

## 4. Common constraints and strategies

### 4.1 LACK OF (GOOD) POLICIES

In some regions experts thought that policies had been appropriate. Government policies in Asia and the Pacific were credited for the past development of aquaculture. Policies were thought to have had a “large positive” impact. A clear commitment to aquaculture by policy-makers, in addition to inconsistent environmental regulations, fueled growth of the industry. This support is poised to become “much more important than before”. Loose environmental controls were no longer considered an asset. Environmental management of aquaculture will have a “very large positive” impact in the future.

In Latin America, past successes were due in part to contributions from the public sector, which had had a “large positive impact”. The public sector contribution is expected to become even more important in the future. This is also connected with concerns in the region over the absence of legislative frameworks and of environmentally-friendly aquaculture practices.

Unsuitable policies were considered to be one of the most important explanations for the slow development of aquaculture in the past, particularly in Africa. If no changes are made, the impact of these policies will likely be “even more negative” in the future. Experts thought the problem was a complete absence of policies, or wrongly focused policies. The major concern was the past disregard for commercial, business-oriented aquaculture. Legislation was unfriendly to business investment, property rights were unclear and donors were too focused on small-scale subsistence aquaculture. Mitigating strategies were aimed at re-orienting aquaculture towards the private sector and its profit orientation. This would require good governance and education of public sector officials and Non-governmental organizations (NGOs). Nucleus farms, foreign investment, fiscal incentives, pilot commercial farms to act as demonstration farms, were among the suggestions.

While Latin American experts considered that the public sector had historically played a valuable role in the region’s aquaculture development, they were concerned that the lack of institutional support would jeopardize aquaculture expansion in the future. Environmental pressures would also negatively hurt aquaculture. For this reason the experts considered that one factor that would make a “very large” positive contribution in the future would be for policy makers to adopt a pro-active commitment to aquaculture with concomitant procedures. This would include laws, regulations and codes of conduct.

Experts in North America and Western Europe had somewhat similar views about the role of the public sector. In general they considered that the public sector had played a valuable role in the past. In both regions this beneficial impact was illustrated by government support for research, particularly private/public research partnerships. Experts also expected this role to become “more important” in the future as a determinant in the success of aquaculture. In both regions experts expressed concerns that future development could be jeopardized by overadministration. In North America, overregulation threatened new technologies such as offshore cage culture or multitrophic aquaculture. Politicians and policy-makers might tighten regulations in response to vocal critics of aquaculture. In Western Europe there were more concerns

on bureaucratic impediments to aquaculture. Thus “large positive effects” would result from simplification of bureaucratic procedures in obtaining licenses, improving administrative structures and making aquaculture administration more flexible.

Experts in Eastern Europe expressed no opinion about past policies, but there were concerns about future pollution problems (as in Latin America) and the lack of environmental controls. Integrated coastal management was suggested for both Asia and Eastern Europe as a solution to conflicts over coastal resources.

## **4.2 FINANCING**

With the exception of Europe, access to financing for aquaculture investment was considered a constraint in all regions. In Africa, Asia and Latin America, unavailability and difficult access to capital was expected to deter investment in the sector even more negatively in the future. Difficulty accessing capital in North America was identified as a very negative constraint in the past, being likely to continue for the next fifteen years.

Experts in Western Europe reported relatively few problems with financing. In fact, financing (both private and public) was ranked as one of only two factors that had had a very large positive impact in the past. However, experts were less optimistic about the future. Lack of capital was identified as one of several factors that might have a negative impact on aquaculture development over the next fifteen years.

Suggested mitigating strategies in the regions can be classified into a few categories: means of increasing capital directly, means of increasing access to bank credit, and means of reducing risk. To increase availability of capital, suggestions ranged from microcredit schemes, nucleus farming, attracting foreign investment and large scale farms (which would have their own sources of capital) and direct funding by public agencies. Experts in Asia and Latin America suggested that international agencies could assist with financing. They also thought that national development banks could provide soft loans to rural farmers who often have no collateral. This suggestion of regional and national government financial support for farmers without collateral was shared by experts in North America. Aquaculture associations were also viewed as a possible source of financing, particularly for rural farmers.

To increase access to bank credits, the most common suggestions were to improve financial capacity of farmers and to educate bankers about aquaculture. Assistance with business plans was suggested by experts in Africa and Asia. The development of sound business planning could be done in conjunction with bankers. Providing information about aquaculture to banks was seen as a means of educating bankers about different risks associated with the sector. Tours of successful ventures could be organized, and information disseminated about aquaculture expansion elsewhere.

Linked to the need to access bank credit was the need to minimize risks. Farmers need to be informed about risks that might fuel the skepticism of bankers towards aquaculture. Similarly, providing easier access to insurance should also encourage bankers to lend. Another suggestion was to increase the length of aquaculture leases as a means of reassuring bankers about the secure nature of the enterprise.

## **4.3 FEED CONSTRAINTS AND POLICIES**

In three regions, experts stated that feed had been a constraint in the past or would be in the future. In Africa, limited availability and access to good quality and relatively cheap feed had negatively affected aquaculture development in the region. This constraint was expected to have an even more negative impact in the future, unless there were mitigating strategies. In Asia, the lack of domestic feed industries was considered to have handicapped aquaculture in the past, but the major concerns were focused on future supplies. The unavailability of high quality formulated feed and the failure to

protect trash fish would have a “very negative impact” on the industry over the next fifteen years. However, experts thought that protection of trash fish was very unlikely in the future. In Eastern Europe, the principal concern was the high cost of feed rather than its availability. The rising price of feed ingredients had had a “very large negative” impact in the past; encouraging a domestic feed industry would make a “very positive” contribution to future growth in the region.

Suggestions on how to promote a feed industry were similar in all three regions. The overall goal was to create a more supportive environment for a feed industry, which might require incentives (although there was no consensus on this in Asia), joint ventures, and diversification into fish feed by animal feed enterprises. Using local ingredients where cost effective and importing fish meal (if necessary) were policies suggested. To obtain economies of scale, village-scale feed-mill factories – encouraging large-scale farmers to produce fish feed – and cooperatives might be practical. A proactive public policy initiative would be for authorities to investigate the reasons for the lack of feed mills, conduct feasibility studies and then call for external assistance with an appropriate package aid.

#### **4.4 SEED CONSTRAINTS AND POLICIES**

The availability and quality of seed has also been a constraint in Africa but not so much in other regions, according to the experts. In Asia, however, future access to seed is expected to become more important. As in Europe and North America, this is partly linked to the need for breeding programmes of new commercial species.

Mitigating strategies for seed production include promoting private hatcheries through incentives, facilitating research in fish breeding and better training. Economic models of successful hatcheries could also be developed as a way of encouraging investment. To inform growers about seed availability, dissemination of information (perhaps by Internet) was also proposed.

#### **4.5 PERCEPTIONS OF AND OPPOSITION TO AQUACULTURE**

In all regions, except Africa and Eastern Europe, opposition to aquaculture was considered to be a threat to future development. In some regions, opposition was thought to be caused by misinformation; in other regions, opposition has been triggered by certain attributes of aquaculture. Mitigating strategies were recommended according to the perceived cause.

In Asia, public mistrust promoted by sensationalist media was seen as having a very likely, large negative effect over the next fifteen years. A similar perception, promoted by certain NGOs, was reported by experts in the Americas and Western Europe.

To counter these negative perceptions, mitigating strategies would include: improving communication with the public through proactive media campaigns, ensuring that sound information is available and publicizing the positive aspects of aquaculture on employment and economic development. Aquaculture’s role in reducing pressure on overfished capture fisheries should also be publicized. On the other hand, the industry needs to become open and transparent, and governments must address issues such as fish health and pollution.

To counter opposition produced by conflicts over limited coastal resources (a major concern in Asia, North America and Western Europe), the experts suggested the establishment of mariculture parks, zoning, and integrated coastal management. The public should be informed of the advantages of aquaculture by way of credible cost-benefit studies. In this respect, planners should weigh negative externalities incurred by coastal residents against positive externalities provided by aquaculture. Siting decisions should not be determined on the grounds of historical precedence or be unduly influenced by lobbyist activity.

## 4.6 TECHNOLOGY

Technological advances were considered a key to overcome constraints in most regions. Experts thought that there had been too much emphasis on tilapia aquaculture and on cage culture in Africa; more focus should be placed on the marine environment in the future. In Asia and the Pacific, North America and Western Europe, technological advances (from engineering to breeding to processing) had played a large role in the past and would become even more important in the future. Two constraints that might be overcome by technology were the scarcity of commercial species and shortages of coastal space. Improved breeding and the development of indigenous species were advocated in Asia and Latin America to counter the first problem. Offshore aquaculture was seen in all regions as a potential solution to coastal space constraints, although no consensus on its true potential was achieved in North America. Experts in Mexico expressed concerns on its feasibility whereas other experts in the region considered that offshore culture provided a response to spatial constraints and to the aesthetic concerns from coastal residents.

## 4.7 SUMMARY

Corrective measures and strategies suggested by experts to reverse the impact of the most important constraints facing aquaculture development across regions are summarized in Table 7.

TABLE 7

Summary of corrective measures suggested by the experts, where 1= "very important"

Corrective measures		Africa	Asia and the Pacific	Latin America	North America	Eastern Europe	Western Europe
Legislation	Aquaculture to be given higher profile		1	1			
	Ensure strong advocacy alliances amongst stakeholders/aquaculture lobby	1	1				
	Prepare (proactive) aquaculture legislations			1		1	
	Improve institutional frameworks/adequate administrative procedures			1		1	
Capital	International agencies to provide support/loans		1	1			
	Convince governments/financial institutions on the profitability of aquaculture projects	1	1				
	Educate bank loan officers on aquaculture potential and risks	1	1				
	Assist producers to elaborate good business plans	1	1		1		
	If business plans are solid, provide government loan guarantees	1	1				
	Promote producers cooperative	1	1		1		
	Mobilize funds locally	1	1	1			
	Develop microfinance institutions and/or schemes specific for aquaculture	1		1			
	Improve public image for lenders	1			1		
Capacity	Provide thematic training for existing personnel	1				1	
	Workshops/annual training seminars for extension workers	1				1	
	Provide information (user friendly form/magazines in native languages)	1				1	
Seed	Broodstock improvement	1				1	
Extension services	Improved training for extension workers	1		1			
Feed	Provide more support to R&D activities for aquaculture feed development	1	1	1			1

	Corrective measures	Africa	Asia and the Pacific	Latin America	North America	Eastern Europe	Western Europe
Market	Promote herbivorous species		1	1			
	Explore/expand markets	1	1				
	Promote quality of aquaculture products	1	1				
	Promotion of aquaculture products (media, fairs, etc.)	1	1				
	Advertisements and public campaigns in favour of aquaculture products	1	1			1	
Access to and use of water and sites	Establish and prioritize zoning		1		1		
	Atlas/updates on availability of fish farming sites				1	1	
	Clear land law and policy (with access rights defined)	1	1			1	
	Establish more cooperation amongst stakeholders (especially concerned authorities)	1	1				
Negative publicity and opposition	Positive media campaigns/make sure dialogue occurs		1		1		1
	Farmers and industry associations to improve image and credibility of the industry by promoting science-based debates, reports for media on benefits of aquaculture, etc.		1		1		
	Better communication with media (positive aspects/scientific results)		1		1		
	Strengthen aquaculture sector advocacy (including talks at universities, chambers of commerce, nutrition forums, etc.)						
Environmental policies and management	Develop proper regulations to support sustainable aquaculture/keep sites viable			1	1		
	Coastal zone management and consultation to alleviate competition over the use of coastal resources				1		1
	Regulations and sanctions on farms to reduce environmental impact			1			1
	Clear environmental protection policies					1	1
	Develop/improve management tools		1				1
	Effective monitoring		1		1		1
Disease outbreaks	Effective and safe disease prevention, diagnosis, control and treatment measures		1	1			
	Adopt codes of conducts and best management practices		1	1			
	Regulations on imports into and transfers within country		1	1			1
	Quarantine systems (for import)	1		1			
	Provide training in disease management		1	1			
Environmental issues (including climate change)	Develop management tools/best practices		1				1
	Raise awareness (amongst technicians, for instance)		1				1
	Build capacity/have officers specialized in environmental control		1			1	
Cost and price fluctuation	Genetic improvement		1			1	

