

Supporting Disaster Response and Preparedness in Aquaculture

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The aquaculture sector is particularly vulnerable to natural and human induced rapid- or slow- onset disasters. This is due to the risks associated with the location of fish farm production facilities and other infrastructure, the type of activities associated with fish farming, the nature of fish in specific development stages (fry, fingerling, larvae), and the limited capacity of the sector to reduce and cope with the potential consequences of a disaster. This complexity presents unique challenges in terms of preparing for and responding to disasters.¹

The sector is impacted by a wide range of disasters (and emergencies) including, for example, droughts, earthquakes, floods, landslides, storms, tsunami and tidal surges, transboundary aquatic animal disease (TAAD) and pest outbreaks, complex emergencies and protracted crises (such as conflict), chemical hazards (such as oil spills), nuclear release and radioactivity and food insecurity. The impacts of these disasters on the aquaculture sector can be direct, on individuals households and production systems or indirect, affecting the entire sector and beyond. The immediate damage from disasters can be loss of livelihoods, assets (e.g. cages, ponds, bunds and water supply systems, nurseries, hatcheries, feedmills, broodstock), post-harvest and processing facilities and both private and public sector service and support providers (including research facilities) (Box 1²). Other slow onset disasters, such as fish disease outbreaks, build up over time and significantly affect production, as with the salmon diseases which halved 2009 Atlantic salmon output in Chile. Other factors can exacerbate these effects on vulnerable communities. Climate change impacts, poverty, weak institutions, HIV/AIDS epidemics, overfishing and ecosystem degradation can increase underlying vulnerability. Disaster impacts can be compounded by the vulnerability of poor and marginalised groups and communities (usually coastal) who can be disproportionately affected. The number of disasters has been increasing in recent years and as a consequence strengthening resilience and reducing vulnerability to disasters are seen as increasingly important³.

On-going reform to improve the effectiveness of humanitarian aid has led to the development of the cluster approach and FAO is now the UN emergency lead technical agency⁴ for the Agriculture Cluster (which includes the aquaculture and fisheries sectors). The work of FAO in emergency response and disaster preparedness is coordinated by its emergency department (TCE)⁵. In 2006, FAO established the Crisis Management Centre for the Food

Box 1: FAO supported damage and needs assessment of the aquaculture sector in Aceh Province, Indonesia, following the 2004 Asian tsunami. These showed at least 20 000 ha of tambaks (ponds) were damaged, with another 5 000 ha out of production due to damaged water supplies. A significant source of income and employment for the province was lost with at least 40 000 people directly employed in aquaculture affected. Knock-on effects were felt on households dependent on aquaculture. Public services lost staff and facilities severely affecting their capacity to support rehabilitation. Aquaculture was effectively stopped in the major farming areas of the east coast, and disappeared from the severely impacted west coast. The main causes of damage were debris and silt causing sedimentation in ponds and irrigation canals. The damage to brackishwater irrigation canals disrupted water supplies which in turn stopped farming in other areas. Extensive damage occurred to 193 of the 223 shrimp hatcheries. There were loss of marine fish cages in Simeulue and Nias islands.

Chain Crises (CMC-FC) which serves as the organization's framework for assessing, managing and communicating risks along the food chain in the areas of agriculture, fisheries and aquaculture and forestry. It also covers FAO's responsibilities in the area of nuclear emergencies. The CMC-FC demonstrates FAO's determination to address these in a comprehensive, systematic, inter-disciplinary, institution-wide collaborative approach. Recent external evaluations of FAO have highlighted the organization's comparative advantage in this domain. Working with partners at national regional and global level in the sector (and beyond) is a key part of preparedness and response to emergencies. Currently, the Fisheries and Aquaculture Department (FI Department) is supporting emergency response projects in 37 countries globally.

The FI Department provides a broad range of support following a disaster involving the aquaculture sector. The first priority is to work with local and national partners on damage and needs assessments. This assessment is used for short-, medium- and long-term recovery planning and the phasing of activities back into normal development. During rehabilitation and recovery, FAO provides support to sector coordination, technical advice, capacity building, communication and information sharing, partnership development, livelihood recovery inputs and the mobilisation of resources (Box 2). Priority is given to getting production systems and food chains working to avoid food security problems and restore livelihoods. The recovery efforts of FAO are guided by international

agreements such as Hyogo Framework for Action, the Code of Conduct for Responsible Fisheries (CCRF) and aligned to the Millennium Development Goals with the aim of “building back better” (Box 2).

Box 2: In response to the food security emergency in Timor Leste, FAO provided support to improve aquaculture production in the province and to help diversify livelihoods. Support for grouper nursery activities included the provision of tiger grouper seed, fish feed and treatments and laboratory equipment for a government fish hatchery. Capacity building was carried for government staff in hatchery operation, seaweed seedling bank technology and seed selection, maintaining quality of seeds and prevention of disease, seaweed processing and marketing. These activities helped increase the capacity of government and NGO staff to provide extension services to the farmers in coastal areas in Kupang Bay. Capacity building was also provided to participants from fish farming groups.

Disaster prevention and preparedness are integrated into the cycle to ensure that impacts of future disasters are reduced.⁶

The FI Department also provides support to the aquaculture sector in prevention and preparedness for fish disease outbreaks. Examples of past and recent actions by the FI Department to effectively respond to biosecurity emergencies include the following: (i) technical assistance in the investigation of epizootic ulcerative syndrome (EUS) incursion in southern Africa (2007)⁷ and emergency response to koi herpesvirus (KHV) in Asia (2003)⁸, (ii) pioneering work in promoting the application of risk analysis to aquaculture production⁹ in Asia which has now expanded to other regions (e.g. Western Balkan region¹⁰, the Gulf region¹¹, the Pacific Islands), (iii) organization, in December 2009, of an expert workshop, supported by EU, OIE, WHO and FAO Member states, on improving aquatic biosecurity through prudent and judicious use of veterinary medicinal products, and (iv) preparation of a number of guidelines on risk analysis, emergency preparedness, better management practices and aquaculture insurance. All these actions support the development of knowledge base and enhance human and technical capacities on biosecurity.

Early warning of TAADs is provided through the FAO interdepartmental Food Chain Crisis Management Centre and EMPRES (Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases¹²) system. With recent increases in the number of outbreaks of transboundary animal diseases, plant pests and diseases and food safety emergencies, there has become an increase in public awareness of their potential impact on human health as well as on livelihoods, food security, national economies and to the global markets. These outbreaks have enhanced the recognition of the need to address such threats in a comprehensive approach, oriented to the entire food chain. Changing agro-ecological conditions, intensification of the food production systems and the expansion of global trade supplied by these systems increase the likelihood of animal and plant diseases and pests emerging and spreading farther and faster than ever before, and unsafe food reaching numerous consumers in distant markets. With

the advent and spread of instant mass communication, news of outbreaks can cause generalized consumer panic, market collapse and serious economic damage in regions well beyond affected areas. EMPRES, was established in 1994, is thus mainstreamed into the overall framework of FAO's Food Chain Emergency Management as the technical core element for risk assessment and advice on risk management and risk communication.

FAO is in the process of reform and has developed organizational objectives aimed to support reducing the vulnerability of fishing and fish farming communities to the impacts of natural disasters and climate change. The Department is developing partnerships at global, regional and national levels for improved preparedness and response to disasters.

At the same time, the Department continues its efforts to reduce disaster risks through good aquaculture management practices, application of risk analysis to aquatic animal movements and approaches such as the ecosystem approach to fisheries and aquaculture and community-based management. One of the current challenges at policy level is to link the disaster risk reduction/management (DRR/DRM) and climate change adaptation into aquaculture planning and to mainstream aquaculture into DRM planning. ■

¹The Centre for Research on the Epidemiology of Disasters (CRED, 2010) defines a disaster as “a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering”. Disasters result from a combination of vulnerability and exposure of the community or society to hazards and *insufficient capacity or measures to reduce or cope with the potential negative consequences* (UNISDR, 2010).

²FAO, 2005. An assessment of the impacts of the 26th December 2004 earthquake and tsunami on aquaculture in the Provinces of Aceh and North Sumatra, Indonesia. FAO and Dinas Kelautan dan Perikanan (DKP). Michael Phillips and Agus Budhiman.

³www.humanitarianreform.org

⁴See www.humanitarianreform.org for details of the UNcluster approach to emergencies

⁵www.fao.org/emergencies/

⁶FAO 2007. Disaster response and risk management in the fisheries sector. Westlund, Poulain, Båge and Raymon van Anrooy. Rome 2007.

⁷FAO. 2009. Report of the International Emergency Disease Investigation Task Force on a Serious Finfish Disease in Southern Africa, 18-26 May 2007. Rome, FAO. 2009. 70p. (head of FAO International Emergency Disease Investigation Task Force).

⁸Bondad-Reantaso, M.G., Sunarto, A. & Subasinghe, R.P. 2007. Managing koi herpesvirus disease outbreak in Indonesia and the lessons learned, pp. 21-28. In Dodet, B. and OIE Scientific and Technical Department (eds.). The OIE Global Conference on Aquatic Animal Health. Dev. Biol. (Basel). Basel, Karger. 2007. Vol. 129: 21-28.

⁹Bondad-Reantaso, M.G., Arthur, J.R. and Subasinghe, R.P. (eds.). 2008. Understanding and applying risk analysis in aquaculture. FAO Fisheries and Aquaculture Technical Paper No. 519. Rome. FAO. 304p.

¹⁰Bondad-Reantaso, M.G., Arthur, J.R. and Subasinghe, R.P. (eds.). 2009. Strengthening aquaculture health management in Bosnia and Herzegovina. FAO Fisheries and Aquaculture Technical Paper. No. 524. Rome, FAO. 83p.

¹¹FAO./Regional Commission for Fisheries. Report of the Regional Technical Workshop on Aquatic Animal Health. Jeddah, Kingdom of Saudi Arabia, 6-10 April 2008. FAO Fisheries and Aquaculture Report. No. 876. Rome. FAO. 119p.

¹²For details of the EMPRES system see: <http://www.fao.org/ag/againfo/programmes/en/empres/home.asp>