationship of such companies with fin fish farmers is good. We see ourselves feeding into the same market in future, with the same Scottish quality with which we want to brand all our products.

As Graeme Dear said, we are alluding to the responses of some individuals on the matter, but across the board at business level there is good collaboration between fin fish farmers and shellfish farmers.

Doug McLeod: I am speaking from the other side of the fence, but I agree with my colleagues that, in general, relations between those who farm different species are not too bad. There are, unfortunately, a few outstanding examples in which confrontational situations have developed. We need not name any names, because such matters are best dealt with on a site-specific basis. Those examples must not be allowed to get blown up into a national issue because at national level and on species levels we do, and should, feed off each other, rather than fight. The way forward is to co-operate and collaborate. I fear, however, that that requires more listening on the part of the fin fish farmers than has sometimes been the case in the past.

The majority of shellfish growers are open to rational discussion. Several of my members are former fin fish farmers or current fin fish farmers. We can—and do—get along, although we need to communicate more. I hope that communication has been improving as the years have gone by. Where we have specific conflicts, the two sides have been seen to retreat into their laagers—I hold up my hands in that regard—and cease to communicate, which leads to problems. The associations perhaps have a role in trying to reduce such residual confrontation.

Dennis Overton: Any such problems are, by and large, residual. From our experience in Shetland, I would say that there has been an

increasing amount of effective co-operation as businesses have grown up as neighbours, as on the Scottish west coast, as Graeme Dear described.

To return to research, I feel that co-operation could be even more fully developed in, for example, studying the impact of nitrogen in the wider marine ecosystem. That would help both sectors better to understand each other and to develop more effectively and co-operatively.

Mr Slaski: I want to flag up the development of an overarching trade association. The Federation of Scottish Aquaculture Producers is a group of us who are trying to work together and engage in dialogue. The federation has existed for almost two years and much of the dialogue goes on behind the scenes. We will, increasingly, see issues such as this bringing us together as an industry that has a national vision.

Fiona McLeod: You now have an industry association that you can work with. While you are co-operating among yourselves, do the powers that be—such as planning authorities—stand in your way or do they promote your working together? We talked about assimilative capacity, but we must also consider environmental capacity. How many industrial applications on a sea loch will a planning authority accept? If you were trying to work together to set up joint sites for fin fish and shellfish, for example, would that go down well with planning authorities?

Doug McLeod: There is a bit of a problem under the current locational guidelines. The current set-up is based on separation distances rather than on bringing operations closer together for synergetic purposes. That is why all sectors welcome the Executive's announcement of a review of the locational guidelines. That should be central to the development of any strategy. I argue that the main element of a strategy is location. The main issue is the criteria for determining prioritisation and location of individual species or joint-species operations.

I hope that, in its consultation, the Executive starts from the position of multispecies aquaculture, rather than from the historic emphasis—which probably flowed from the Crown Estates—of creating apartheid between shellfish and salmon, which now exists between salmon and other fin fish. We need to come together more, as long as what we do is based on robust science. We do not want to introduce disease problems because there are multispecies operations. Multispecies operations work worldwide, so I do not see why they should not work here.

Mr Slaski: The locational guidelines review is welcome. It will form the national vision—the national planning policy guideline, if you like. We must also consider the important role of local authorities, particularly in deciding their framework plans for multistakeholder use. The Highland Council has already taken a good lead on that—its work on that is impressive—and I hope that other local authorities will follow its lead. They need resources to help them to achieve it, but the way forward is to have a vision at a local level as well as at national level. I endorse what Doug McLeod said—we are all working towards that at the moment. The situation is quite positive.

Maureen Macmillan: I want to go back a question or two and to ask about best practice. You talked about the possibility of giving some kind of reward to firms that employed very good practice. Would the industry police that, or would there be a role for the Executive, the Scottish Environment Protection Agency or an independent body? Obviously, people could not just nominate themselves without some kind of regulation or test of good practice.

Lord Jamie Lindsay: There are different levels of practice: there is better practice, very good practice and excellent practice. Some such practices are worthy but aspirational and are essentially unmeasurable. Nonetheless, they indicate genuine intent by an operator to make better decisions in respect of environmental management or other relevant issues. As we come up the scale, we might implement a system that can be measured, but we perhaps do not want independent measurements. Rather than employ an independent auditor to measure practice, one should audit it oneself, as it were. At the top of the scale, which is where Scottish Quality Salmon members have gone, not only can we develop a system that can be audited—in other words, the standards that we design into that system can be measured at ground level—we can ensure that a third-party independent inspectorate carries out the audit and issues a certificate of compliance or non-compliance.

In order to finish off the credibility of the disciplines involved for the wider audience—this goes to the heart of Maureen Macmillan's question—the United Kingdom Accreditation Service can accredit the standards and inspection regime against international disciplines. There are well-recognised international disciplines against which production, management and inspection standards can be measured. We firmly believe that at the top of that tree, we are getting to a level of robustness and credibility at which a statutory body, such as the Scottish Environment Protection Agency, or a planning authority could acknowledge the relevance of the attributes that are being put forward.

15:15

The Convener: I move us on to the final area of questioning for this group of witnesses, which is on environmental sustainability.

Nora Radcliffe: One element of the sustainability equation that has been seen as a cause for concern is the impact on fish stocks that supply fish meal and fish oils. What potential is there for reduction in the use of fish meal and fish oils? Is it realistic to see vegetable oils as a substitute? How advanced is the research on possible substitute food?

Dr Dear: Fish feed is very close to the heart of a fish farmer; it is the single biggest production cost. In that alone, there is a phenomenal drive for him or her to reduce the amount of feed used to produce a kilogram of fish. Constant attention is paid to improving the feed conversion ratio. It might surprise the committee to learn that investment in improved feed-control mechanisms, on which we focus a lot of attention, is not without its problems in terms of regulatory approval.

I encourage all fish farmers to invest in the highest quality equipment they can afford, because that will reduce the feed conversion ratio, which will help tremendously in making a finite resource—everybody acknowledges that fish meal and fish oils are finite resources—go as far as possible. A lot of fish meal and fish oils are used outside aquaculture, although there has been a trend toward aquaculture using more and more over the past few years.

Incorporation of plant oils in fish diets is not a problem; Nora Radcliffe asked how far research on that had gone. Almost all the feed companies and a number of farming companies have carried out extensive trials with various combinations of plant and fish oils, including blind consumer testing.

We would not have a problem with incorporating specific percentages of plant oils in fish-feed diets tomorrow. We would be able to do that and still deliver a high quality product, using health-enhancing omega 3 oils. Farmers could use a number of strategies. They could use a higher concentration of plant oils and fish-oil mixes in the first year and switch to using more marine oils in the second year. There is a lot of scope. I assure the committee that members could eat fish that has been fed on plant oils tomorrow—they are out there—without being able to detect the difference.

Lord Jamie Lindsay: I want to add a point that is relevant to the wider discussion. My point is on the sourcing of fish meal and fish oils. Scottish Quality Salmon has imposed standards and ISO 14001 and EN 45011 are mentioned at every stage in the chain, including the feed sector. SQS feed members all have ISO 14001 systems in place, so they are all obliged to respect the fact that only sustainably managed fisheries can be used as sources of their meal and oil raw ingredients.

We should acknowledge that there is a wide debate not only in this country but elsewhere about the sustainability of the fish stocks from which meal and oil are derived, and we should seize any opportunity to provide additional clarification and assurance on sustainability of those stocks. SQS is considering energetically what other third-party measurements are available around the world to fisheries that supply to the fish manufacture sector. I stress that we already have standards on sustainability for fish meal and fish oils, but it would be good for Scotland to employ any additional available reassurances to address the concerns that have been expressed.

Dennis Overton: Notwithstanding what Jamie Lindsay said, the role of the committee and of the Executive should be to bring pressure to bear to establish verifiable sustainability measures of wild fish, in particular the so-called industrial fish species. In the European context, things are not as developed as they should be. For example, the blue whiting fishery requires significant input and work to bring about a measured level of sustainability. However, the political process could help the long-term sustainability of the feed source. Some partnership will be required.

The Convener: Fiona McLeod will ask the last group of questions. If John Munro still wants to ask the question that he wanted to ask earlier, he may do so after Fiona McLeod's question.

Fiona McLeod: My questions on sustainability and economic development have been covered, so I want simply to use the example of sea lice to find out people's views on the economic and environmental effects of the industry and to sum up what has already been said.

Earlier, Dr Dear mentioned that that there would have been no sea lice problem if the industry had been allowed to use the kinds of therapeutants and levels of therapeutants that it wanted to use, at the time that it wanted to use them. The converse argument is that too many therapeutants are put into our water and cause environmental damage when there are other ways in which to manage sea lice that do not require therapeutants. As producers, will you talk about that? Are therapeutants necessarily the most effective treatments for diseases? How can diseases within the stock be managed without causing a huge impact on the environment in which the stock is being reared?

Dr Dear: First, the use of such a treatment is the last resort. SQS members have developed many of the practices that others have said should be

adopted, such as fallowing, single year-class stocking, management agreements and the synchronous treatments and swim-through net management, which are included in the national treatment strategy. All those were developed by SQS members and have been made available to the rest of the industry. We would use a medicine only after we had done all those other things.

Sea lice cannot be prevented from coming to a farm, so action needs to be taken at some stage. We monitor the lice populations every week. Because we know the exact life-cycle of sea lice, we are able to target treatments as well as possible. It is worth pointing out that the medicines that are used are rigorously tested in the lab and in the field at European and UK level before they ever become the subject of a farmer's application for a discharge consent. That process can add another two to three years to the sequence. It can—and has—taken us between eight and 10 years to bring a medicine through the process. We do not do that lightly. We do not just say, "We need a new medicine," and throw it in the water.

We have always believed that the new in-feed therapeutants would, if we used common sense, allow us better to manage sea lice on farms. The process is a bit like painting the Forth rail bridge. Unless there are in-feed therapeutants, each individual cage must be treated and by the time one returns to the first cage—it can take a couple of weeks to get through a farm—the problem might have arisen again. With in-feed therapeutants, every fish can be treated on the same day at the same time, which is a more effective method of lice control. There are also environmental benefits, because there is a much longer period of freedom from lice before another treatment needs to be carried out. We have many data to substantiate that—the committee might like to see copies of research and practical work.

The best available tools must be used. We would expect general practitioners and vets to use the best available tools; our salmon expect that of us.

Fiona McLeod: I want to clarify something. You said that you monitor sea lice every week.

Dr Dear: Yes.

Fiona McLeod: For how long have you been doing that? Do you have figures? You said that therapeutants were the last resort. Over the past five years, has the number of sea lice increased, decreased or stayed the same?

Dr Dear: We have monitored sea lice for longer than I care to remember. We submitted data points to the University of Strathclyde and the University of Glasgow through a research programme—funnily enough through the LINK programme. We have well over 100,000 data points that those universities can use. They will produce the most comprehensive assessment of sea lice populations ever.

I can tell the committee about our experience of the past cycle in one of the Marine Harvest Scotland farms. One of the new in-feeds has been so effective in the treatment of sea lice that we did not have to treat more than once in a whole two-year cycle. In the past, that was unheard of.

Fiona McLeod: So using the new treatment, only one new treatment in the two-year cycle is required. Of all the other methods that you mentioned, therefore—I think that you mentioned six—none approaches that one therapeutant in respect of cutting down the number of lice.

Dr Dear: Our company automatically carries out fallowing and single-year class management. We do all the things that I mentioned. Normally, when smolts are stocked in a salmon cage, there are no sea lice, as they come from fresh water. The wild fish bring sea lice with them—that is fine, as it is what they do—and they can build up in a farm. A treatment might or might not be needed in the first year, as there are two different species of lice. However, we now understand the sea lice cycle much better and have found that there is a weakness in the two-year cycle, usually between weeks 11 and 16. We can exploit that in the second year and carry out a targeted treatment—that is the national treatment strategy—and try to synchronise that treatment with all the other operators. If there is more than one farm in a loch and treatments are carried out at the same time, there will be better results. That can create discharge consent problems with some of the bath treatments that are available, but probably not with the in-feed treatments.

Therefore, therapeutants are still the last resort. If we do not have to use therapeutants in the cycle, we do not.

We must also be mindful of the fact that sea lice are a pest that can kill salmon if an infestation is allowed to progress. From a welfare perspective, it is unacceptable to allow that to happen. If the committee wishes, I could submit some data to explain in greater detail what I have just said.

15:30

The Convener: That would be useful. Professor Read could liaise with you to get the appropriate data.

Dr Dear: That is no problem.

Mr Slaski: We are now considering multispecies farming for the future. The rotation of any different species in a farming environment is always quite an interesting concept from the point of view of breaking disease cycles. I mentioned the industry-

Government working group's achievements. Last week, the aquaculture health joint working group established a sub-committee to examine the interrelationship between different species that we might culture in the future and how diseases might affect one species and not another. There is another way of looking ahead in the broader context of the industry; that is quite exciting. It is early days, but we have started on that process.

John Farquhar Munro (Ross, Skye and Inverness West) (LD): Most of the queries that I had have been covered in the fairly lengthy discussion that we have had. At the outset, I say that I hope that the witnesses representing the fin fish industry are not of the opinion that the committee is here to destroy their industry. Most of the evidence that has been heard by the Rural Development Committee and the Transport and the Environment Committee, as well as evidence that I have taken myself, supports the industry because of the jobs that it creates in rural parts of Scotland. That is to be welcomed. The concern is that such job creation must be in harmony with the environment. The evidence that industry representatives have given us today suggests that they are very much in harmony with the environment, but that is not the perception that some people hold.

Incidentally, I am concerned and dismayed that there is such a strong lobby from the fin fish industry, while poor Doug McLeod is all on his own representing the shellfish industry. Perhaps that imbalance can be redressed at some future date. I have been intimately involved with the activities that are going on in the shellfish industry.

As I said, the popular perception is that fin fish farming is not completely in harmony with the environment and with other stakeholders in the sea fish industry. How might that issue be addressed? What advice can the witnesses give me that I could give to individuals to show that sea cage fish farming activity is quite acceptable and is harmonious with the environment?

Dennis Overton: I suggest that John Farquhar Munro's constituents use some of the channels of communication that are now in place and to which Doug McLeod and Richard Slaski referred. Communication is crucial to the process, and we are moving beyond the separate laagers to work together more effectively. I would ask any concerned shellfish farmer whether they are communicating effectively through the channels that now exist but which perhaps did not exist a couple of years ago. That would be a good starting point to highlight the issues that are of concern to local shellfish farmers. Those concerns should be taken on board and addressed in the cross-industry communication process that is now developing.

Lord Jamie Lindsay: Although we are not necessarily unique, SQS recognises the genuine and deeply felt concerns of parallel interests and stakeholders. Equally, we recognise that, if one wants long-term prosperity for one's investment and operations, it is important to find a way of addressing the concerns of those among whom one wants to carry out those activities.

Some of the SQS standards and codes of practice deliver a level of performance that neither scientists nor legislators demand. They exceed the thresholds that we should logically be aiming to achieve, but we know that if we do not deliver that additional quality and performance guarantee, other stakeholder interests will feel that their concerns have not been properly addressed. In practice, the modern definition of sustainability increasingly means working with parallel interests, as well as delivering the normal demands of sustainable development.

I should add—because I know that it was circulated just before the meeting started—that evidence of dialogue with parallel interests is in the joint statement that Scottish Quality Salmon and the Salmonid Fisheries Forum issued today. It is a joint vision of how the regulatory structure that stems from the wider Government strategic review should be delivered. For farmed-salmon interests and wild-salmon interests to sit down and identify the best way forward for both is a significant development. It also goes right to the heart of John Farquhar Munro's point that we should work with neighbouring interests.

Dr Dear: The best answer I can give John Farquhar Munro is to say that he should come and meet the people who are responsible for managing the feed, the waste impacts and the sea lice treatments, and understand what they have to do. If he does that, he will receive a message that he can deliver. He should come and have a look.

John Farquhar Munro: In that context, I recently visited a couple of sites on the west coast and—to be fair to the industry—what I saw there was encouraging and represented a marked improvement on what I saw some years ago. It is all very well my seeing that improvement, but you and I have to transmit that perception to the general public; otherwise we will have many meetings such as we are having today, without convincing anybody.

The Convener: I will draw this part of the meeting to a close on that point, because we have two other groups of witnesses to get through. I thank Dr Graeme Dear, Lord James Lindsay, Dennis Overton, Mr Richard Slaski and Doug McLeod for their evidence. We will have a five-minute break, but I ask members to return promptly after the break so that we can progress with the rest of our witnesses.

15:37

Meeting suspended.

15:48

On resuming—

The Convener: I welcome our next set of witnesses: Douglas MacDiarmid and Iain Sutherland, who are from Highlands and Islands Enterprise, and Malcolm Gillespie, who is from the Sea Fish Industry Authority.

Highlands and Islands Enterprise has distributed a paper that may be of benefit to our discussion and to which members may wish to refer. If Douglas MacDiarmid or Iain Sutherland would say a few words about the paper, that might help us before we ask questions. Also, it might help members to streamline their lines of questioning if they take into account the areas that are covered in the paper.

Do the witnesses wish to introduce the paper that they have distributed?

Douglas MacDiarmid (Highlands and Islands Enterprise): The aquaculture industry has huge importance for our area. Rather than refer directly to the paper, I will put into context our gladness that the committee is in the Highlands and Islands today. Statistics are often bandied about—for example, we have heard mention of about 7,000 jobs. Our paper indicates that about 1,800 jobs are in the most fragile areas of the Highlands and Islands. I will set that situation in the context of Highlands and Islands Enterprise's role as the Government's key development agency in the area.

HIE's role is not just about growing business and developing skills in the region—critically, it is about strengthening communities. For many decades, HIE and the body that preceded us—the Highlands and Islands Development Board—had the role of reversing the decline in population and the difficult economic circumstances. In the final quarter of the 20th century, the aquaculture industry was unquestionably critical to reversing those deleterious trends in some of the most fragile areas. The committee's presence in the Highlands and Islands is critical from the perspective of the community role that HIE exercises in addition to its role in the more conventional enterprise agenda of growing business and so on, as the committee will get a feeling for how important aquaculture is in some of our more rural areas. During questioning, I will be happy to illustrate that with specific examples. Although the aquaculture industry is perhaps not the whole answer for such communities, which remain under threat, it is certainly a vital part of the answer. Thank you for that opportunity.

The Convener: Thank you for your remarks. The committee recognises the importance of the industry to many small rural communities. That was a major factor in our decision to come to Oban. We wanted to underline the fact that the Scottish Parliament is available to the whole of Scotland, not just to the central belt. It is important that the Parliament's committees underline that message by getting about Scotland.

Maureen Macmillan: I agree with what you said about the importance of the aquaculture industry to the Highlands and Islands. I know that HIE takes a holistic approach to such industries. How might the Executive, too, take a holistic approach? What sort of strategy and governance should be used? Perhaps you could comment on the socioeconomic and environmental balance that must be struck. I would appreciate examples of what is happening in communities.

Douglas MacDiarmid: I will refer briefly to a central part of our strategy: sustainable development. We are certainly not in favour of development at all costs. We want that sustainability to appear in competitive businesses and in the strength of communities. We want communities to be socially sustainable. Sustainability is also critical to the environmental agenda. If we as a development body do not take account of the drivers in the environment—whether environmental bodies or consumer preference—the competitiveness of the industries that we support will not have a long-term future. As a development agency, we regard sustainability as a holistic agenda.

I will pick out a few small communities as examples of the importance of getting the balance right. More than 25 to 30 per cent of the work force on Harris—more than 100 out of the 400 people who work on that island—are employed in the aquaculture industry. Not only direct employment is involved. The local primary schools, which have small school rolls, are utterly dependent on that employment and the secondary employment that goes with it.

It is quite easy to envisage an implosion of those communities and a complete depopulation. Tomorrow, I will travel to Shetland with the Highlands and Islands Enterprise board to visit Out Skerries—12 miles from Lerwick. Out Skerries is a community of 75 people, of whom about 50 are in employment; of those, 25 are employed in the aquaculture industry. It is obvious that without aquaculture the local school, the medical services and so on would face difficulties. Without a long-term competitive and sustainable industry it is easy to imagine how that island could become depopulated.

It is crucial that we address the competitiveness of the industry and, with the industry, we invest

considerable funds in doing that. However, at the same time we must consider the environmental agenda to see how we can support proactive environmental efforts by the industry and other agencies.

Maureen Macmillan: If no other witness wants to comment on the impact on communities, I will move on to a comment that you made about how Highlands and Islands Enterprise supports the firms involved financially. We heard earlier that we have to do scientific research and that there must be technological development in this area to get robust science on which to base future developments. What are the priorities for research and development? Might HIE have a role in funding that research or should that be done by the industry or the Government?

Douglas MacDiarmid: A wide spectrum of research needs to be done. Reference was made earlier to the range of the research, from near-market or site-specific development work through to blue-skies or strategic research. Our view is that the nearer one gets to research that is generic and for the common good, the more likely it is that public funding should take the lead, and that the nearer one gets to the marketplace or to site-specific issues, the more likely it is that the private sector should take the lead.

We are actively involved in a number of areas directly. We have offered funding, for example, for the appointment of a development manager for the tripartite working group, which will bring together the wild fishing and aquaculture sectors alongside the Scottish Executive. Reference has been made frequently to the variety of research institutes that are available in Scotland for the industry. There is certainly a role for the Scottish Executive and Highlands and Islands Enterprise in bringing all that knowledge together in a much more cohesive and focused way and in potentially funding components of that research. Places such as Dunstaffnage, which the committee visited this morning, are leading centres for aquaculture research. The University of Stirling is well recognised in this field and we have many other leading centres for aquaculture research.

We ought to see the environmental issue as an opportunity for Scotland and for the Highlands and Islands. We should establish clarity of thinking about the environment. We should identify the top priorities that have to be addressed in the environmental agenda, put the necessary private and public investment into that research and drive the agenda forward for, in the first instance, the benefit of the environment and, ultimately, for the long-term benefit of the industry.

Maureen Macmillan: Should the Executive adopt an environment-led strategy? Will such a strategy be of benefit to the industry?

Malcolm Gillespie (Sea Fish Industry Authority): I welcome the opportunity to speak to the committee. From our point of view, we see the strategy as being important in allaying fears that have been expressed over the years about the industry, where it is going and what its impacts might be.

There has not been a clear and transparent policy at national level, either before devolution or from the Scottish Parliament. This exercise and the research underpinning it, which Douglas MacDiarmid described, will go a long way towards meeting concerns and will be a step towards coastal zone management in the broadest sense. That is important for ensuring that all stakeholders are happy with the way in which the coastal zone is managed in future.

16:00

Maureen Macmillan: You have answered my third question in part, but can you sum up what you think the key features of the strategy should be? What should be the Executive's key aims and objectives in the strategy? You think that the strategy should be environment led, but that that would be of benefit to the industry.

Douglas MacDiarmid: I see the emerging strategy as a real opportunity. The strategy is led by the Scottish Executive environment and rural affairs department. However, given that Highlands and Islands Enterprise is funded through the Scottish Executive enterprise and lifelong learning department, it is important that in the evolution of the strategy the two departments should work together and talk to each other. That will ensure that the different strands of the strategy tie up well and deliver what we are all seeking to achieve.

The environment is critically important. Unless we address that issue and ensure that we have solutions to people's fundamental concerns—real or otherwise—the long-term competitive future of the industry will not be secure.

There are two sides to this issue. Over the past decade—and beyond—we have invested very heavily in the aquaculture industry, using Scottish taxpayers' money. We have provided direct grant funding for the construction of factories, for marketing and for environmental research projects. Tens of millions of pounds have been invested in that way by Highlands and Islands Enterprise. It is very important that the strategy should link together the developmental and environmental agendas for the future.

Maureen Macmillan: So at the end of the day you do not see any conflict between socioeconomic and environmental issues.

Douglas MacDiarmid: If we rely on objective

science and clear thinking, the two are entirely compatible.

Nora Radcliffe: I would like you to develop that point a little. Who should implement the strategy, and how? What would it need to underpin it? What do you see as the key deliverables, and how would you measure success? Can you set out a five-year time scale that you regard as realistic?

Iain Sutherland (Highlands and Islands Enterprise): Every organisation that engages with the industry should deliver the strategy. The Executive, on the one hand, and the industry, on the other, are the front runners. I hope that the regulators under the current system, along with stakeholders, environmental groups and wild fisheries groups, will be engaged in the formulation of the strategy.

The member asks how long the strategy should last. The aquaculture industry is a rapidly evolving industry, and strategies should be revisited as regularly as the sector concerned requires.

The key underpinning of any strategy should be the industry's wish for a broadly accepted vision of how large it may evolve to be and what standards of environmental performance may be expected of it.

Mr McGrigor: My first question is for the Sea Fish Industry Authority. I note that 75 per cent of your income is raised by a statutory industry levy and that the levy does not apply to salmon and trout. Would the levy apply to halibut and other species if they were farmed?

Malcolm Gillespie: Yes. The levy applies to any marine fish or shellfish at first point of sale in the UK. It applies to wild and farmed fish and imports, too.

Mr McGrigor: So there would be a slight disadvantage in farming those species instead of salmon and trout, because the levy would have to be paid.

Malcolm Gillespie: Yes, one could argue that. The activities that the Sea Fish Industry Authority undertakes in support of the industry target in particular the sectors that pay the levy. Of course, there are general spin-off benefits for farmed trout and salmon. One could argue that all sectors should be brought together. It will be increasingly important to see the industry as the fish industry, rather than as the fishing sector, the aquaculture sector and so on. We are all working together to supply fish and seafood products to the UK consumer.

Mr McGrigor: I have a wee question for Highlands and Islands Enterprise. You have mentioned ways in which environmental impacts might be reduced. Would Highlands and Islands Enterprise consider setting up a scholarship or scheme for research on that topic?

Douglas MacDiarmid: We might investigate something in the way of networking and focusing aquaculture research. There is plenty of scope to identify such opportunities and focus effort on creating a coherent platform of research that addresses the long-term needs of the industry.

John Scott: A range of views has been expressed on the future development of aquaculture products and markets. What are the options and priorities for the development of new markets, the expansion of current markets, the diversification of fin fish farming and the diversification and expansion of shellfish farming and polyculture? What are your views on potential developments?

Douglas MacDiarmid: It goes without saying that the first thing that we should do is to protect the markets that we have already. The work of the Transport and the Environment Committee and the Scottish Executive in developing an aquaculture strategy is critical. If we cannot demonstrate to consumers that we have a product that they will prefer to buy in the long term, existing markets could be threatened.

People have spoken about quality at some length and undoubtedly the Scottish sector attracts a premium for its products. We would seek to assist the development of quality through our funding interventions, for example, steering the product investments that salmon farmers make.

It is worth taking a moment to consider diversification. We have worked closely with the sea fish industry on diversification because it is important that producers diversify the economic base of the industry and that we provide additional consumer choice in the future. Fish such as cod and halibut are coming into commercial production. In future, haddock could come into the equation, too. Production capacity is presently about 150,000 tonnes. It would not be unrealistic to expand that, in a measured fashion, by considering diverse species in the coming years.

Malcolm Gillespie: It is worth noting that UK cod consumption is around 150,000 tonnes per annum, of which 120,000 tonnes are imported, so there is significant potential for import substitution at the top end of the price and quality range, which UK processors and retail outlets are looking for. We are now also considering haddock because of signs that similar opportunities exist there.

There is substantial interest in cod, especially in Norway. We have already heard this afternoon about the Norwegian approach to aquaculture. The Norwegians take the potential for expansion in such species very seriously, and the UK is seen as a major market. We have to take the issue seriously and consider all the opportunities.

Nora Radcliffe: What opportunities do we have to sell our expertise in fish farming technology and equipment and their development and efficiency? Is there scope for diversification into those areas?

Douglas MacDiarmid: Ensuring that we have a proper inventory of our knowledge base and mapping it against potential global opportunities and against the needs of our industry would chime well with the Executive's agenda on the global competitiveness of the Scottish economy across the board. We should be clear about our strengths in science and we should exploit them to the full in taking international opportunities. I am sorry to be repetitive but, if we had a focal point for the huge strengths that we have in various institutes in Scotland, we could capitalise in a way that would be very much to the advantage of the Scottish economy.

Maureen Macmillan: I want to go back to what was said about diversification into cod and about how the Norwegians are planning to go into that in a big way, seeing Britain as a potential market. We could be left behind. How long do we have to get our act together?

Malcolm Gillespie: The Norwegians have already issued licences for about 250,000 tonnes of cod production—although this year production stands at about 2,000 tonnes. They are looking ahead and, at top Government level, are encouraging the diversification of their industry because they see it as a potential income earner for the country when oil runs out in 20 years' time. They are taking the long view.

They have brought together a consortium of companies and Government institutes in a programme called "Go for cod", which is now in its third year. Part of the programme is aimed at developing the infrastructure that will be required to underpin and build a cod sector—especially with regard to hatchery production, for which the requirements for cod are very different from those for salmon. Cod can be grown in similar facilities to those required for salmon but, in the early stages, more specialised hatchery units are required.

John Scott: I have a supplementary question. Are the huge expansion in the market and the development of different breeds, all of which eat other fish, sustainable in the long run? Will you not have a different product if the fish are fed on vegetable products?

Malcolm Gillespie: A key element of the programme is consideration of the potential for the substitution of vegetable oil and protein for fish products. A cod requires only a third of the oil in its diet that a salmon requires, which is already an advantage given the limited resources. Nonetheless, it is recognised that other dietary elements will have to be introduced. It is obvious to everyone involved that expansion cannot continue without access to alternative dietary constituents, given existing fish oil and meal availability, and they are working on it.

16:15

John Scott: We have been discussing whether we should pursue the high-quality end of the market—the niche markets—or the bulk end of the market and the commodity product, with Norway and Chile. What are your views on that? Which markets should we go for?

Douglas MacDiarmid: It goes without saying that, having invested substantially, along with the industry—you just heard from Scottish Quality Salmon—we want the quality identity of the Scottish brands to continue, through Label Rouge and so on. It is important that, having established the cachet of the Scottish product in the marketplace, we maintain it and enhance it in the future. That will take many forms. Recently, we have heard about organic salmon production and I suspect that we will hear more about that in the years to come.

There are niche opportunities to which we must be alert. The market will give producers signals about where there are opportunities for enhanced learning and I am sure that the producers will follow those signals. As a fundamental principle, we ought to aspire to the Scottish product having a platform that reflects the fact that it is a wholesome product and a safe food from a well-managed environmental background.

Malcolm Gillespie: It is worth noting that there is a difference in the way in which the new farmed species, such as cod and haddock, are becoming established. They are entering an existing commodity market, whereas the previous farmed species, such as salmon, halibut, turbot and shellfish, to some extent entered a small, luxury market, which they have gradually—or, in some cases, very quickly—increased. Because the commodity market already exists for cod, for example, there are different levels and different prices in the market, reflecting the quality of the fish. It will only be economically viable for farming to come in at the top of that market—providing the size of fish that is not being landed locally any more—and right at the top of the quality scale. The requirement is there from the start.

The Convener: The last issue that we want to address is environmental sustainability.

Fiona McLeod: I would like the witnesses to summarise two elements. First, it has been made clear that they think that the future of the industry should be environmentally as well as economically sustainable. They are saying that the environment comes before the economics of the industry.

Douglas MacDiarmid: I want to balance that. The focus cannot be the environment at any cost—there has to be a cost/profit equation. At the end of the day, producers will not invest if the cost penalty is too high. The equation must be balanced.

Let me be quite clear about what I am saying: HIE believes that a responsible and proactive environmental management approach is a prerequisite for a long-term, successful industry. It is critical that the two issues are balanced.

Fiona McLeod: That leads neatly on to my next question. How should we reward best environmental practice in the industry? Should we use a system of rewards as proposed earlier by the witnesses from SQS, who said that people who sign up to the various environmental standards would be treated advantageously when they apply for licences or for permission to operate at particular locations? Should we have increasingly draconian reprimands for those who do not follow best practice? What is the best way forward?

Douglas MacDiarmid: HIE is an enabling agency—it is not a regulatory agency. From that perspective, our view is that we should incentivise people to do things. We genuinely believe that the best way of getting things done in the long term is to encourage people by price signals or whatever. HIE has been involved in other sectors and industries in the Highlands and Islands. For example, in tourism, we incentivise businesses that are members of the green tourism business scheme. We give environmental signals in our grant conditions—

Fiona McLeod: Will you give us more details about that, so that we are able to understand what the incentives are?

Douglas MacDiarmid: If we were to consider investing grant aid in a hotel business that was looking to expand or upgrade its facilities, we would expect that business to become a member of the green tourism business scheme as a condition of grant assistance. We tend to be quite rigorous about other types of quality or business improvement and encourage people to become members of the Investors in People programme. We say to people, "If you want grant assistance from us, you need to be committed to investing in the people who work in your organisation and to taking that agenda forward." On financial incentives to industries that we will assist in future, we could identify ways of signalling the areas of work that we would prefer to support at higher levels of grant assistance. It is quite conceivable that we would not assist in some cases if the activities that we thought were critical were not being undertaken.

Fiona McLeod: I have a related question on the aquaculture strategy that we envisage. Should the strategy be built on rewards, incentives and partnerships, or should it be a prescriptive strategy that tells people, "You must do these things or you cannot operate a fish farm in Scotland"?

Douglas MacDiarmid: I do not want to speak for the regulatory bodies. I am sure that there is a platform, or minimum standard, which those bodies must define or decide.

It is critical that the strategy has a general tenet that makes it clear that it is about the huge opportunity that exists for the Scottish and the Highland economies, not just for today but for the long term. If we work together, we can solve problems and do extremely well, both for the environment and for the community. The best way to achieve that would be for the strategy to signal incentives, rather than for it to take a negative approach.

The Convener: That brings that series of questions to an end. I thank Malcolm Gillespie, Iain Sutherland and Douglas MacDiarmid for their evidence, which the committee has found useful. I am glad that we asked them to come today and I hope that we will have an opportunity to speak to them again, either in Oban or in another part of their area of responsibility.

I suspend the meeting for one minute while we arrange our next group of witnesses.

16:24

Meeting suspended.

16:25

On resuming—

The Convener: I ask members to take their seats once more and I welcome back to the committee Professor Randolph Richards, Dr Kenneth Black and Dr Dick Shelton. We enjoyed your previous evidence so much that we invited you back for a second go. Today, we will focus on different issues from those on which we took evidence from you previously. The first issue is how the industry should be developed and what the roles of the Executive and the aquaculture industry should be in that development.

Maureen Macmillan: I will ask the same question as I have asked others about the holistic approach that must be taken. As scientists, you might have a different perspective from that of the representatives of HIE or of the industry. How should the balance of socioeconomic and environmental needs be worked out?

Professor Randolph Richards: I agree with previous speakers that a balance on both sides is

needed. It is important that the Executive recognises the importance of aquaculture to Scotland in food exports, quality food products and employment in some of the more fragile rural areas. It is also important that sustainability is at the base of future policy. A large number of speakers have mentioned that.

It is important to maintain the Scottish image—the Scottish branding and quality image. Any strategy must take care of that. Another important aspect is the replacement of elements of traditional capture fisheries. We have heard about the cod situation and the fish gap, of which we in Scotland have an excellent opportunity to take advantage.

In general, Scotland is well placed to develop the new marine species, because of its environment, which is ideal for some of those species and, as some speakers have said, because of the range of expertise in the Scottish Executive's laboratories, in universities and in research institutes around Scotland. We have a unique capability to conduct the necessary research.

The objective that the policy should come up with is sustainable development of aquaculture production in Scotland, with appropriate diversification where that is possible.

Dr Kenneth Black: I liked what Doug McLeod said. There is no point in labouring those issues—much that is sensible has been said. I like the idea of an holistic management tool being developed. Bits and pieces of that are around. To an extent, the locational guidelines are a start in that direction. There is nothing to stop us having quite clever management tools, which include modelling carrying capacity—I would throw sea lice in there, too. There is nothing to stop us including the social and economic aspects in the management decision-making tools.

I have said this before and I will say it again: to underpin those tools, we urgently need to bring together the basic marine data, which are currently held by a wide variety of organisations. The data must be pulled together intelligently, so that decision makers have access to the best-quality information. Although some parts of the west coast have been well researched, for other parts there are few data. Because we know little about those places, we must extrapolate from other situations. It is within our grasp to build a comprehensive set of marine data that includes social and economic aspects and uses clever modelling tools to allow us to assess assimilative capacity. Other industries are constructing similar data sets; I see no reason why we should not have that aim as a driver. It would take a lot of the heat out of the arguments.

16:30

Dr Dick Shelton: From an holistic point of view, it is unfortunate that our aquaculture industry has taken the line that it has. In an ideal world, aquaculture would use the productivity of the sea, which is what the producers of bivalve shellfish do and what Doug McLeod hinted at. When fish that require a high-protein diet—such as salmon, cod and halibut—are taken into inshore waters, they are fed on an extremely valuable and costly diet, which is often taken from stocks that are already overexploited. The waste is dumped in an environment, which in my living memory—and possibly that of some members—was once a pristine and beautiful place. There is nothing holistic about that form of ecological asset stripping.

That is a difficulty, but the problems are controllable. We do not want them to get any worse. During my previous meeting with the committee, I said that we should have a limit on the total biomass of the high-input industry. That does not mean that we should not move things about—sometimes we will have to do that to reduce the dire environmental effects of the industry in its current form. If we are to take an holistic approach, we must consider such a measure. The issue is one of waste disposal and the control of parasites and disease, about which I will say more later.

Before I came to the meeting, I had a call from an anxious person from Orkney who is involved with fishing for sea trout. There is an interesting sea trout fishery in Orkney. He told me that for the first time, the sea trout in Scapa Flow have high levels of sea lice, which is sad. Robin Harper can tell the committee more about the matter, because he has been to Orkney to see the situation for himself.

The serious environmental problems must be addressed if we are to call ourselves holistic. I was particularly concerned to hear about Scotland's difficulty in remaining cost-effective in the commodity end of the salmon rearing industry. There is no real future in making that part of the Scottish industry bigger. To do so would achieve economies of scale at great cost to the environment, which would be wrong.

The future lies in a more compact but higher-quality industry that is directed at niche markets. For example, salmon are produced safely on the open west coast of the Outer Hebrides without major sea louse and disease problems and alongside healthy sea trout and salmon populations. That low-lipid input system produces a particular quality of fish that is smoked over peat and sold at a premium price. Rather than chasing the tail of the commodity end of the market, we should encourage that type of industry.

If I may, I will read out something positive, having said so many horrid things. I have a letter with me from Jon Watt of the Lochaber and District Fisheries Trust. He wrote:

"During winter of 1999/2000 many of the Linnhe salmon farm sites were fallow for extended periods due to ISA. During this period"

local fish farms

"developed a management agreement covering every site from the head of Loch Eil to south of Oban. This brought the Linnhe salmon farms into synchrony with a single year class being produced at all sites … Many sites had to have very long fallows to comply. Sites were re-stocked in spring 2000. When this happened I predicted a good grilse year for the Lochy in 2001 as I believed smolts would have a clear (louse free) run down Linnhe. This has happened. The Lochy system bounced back with almost 500 fish for the catchment".

He said—and I know—that the same applies to a number of other places that have benefited from the infectious salmon anaemia fallowing.

Those are important things, which we need to know about. The problems will not be put right by a bit of minor reshuffling or relocation; we need radical solutions with mandatory backing. That is my main message, but perhaps we can enlarge on it later.

Maureen Macmillan: I was in Orkney at the same time as Robin Harper. I have seen photographs of sea trout almost eaten alive by sea lice. I am aware of the problem in Scapa. On the other hand, eight families have moved to Raasay because of a fish farm development there. The need to strike a balance has to be contended with, and it is a matter of where the line is drawn and of deciding what is more important in the end.

Dr Shelton: I totally agree. I am all in favour of sustainable, nice jobs for our island and Highland communities. Nobody is keener on that than I am. I just do not want other people and other jobs to suffer. We have witnessed the terrible effects on the wild salmon and sea trout industries in Scotland—it is tragic.

Maureen Macmillan: Do you feel that those concerns are now being taken on board, and that there have been moves and an improvement?

Dr Shelton: Those concerns have been taken on board since the committee started to kick a certain amount of—I will not say what, although I think the American word is butt. There is no doubt that the activities of the Transport and the Environment Committee have been hugely helpful in this regard.

Maureen Macmillan: Kenny Black mentioned a few minutes ago that the priorities were modelling for assimilative capacity and, as we have discussed, research into sea lice. I presume that Dr Shelton and Professor Richards would agree with that. Who do you think should undertake such research and development, and who should fund it? What are the respective roles of the public and private sectors, including that of Fisheries Research Services?

Professor Richards: There is a role for many different sources of funding in research, as exist at present. A mixture of scientists, including those in the Scottish Executive and in universities and research laboratories, is working directly on those problems. Sources of funding are quite varied. They include the research councils, the European Community, the Executive itself and industry.

As has already been said today, there is a role for the Scottish Executive in coming up with funding towards some form of LINK programme, such as that which existed in the past. Everyone concerned viewed that as extremely effective, and as an opportunity for the Executive and industry to work together on the provision of the appropriate funds to allow the key elements of research to take place. That has been missing in the past couple of years, but it could help considerably in the future.

Dr Black: I agree with what has been said, but I wish to add something about a problem with the original LINK scheme. The fact that 50 per cent of the funds have to come from Government while 50 per cent have to come from industry poses a real problem for many smaller operators, particularly on the shellfish side. They found it difficult to find that 50 per cent, even when it was a question of making an in-kind contribution.

It was also difficult in the initial stages to get companies interested in environmental LINK projects on a wide scale. LINK projects concentrated more on closer-to-market issues, which were seen as more directly benefiting the bottom line of companies. There were some environmental LINK projects, but not many. That might have changed, perhaps because companies now see the environment as a crucial part of their bottom line, which must be a good thing. However, on some of the more strategic and generic issues, we need to see more targeted Government-sponsored funding, in particular with regard to sea lice. Other issues would be better dealt with not through a LINK scheme, but through direct Government funding—that is coming along.

All researchers ask for more money, so it is a bit awful for me to say this, but we do need more money. We need a more targeted approach. I am not asking for handouts in any sense. The best science must be done on a competitive basis, so that we compete with the best scientific proposals, but I would like more research funding to be available for particular topics, such as sea lice.

It was interesting to hear Dick Shelton's view,

because I expressed a similar view this morning when I talked to some MSPs. Until a couple of years ago, it was hard to find people who would admit to a link between sea lice and the decline in wild salmonids, but now almost everybody is comfortable with the idea that there is such a link in principle. We need funding to substantiate the degree of the link. It is crucial that we know what the transmission factors are between farmed fish and wild populations, to enable us to establish the appropriate burdens for lice for farmed salmon.

Dr Shelton: Establishing the appropriate burdens is critical. We understand from what Graeme Dear told us this morning that we know now how to deal with lice. By a combination of sensible husbandry and synchrony, it is possible to keep lice levels low with the help of modern drugs, provided that one gets agreement to use the drugs and that they can be used safely. Given the enormous numbers of fish in the cages, the control that must be exerted over the lice to protect wild fish is much greater than would be required merely for the health of the fish in the cages. That probably means—although we do not know for certain—that there must be absolutely no adult ovigerous lice in the cages. If it is possible to use the drugs that Graeme Dear referred to, that result might be achievable, even within the limits of current knowledge.

The problem is knowing what is safe and what is not. SEPA worries sometimes about the amounts of chemicals that are used to control lice. The problem is a great deal less if an in-feed lousicide is used, but in instances where it is not possible to control lice to the degree that is required for wild protection, someone—SEPA or whoever—should insist that farms in the area be reduced in size so that the lice can be safely treated.

The question then arises: who should do the inspecting? If SEPA is controlling the lousicide, who should say what the louse levels should be, and who should look at the whole process? My view is that SEPA is probably the best organisation for all those tasks, but for some of them, it might need help. The kind of help that it needs is not just the help that it would get from the marine laboratory in Aberdeen; it is the help that it would get from my former colleagues in the freshwater fisheries laboratory, whose responsibility it is to look after these anadromous wild stocks.

Maureen Macmillan: I have one supplementary question about sea lice.

The Convener: I will let Fiona McLeod and Jamie McGrigor ask questions first, because they are busting to get in.

Fiona McLeod: I thought that this was an appropriate point to ask questions about sea lice, rather than wait and come back to them. There are concerns on one hand that the industry has to wait too long to receive authorisation from SEPA to go ahead and medicate, and on the other hand there are concerns that we might be over-medicating and therefore affecting the environment. Will you tell us how we work out what the correct balance is to look after fish health, especially when there are sea lice? Dr Black has told us already that we must go out and do the research.

Will you also each comment on something that Dr Dear said? I am beginning to wonder whether I heard him correctly. He said that smolts do not have lice and that lice on farmed fish come only from the wild stocks, not vice versa.

The Convener: If Jamie McGrigor and Maureen Macmillan want to ask about similar areas, they can throw their questions in. We can then let the witnesses try to deal with all the points on sea lice.

16:45

Mr McGrigor: I am aware of the importance of the wild salmon and sea trout fisheries. We have an enormous coastline. I do not know how many thousands of miles there are on the west coast—there are 2,800 miles of coastline in Argyll alone, I believe. Do you know, or is there any evidence on, how far a salmon farm must be from a river mouth before it has no impact in relation to sea lice? Halibut are better suited to sheltered positions and do not appear to suffer from sea lice. If they were farmed in some of the positions where the salmon cages are now, would that produce a marked improvement?

Maureen Macmillan: I will ask about research into sea lice. The in-feed treatment seems to be the flavour of the month just now, although perhaps it does not taste all that nice.

The Convener: It is flavour of the month for salmon.

Maureen Macmillan: I believe that research was being done into the possibility of vaccination and I wondered whether that had made progress.

John Scott: Will the witnesses comment on stocking densities while they are at it?

Dr Shelton: Smolts have no sea lice on them because they have come straight out of fresh water. Where they get the lice from afterwards depends on whether there are many anadromous wild fish in the area and whether the nearest source of sea lice is a set of fish farm cages. Those are the dynamics of the matter.

The question of safe distance is difficult. It depends a good deal on the local hydrography and on the behaviour patterns of sea trout and salmon. On the whole, salmon go rapidly to sea,

straight out into deep water, and tend to be exposed to large numbers of sea lice only down long, fiordic lochs, such as Loch Linnhe or Loch Fyne. Sea trout tend to hang about and spend much of the summer close inshore, often even in the kelp zone. During that process, they will migrate up and down the coast. Some of them, if they are not mature, even overwinter in non-native estuaries. There is therefore no obvious safe distance for sea trout in Scottish inshore waters. For salmon, the distance depends on the shape of the coastline, but generally speaking 20km or 30km on the open coast is safe. However, we need to do research on safe distances for specific rivers.

Relocating farms will certainly be helpful in some places. For instance, taking cages out of fiordic lochs would be helpful to salmon, for exactly the same reason as the infectious salmon anaemia fallowing was so helpful, as Jon Watt's letter, which I read to you, explained. We hope that those results can be achieved by carefully focused large-scale treatment using modern drugs, if that can be done safely enough, under SEPA's control.

Dr Black: I will address the question on medicines. We heard earlier that it takes about 10 years for a drug to be developed from an idea into something that is used on farms. That is far too long. The reason why it takes so long is, I guess, the issue of potential damage to the environment. There is also the question whether the drug is efficacious. We need efficacious drugs that have minimal environmental impacts. Our preference would be for drugs that break down quickly. That would mean that they did not accumulate and would not be found after a period of time. Such drugs have a limited ability to cause damage.

The process could be speeded up if people realised that drugs could be of huge positive benefit to the environment. The process should not be viewed as one in which people want to put in something rather dodgy and we have to ensure that they get it right. That is the way in which the process is geared at the moment, but we need to ensure that it enables people to put in something that has potential benefits to the environment. There must be a way to speed up the process. If that were to happen, innovators in the drug industry would be encouraged to produce better medicines.

Professor Richards: Some panel members suggested that the decline in the number of sea trout and salmon is a result of sea lice. I do not accept that argument. There may be cases in which sea lice have had an effect, but many reasons for the decline in the sea trout and salmon populations predate the development of salmon farming in Scotland.

Drugs are licensed carefully; the process is the same as for drugs that are used on humans or animals. The Veterinary Medicines Directorate and the Veterinary Products Committee examine a range of data on safety, quality and efficacy to ensure that drugs are effective, safe and of a constant quality.

Those examinations include consideration of environmental safety. In the case of the aqueous environment, that requires many studies to be undertaken. Those studies start at the laboratory scale before they are taken out to field-scale trials in real situations in the sea, which are monitored and controlled carefully. SEPA is actively involved in the meetings that are part of the licensing process, during which it makes its comments known. When the licence is eventually granted, it is with SEPA's full approval. SEPA knows everything that is going on, including all the background information on environmental safety.

There will be variations in the relative safety or danger that is to be found on a site-by-site basis or, in this case, a loch-by-loch basis. That is where SEPA comes in. It regulates the quantity and frequency of drug usage in the field. That process has been going on since we began to have problems with sea lice.

In the case of all the treatments for sea lice, the process is controlled carefully. No problems have become apparent as a result of the use of the treatment materials. As members heard, the advantage of feed treatments is that they allow entire farm populations in a loch to be treated in a synchronous treatment. That gives a fantastic opportunity to control completely the loch system at any one time.

The risks and benefits of carrying out synchronous treatments have perhaps not been weighed up carefully enough. They could be compared with one-day measurements to determine whether there is a slight increase in risk for the local environment. SEPA should examine that issue more carefully.

We heard about the use of management techniques to improve methods such as fallowing by normal husbandry means to decrease the number of lice in the system. The combination of husbandry improvements and the use of particular products should mean that we have good control of the lice. Even if lice do not represent a threat to wild fish, they are a threat to farmed fish and farmers want to control them.

The Convener: Jamie McGrigor asked about farming halibut in vulnerable areas. We are advised that the farming of halibut does not produce lice problems. Will the members of the panel comment on whether halibut farming might produce other risks to wild fish?

Professor Richards: The common sea louse

that causes most of the damage to salmon—Lepeophtheirus—is a salmonid parasite that does not affect other species. Another species of louse—Caligus—can affect a range of species of fish. Halibut have a form of lice that do not affect other species of fish. There would be benefit in using halibut to break a cycle of disease or in using them in sites where lice might be seen to be a particular risk. We are estimating the risk of other types of disease spreading between species. The aquaculture health joint working group is investigating that issue before aquaculture involving new species expands in Scotland.

Dr Black: I was not suggesting that we should rush medicines out into the environment without proper testing. I hope that I did not give that impression.

The inclusion of strategic treatments in feeds has been mentioned. The cumulative effect of several farms doing that at the same time in the same system is much smaller—almost nil—for in-feeds, which are particle active and tend to hang around in the local environment. Problems may arise with bath treatments, which involve the release of water containing a chemical. If a number of such treatments were carried out in one loch at the same time, that could lead to a breach of the environmental quality standard. An important distinction needs to be made between in-feeds and bath treatments. In-feeds are far superior, as they allow for treatment of the whole site. It would be possible to treat several sites with little risk of breaching the EQS.

Maureen Macmillan: Are you saying that we should get rid of bath treatments?

Dr Black: It is important that a variety of medicines are available to treat lice so that we do not allow resistance to build up. At the moment we have few products. We should not get rid of bath treatments, because we need the ones that we have. Ideally, we would be able to ensure that whatever chemical we used was retained in the local environment and did not have wider effects. In-feeds are best at doing that. Ideally, we would have dozens of in-feed treatments, all of which were efficacious and had short environmental half-lives. That would be the best approach. In-feeds involve treating the fish systemically, as they are ingested. For that reason, much less chemical is needed than in bath treatments.

John Scott: Apart from synthetic pyrethroids and ivermectin, what treatments are available to you?

Dr Black: The three main treatments are emamectin, cypermethrin, which is a bath treatment, and the use of an organophosphate, azamethiphos.

John Scott: Are those treatments equally efficient, or is ivermectin most efficient because of its persistence?

Dr Black: It is not ivermectin; it is emamectin. I am not clued up about how the different chemicals compare in terms of efficiency.

Professor Richards: Emamectin has been subjected to many tests as part of the official licensing process. Ivermectin is a related product that is widely used in the animal industry to treat parasites of cattle and sheep. It has not been tested effectively for use in salmon.

Dr Shelton: As far as wild salmon and sea trout stocks are concerned, the great advantage of halibut is that they do not carry Lepeophtheirus salmonis. When they escape, they do not pose the threat to wild stocks that escaped farmed salmon pose. A number of studies have been carried out into the issue. A study undertaken by Andy Ferguson in Ireland will show the dire effects of genetic introgression by escaped farm salmon. We hope that the results of that study will appear in the summer. So far we have not talked much about genetic introgression, but it is one of the problems that we have to worry about. Mercifully, halibut cannot cause that problem, because they are a very different species from salmon.

We have not spoken enough about Allan Berry's original inquiry. Allan Berry was concerned that the large quantities of waste material that are produced by this enormous industry were affecting algal growth in lochs and perhaps more widely. I know nothing about that issue, but it worries me a great deal because of the scale of the industry. It worries me particularly because of the terrible bans that have been imposed on scallop fishing and that have caused great loss to a number of Highland communities, often for substantial periods. If there is no link between the outbreaks and the salmon farming industry, that is all well and good—the industry can continue to expand and we can grow lots of halibut, which will create the same problem of waste disposal. However, if history shows that there is a link, we have a great deal to worry about. Some of the modelling that has been done has been reassuring, but I am not convinced that there is no link. I do not know what the other witnesses feel about that issue.

The Convener: Do either Professor Richards or Dr Black want to respond to that point?

Professor Richards: I do not believe that the link between scallop toxins and the fish farming industry has been proved. The problem with the blooms that lead to the toxins is at present occurring around the east coast, where there is no fish farming. The scientists who have examined the problem have not come up with a direct link, despite the fact that the marine laboratory has reported extensively on the problem.

John Scott: Will you speculate on the cause of the algal blooms? Are nitrogenous compounds the cause?

Professor Richards: They could well be. Often, the blooms arise because of particular environmental conditions. It is common for blooms to build up during periods of prolonged sunshine and restricted water movements. The nutrients in the water can come from a variety of sources. Very often, there are more nutrients that have been washed down the river systems than have come from the aquaculture industry.

17:00

John Scott: Does Dr Black have a view on that?

Dr Black: I do not research amnesic shellfish poisoning, but I know people who do. My understanding is that people found ASP when they looked for it. As they had not looked for ASP before, there is every reason to suspect that ASP had been present for a long time before. One might then ask why people did not get ill as a result of eating scallops.

The limits on scallops that are set for human health purposes are based on full animals, but people eat only certain parts of the animal. If the levels of toxin that have been experienced in the past few years since they have been measured were previously present for years or decades, it is not necessarily the case that anyone would have become ill from those levels more recently. At the moment, I know of no way in which to test clearly whether ASP suddenly occurred by coincidence when it first began to be monitored or whether it had occurred for many generations before. We have no way of knowing.

It is right to say that there has been far too little debate on the driving issues that are not ASP issues. Throughout the world, quite a lot of research is being done on the production of toxins but, as far as I am aware, there are no absolutely conclusive answers on any of those things. We need simply to continue funding research, especially if there is perceived to be a risk factor.

The Convener: We have drifted quite a bit from our original line of questioning, to which I want to draw us back. Perhaps John Scott will move us on to another area of questioning.

John Scott: We have talked about the strategy and the problems, but how should the future successes or failures of the industry ultimately be measured? What sort of time scales should we set for tidying up our act? We all want the harmonious co-existence of everyone's interests, but it is obvious that there are problems out there. How long should we give ourselves to get our house in order so that we can achieve that harmonious co-existence? How will we know when we have achieved it?

Dr Shelton: That depends on the problems that are being considered.

I mentioned the case of Jon Watt and Loch Linnhe as an example of how quickly stocks can respond if there is sufficient juvenile material in the rivers. Because their lives at sea are very short, the response of Atlantic salmon to an improvement in marine survival opportunities can be very rapid. Provided that the spawning stock has not been so driven down that there are no eggs—or very few eggs—a rapid response can take place in two or three generations of the fish, which means four, five or six years. That is a quick response. One measure of our success would be the recovery of salmon populations in the affected areas.

A recovery for sea trout will take longer because they grow much more slowly. The spawning stocks in some places are so depleted that it will take a long time for the old, female fish, many of which have spawned several times—or did so in the past, if they survived long enough—to recover. It will perhaps take as long as 10 years for sea trout stocks to recover. Those recoveries can happen, as the stocks, albeit in small numbers, still exist. Stocks are following similar life-history trajectories to the north and south of the affected area. Their strays could augment the depleted stocks.

If we could wave a magic wand and treat all the lice and so on, the Atlantic salmon and the sea trout could recover within about 10 years. We know that the sea bed can also recover quickly, if the polluting input is removed. The jury is completely out on the wider question of algal blooms. However, algae are short-lived organisms, so recovery from algal pollution could also be rapid. Although things look dire, no irreparable damage has been done yet—mercifully—which, in a sense, is a message of hope.

There are two ways of coping with the conflicts that we have discussed. First, we can decide to clear up the pollution and put things back as they were, but we do not do that on land, where there are conflicts between, for example, fisheries and forestry, paper mills, and hydroelectric power. Secondly, we can decide that a sacrifice must be made, which means, for example, allocating separate areas for hydroelectric power, caged farms, and wild fish, but if we go down that road it is only fair that the people who create the problem compensate the person who makes the sacrifice.

The Convener: It is probably appropriate to remind committee members and the public that

the committee asked the Executive to commission work into areas in which scientific research might be inconclusive. Members will probably be aware that Dr Black is bringing together that work and will report to us in due course. It is acknowledged that there are areas in which scientific evidence is inconclusive or where more research must be done. The committee took on board the issue of such work, which is continuing, and developed it with the Executive.

John Scott: I wonder whether anyone else has an opinion on the question that Dr Shelton answered well.

Dr Black: Was the question about how long a strategy should continue?

John Scott: How will we know when everybody is happy? Is that achievable?

Dr Black: I think that that happens in heaven, does it not? I think that Dr Shelton's answer was that there are different answers for different things. I am intrigued by what sustainability means. Someone talked about economic sustainability and environmental sustainability as if they are different types. Sustainability surely means that something can be sustained. It does not matter what limiting factors there might be; something is either sustainable or it is non-sustainable. Something cannot be sustainable in some departments, but not in others; if it has fallen at the first hurdle, it will never get to the second hurdle—if you understand my meaning.

Sustainability is a key factor. It is clear on the horizon—10 or 15 years down the line—that the sustainability of the food supply for fish that require fishmeal will be an issue. That will depend on the progress that is made on the substitution of feed materials, too. I guess that the considerable research on that will ramp up a great deal when the price of feed increases as more of it is used.

Mr McGrigor: On feed, Professor Richards said in his submission:

"A key element of future policy should be the use of 'discards' and 'black fish' from traditional capture fisheries, following the lead set by the Icelandic authorities."

Can you expand on that? If that policy were followed, it would have huge implications for the future of the common fisheries policy. I entirely agree with using discards in particular, as they are being wasted.

Professor Richards: The Icelanders have a policy of setting quotas. There are thorough inspections, and whatever the boats catch they have to bring back to shore. Anything that is caught is used, and any discards are used for fishmeal and so on. If the boats catch too much of the wrong size or species of fish, they suffer severe penalties. The technology now available to the boats that trawl for fish allows them to identify the species and size of fish with their sonars and so on, prior to catching them. There is no reason why they cannot be more focused on the fish that they are meant to be catching, so that they do not just catch anything that happens to be in the sea. If that policy were applied, it would save a tremendous amount of the current wastage.

Nora Radcliffe: Will you expand on the sustainability of the supply of fishmeal and fish oils and how far the research on minimising their use or on their substitution has come?

Professor Richards: You have heard already that the fish feed industry has done a tremendous amount of research on increasing the efficiency of digestion of the feeds that are used, so that there is much less waste, and on substituting plant materials for fishmeals. The current diets that are being produced can readily substitute perhaps 25 per cent of that volume, which is quite significant. In addition, work is going on to consider the genetic basis of metabolism of fish oil. Fish have the ability to produce the health-giving oils omega 3s and omega 6s to varying amounts, depending on the species. If we can identify the genetic basis of such production, we can select, in our brood stock programmes, fish that can do it rather better. As the breeding programme develops, we can find fish that are much more able to take a higher quantity of vegetable material in their diet. The European Community is funding that work.

Nora Radcliffe: We talked about polyculture and growing seaweed as a way of benefiting from some sort of synergy. Is any research going on in that area? I am being opportunistic because we have three scientists with us.

Dr Black: There is not enough, I would say.

John Scott: I have a controversial question. You spoke about using vegetable oils in fish feeds. What are your views on using oils that are derived from genetically modified products?

Professor Richards: The industry should answer that. Its current policy is not to use such materials. It would have a very negative effect on consumer demand and the image of the product, which is that it is healthy and natural.

Dr Black: There are qualms that that will happen in future. I think that we will be able to get plants that produce fish oils. The question then will be why we are eating fish; why do we not just eat those plants. [*Laughter.*]

The Convener: Follow that.

Mr McGrigor: I was delighted to see the joint statement from the Salmonid Fisheries Forum and Scottish Quality Salmon, in which they suggest that

"Mandatory implementation of such codes places the emphasis on measures that are pro-active and preventative rather than solely on those that are reactive and curative."

Do you all agree with that?

Dr Shelton: Up to a point. I totally agree with the sprit of it, but when I worked for the Scottish Office we were constantly told that what gets measured gets done. We have to back up consideration of a code of practice with actual measures of what the code of practice will do. Somebody independent needs to keep a check and a list. In principle I agree, but it should be properly backed up.

Professor Richards: Collaboration with the tripartite working group is extremely good at the moment. Area management agreements are increasingly being used. That is surely the way forward for strategy. It is proactive, because people discuss potential problems, come up with a management scheme to handle them, follow progress with those policies and modify them if necessary, so that everyone is happy.

Dr Black: The only thing that I want to say is that I read the committee's report on phase 1 of the inquiry into aquaculture and was pleased that members had taken on board the issue of confidentiality of data in respect of some area management agreements. I say again that the process would work much better if such commercial confidentiality were removed and all farmers were made to produce data.

17:15

The Convener: That brings us to end of the questions that we wanted to ask. We have covered a lot of ground and the meeting has been useful. The answers stimulated additional questions. I thank Professor Richards, Dr Black and Dr Shelton. Their evidence has been useful for our inquiry.

I thank the people of Oban and Argyll and Bute Council for the warm welcome that we have been given and for the use of Corran Halls. The venue is excellent and it is encouraging that a number of people have come to see one of the Scottish Parliament's committees. I also thank those who assisted in organising the meeting, including Fiona McCallum, Karen Leitch and Gwilym Gibbons.

I hope that members of the public have found the meeting informative. This has been the first Scottish Parliament committee meeting to take place in Oban and I hope that other committees will follow that precedent. I thank everybody for attending and look forward to seeing you in the future.

Meeting closed at 17:16.

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