SECTION 3

Building capacity for safety and quality

A review of the capacity building efforts in developing countries – case study: Africa

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ABSTRACT

The paper reviews the challenges that the African food industry is facing in meeting market requirements for food safety and quality. It outlines UNIDO's capacity building role in 25 African countries. Its food safety projects involve capacity building in the following areas: food safety awareness, inspection and auditing, risk analysis and traceability, laboratory facilities and scientific support, regulations and food safety management, and developing food safety policies. These programmes contribute to the establishment of reliable food safety and quality assurance systems; systems that are instrumental for developing a fish export industry. However, the results to date vary between countries and by the type of programme undertaken. Moreover, concerns have been raised about system and resource sustainability. Increasing the impact of UNIDO's capacity building efforts will depend on a capacity to learn from experience and to increase synergies with other multilateral and bilateral technical assistance interventions.

INTRODUCTION

Since the conclusion of the World Trade Organization (WTO) Uruguay Round Agreements in 1994, global trade has grown considerably. Despite the positive outcome of the DOHA conference and other major world conferences and summits such as the Millennium Summit, the World Summit on Sustainable Development (Johannesburg September 2002) and the United Nations Conference in Monterrey (March 2002), developing countries have yielded few substantial benefits from increased world trade. With around 10 percent of the world's population, Africa's share of the world Gross Domestic Product (GDP) is only 1 percent. Its share of world trade is only 2 percent. The North African countries and South Africa are well above these averages, while Sub-Saharan Africa, including Eastern Africa, falls below.

Developing countries in general, and Africa in particular, have not benefited enough from the opportunities offered by rapidly changing global markets. These countries often lack an effective industrial productive capacity needed to ensure product diversification. They also lack the necessary knowledge of multilateral trade systems and WTO regulations and are unable to comply with the international standards required to access global markets. Moreover, companies in developing countries cannot compete on either quality or price. This situation stems from the following major problems:

- Markets: Domestic markets are very small (in terms of population and purchasing power) and do not offer the economies of scale needed to produce goods at a competitive price.

- Production technology: In most cases the production technology is outdated (with the exception of parts of the fish industry) and existing production facilities are not optimized.
- Investment: Many of the African countries do not have an attractive environment for international investment and the related transfer of technology and know-how.
- Food safety and quality management: Most of the African countries do not have reliable food safety and quality assurance systems that conform to international standards.

Despite these problems, the food industry represents for developing countries in general and African countries in particular, a valuable source of foreign income. In some African countries fish exports are now more economically important than traditional export commodities like coffee.

An analysis of the food safety programmes and projects UNIDO has implemented over the last 10 years in 25[1] African countries (the fish industry being the main focus in 12 countries) offers an opportunity to review the constraints the food industry faces, and the capacity building efforts undertaken by UNIDO. These activities were designed to help countries address food safety and quality issues. These issues include; the lack of a risk-based food safety policy applying the principles of prevention throughout the food chain, outdated legislation or regulatory frameworks, weak food safety management systems, lack of qualified food safety inspectors and auditors, lack of scientific support for monitoring programmes and risk analysis, weak laboratory infrastructure and weak capacity amongst food suppliers.

The technical assistance provided by UNIDO aims to strengthen the trade capacity of beneficiary countries and relies on two main interlinked components:
- strengthening the Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) related infrastructures to manage the food safety system;
- strengthening the supply side productive capacity and the promotion of local competitive suppliers.

The food safety elements of UNIDO programmes encompass the main capacity building elements required to address these issues, including:
- strengthening the capacity of food suppliers and increasing food safety awareness/ information (all projects cover this issue);
- developing inspection/auditing regimes, and risk analysis and traceability (96 percent of the projects address these issues as a priority);
- improving laboratory facilities and providing scientific support (84 percent of the programmes);
- improving regulations (76 percent);
- enhancing food safety management (75 percent); and
- improving food safety policies (68 percent of the programmes).

Globally, UNIDO programmes (worth around US$30 million) have contributed to the establishment of reliable food safety and quality assurance systems, particularly in the fish industry. This has been instrumental in securing and expanding fish exports. However, the results obtained so far vary by country and by the capacity building element introduced. There are considerable concerns about system sustainability. In response, UNIDO has systematically adopted a holistic approach involving all relevant stakeholders. To ensure the greatest impact, UNIDO's activities have targeted exporting sectors such as the fish industry, which are subject to strong market pressures and where the private sector and recipient governments have supported legislative

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[1] The countries involved are: Algeria, Angola, Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Egypt, Eritrea, Ethiopia, Ghana, Guinea, Kenya, Madagascar, Mali, Mauritania, Morocco, Mozambique, Niger, Nigeria, Senegal, Sudan, Tanzania, Togo, Tunisia and Uganda.

enforcement. Experience has pushed UNIDO to seek synergies with other multilateral and bilateral technical assistance interventions, to ensure the maximum possible impact from technical assistance.

CHALLENGES FACING THE AFRICAN FOOD INDUSTRY

Food safety policy
In most African countries, resources made available for food safety activities are scarce and scattered, and coordination systems are weak at all levels. There are no risk-based food safety policies applying the principles of prevention throughout the food chain (farm to table approach). Responsibilities may be shared between several agencies/institutions with little coordination, resulting in a lack of accountability, duplication of effort, waste of scarce public funds, and conflicting interests and confusion between stakeholders. The present structure also causes problems in relation to who is the Competent Authority (CA), an essential component of the administrative structure. Unclear lines of authority are unacceptable to trade partners. The splitting and overlapping of responsibilities continues to be the main constraint hampering progress in developing food safety systems.

Food safety management
Food safety management is generally weak in most African countries. Unclear responsibility means no accountability. This contrasts with a centrally coordinated system where there is clear leadership responsible for; the development of policies, for operating control and monitoring programmes, for staff training, for establishing scientific and laboratory support, and for securing public funds to the sector. Another weak point is the influence of politics on technical competencies, where food safety is directly administered by ministries and elected local authorities. Most African countries have established national Codex Committees. These play a role in finalizing standards related to Codex functions, but have little or no influence in questions related to a general food policy. Government representatives dominate the committees, and there is little or no representation from the private sector and consumers.

Public awareness, information and education
The capability and/or capacity to perform risk analysis, including science-based risk assessment in food safety, are scattered or non-existent in institutions reporting to government agencies. Food safety agencies pay little or no attention to the dissemination of information and advice to the relevant stakeholders along the food chain. As a consequence, the population's awareness of food safety issues is very low. Better understanding of the need and the mechanisms for change is needed. This applies to all stakeholders, whether politicians, consumers or the private sector (farmers, industry and traders and their representative organisations).

Laws, regulations and standards
Regulatory frameworks and enforcement manuals are outdated and do not have the holistic/food chain ('farm to table') approach being introduced internationally. In most cases legislation is not flexible enough to keep pace with new technological developments, emerging hazards, changing consumer demands and new food safety requirements. Although African countries are members or observers of the Codex Alimentarius Commission (Codex), the World Organisation for Animal Health (OIE) and International Plant Protection Convention (IPPC), their implementation of the requirements adopted by Codex, OIE and IPPC is far from satisfactory. This poses considerable difficulties for these countries to participate in international trade. Harmonization of laws and regulations, including implementation of international

standards in the SPS area are an essential prerequisite for regional and international trade liberalization in agriculture, fish and food products.

Inspection and auditing

Through their regular contacts with food producers, traders, and consumers, food inspectors or food safety auditors play a key role in the food safety system. In most African countries there are only a few trained inspectors and/or food auditors who are familiar with risk-based food safety systems. The level of food safety awareness in the private sector also depends on the competence of, and information disseminated by these inspectors or food safety auditors.

In some countries locally elected governments are in principle responsible for inspection and auditing, including the licensing of premises and establishments for the transportation, slaughtering and storage of food. These local governments instruct inspectors in the absence of a corresponding central authority. However, they have little or no technical competence to advise local inspectors, and limited resources to introduce food safety mechanisms. In addition, information or communication hardware like telephones, computers and transportation facilities are scarce, which makes internal communications difficult.

Properly trained inspectors or food safety auditors are a prerequisite for an efficient food safety control system. The reputation and integrity of the control system depends to a very large extent on the skills of the inspectors or auditors. However, systems for training staff in the food safety area are weak or non-existent in most African countries.

Monitoring and scientific support

A risk-based food safety policy calls for the collection and evaluation of information/data related to the prevalence of food borne diseases, the contamination of feed and food, and animal and plant health. The availability of such data is a prerequisite for risk assessment. Monitoring programmes for biological and chemical contamination of feed and food or the prevalence of food borne diseases and animal and plant diseases do not exist. Consequently, very limited information or data is available in most African countries. In this situation, risk analysis is virtually impossible and hence the international export of food products is problematic. Scientific support for monitoring programmes and assessing risk is a prerequisite in a modern food safety infrastructure. Such support is not available in all areas in most African countries.

Laboratory support and accreditation

Laboratory support

There are a number of food safety laboratories in Africa, but most have limited equipment and capacity. Almost all the agencies or institutions involved in food safety have or aim to have their own laboratory. However, most laboratories suffer from limited financial resources, equipment, and trained personnel, resulting in a limited capacity to perform even the most basic analyses that are essential to a number of potential export commodities. This includes the determination of parameters like pesticide residues, veterinary drug residues and chemical contaminants including PCB, dioxin and heavy metals as well as mycotoxins.

Accreditation

Africa's only accreditation body is located in South Africa. This is the South Africa National Accreditation System (SANAS), which is firmly established as the national accreditation body of South Africa. The scope of accreditation offered by SANAS comprises test laboratories, verification laboratories, calibration laboratories,

inspection bodies, quality and environmental management certification bodies, and GLP system certification bodies. SANAS is internationally well recognized. In 1997, following a peer assessment, SANAS entered into a Mutual Recognition Agreement (MRA) with the European Accreditation (EA, then WECC). Recently, OECD's Good Laboratory Practice (GLP) panel has successfully evaluated SANAS with respect to GLP system certification. SANAS is taking an active role in the establishment of accreditation in other countries in Africa. The West African Economic and Monetary Union (UEMOA), the East Asia Summit (EAS) and the Common Market for Eastern and Southern Africa (COMESA) are also trying to develop their own accreditation systems.

Food suppliers

In African countries most food operations do not have a formalized food safety/ quality assurance system. Levels of awareness are low and there is a lack of know-how and investment to upgrade physical facilities and equipment. Due to export market pressures, most fish processing units are engaged in the implementation of Good Hygiene Practice (GHP) and Hazard Analysis and Critical Control Point (HACCP) and a few have obtained International Organization for Standardization (ISO) certification. However, due to their limited number, demand for support services is too low to sustain the required food safety institutional infrastructure, particularly the laboratory and the certification infrastructures that have to be heavily subsidized.

DEVELOPMENT APPROACH AND STRATEGY

African countries face significant challenges in meeting the requirements laid down in the SPS/TBT Agreements, which would enable them to participate in the international trade of agricultural and fishery products. UNIDO's assistance involves the various stakeholders (participatory approach) and its activities range from developing policy and legislation to building infrastructures like administration, inspection, auditing and laboratory structures (holistic approach). To ensure system sustainability, the objectives, outputs and activities of UNIDO's projects are structured in two main interlinked components that are implemented in parallel, in order to:

- Strengthen the SPS/TBT infrastructure to manage the food safety system, as well as to inspect or audit and to certify product compliance and conformity to food safety and quality regulations and standards, thus facilitating product access in various markets. This covers aspects like food safety policy, public awareness, information and education, risk analysis and food chain approach, legislation (including regulations and standards), management of food safety related activities, inspection and auditing, monitoring and surveillance and developing laboratory infrastructures.
- Strengthen the supply side productive capacity with a focus on priority sub-sectors or products and the promotion of local competitive suppliers. This includes in particular the dissemination of Good Aquaculture Practice (GAP), Good Management Practice (GMP), GHP, and HACCP along the food chain through developing awareness, increasing information and training as well as the introducing quality management systems based on HACCP and ISO standards in selected pilot food operations.

While developing national food safety and quality related capacities and capabilities, UNIDO assists in strengthening regional cooperation and coordination and encouraging harmonization of SPS and TBT systems with international standards and requirements. Regional cooperation and harmonisation can facilitate trade. It can lead to the development of a regional infrastructure (accreditation system, reference laboratories, etc.) that would not be affordable or sustainable at a national level, and help to strengthen a regionally based trade negotiation capacity.

RESULTS AND DEVELOPMENTS

Food safety policy and strategies based on risk assessment and food chain approach

A risk-based food safety policy applying the principles of prevention throughout the food chain (farm to table approach) is a prerequisite for meeting international requirements and standards. UNIDO is helping African countries to set up a well-defined and well-structured food safety policy with defined objectives and strategies, and a plan of action for implementation. All stakeholders, including the private sector, academia, research institutions, consumer associations and other NGOs, are involved in policy development. While focusing on the need for food security and consumer protection, the policy takes into consideration the country's economic situation including its export import status, and the relative development of its food industry.

About 68 percent of the UNIDO technical assistance projects include some policy aspects. Mid-term results are mixed. In most countries and in the regional groupings, coordination and cooperation mechanisms have been established between the main stakeholders and/or the relevant authorities of the countries concerned and progress has been made towards the design of a common food policy, including in UEMOA, the Southern African Development Community (SADC), COMESA and the East African Community (EAC). However, only a few countries have appropriate scientific support and have started implementing the necessary monitoring programmes required for risk assessment and for supporting the policy making process.

More progress has been made in the fish industry sector where seven countries (out of the 12 assisted where the fish industry is the main focus of UNIDO activities) have started to address the policy issues that would allow the implementation of a risk assessment framework.

Establishing an appropriate national framework for food safety management

It is important that all ministries and agencies involved in food safety act in an integrated and coordinated manner. This helps to ensure adequate controls throughout the food chain and to make the best use of limited resources. UNIDO has been assisting the African countries to establish appropriate food safety management systems by promoting the establishment of national coordination frameworks or mechanisms, or even one central umbrella food safety authority, to deal with all food safety matters. Central authorities would be given clearly defined leadership functions for issues like:
- implementation of an integrated food safety policy;
- setting or proposing new regulation or standards;
- participating in relevant international food safety related activities;
- coordinating the operation of the national food control programme including monitoring mechanisms;
- facilitating continuous training and improvement; and
- securing funds and allocating resources.

Although some progress has been made, it has been difficult to achieve the full cooperation of all government agencies involved. From the 25 countries assisted in food safety, four have established Food Safety Agencies and three have introduced National Food Safety Committees, typically coordinated by the Ministry of Health. In other countries various institutions (ministries, standardization bodies, laboratories, private control agencies, etc.) are sharing the responsibility for and implementation of food safety management with no or little coordination. This leads to poor accountability and wasted resources. Many countries prefer to go through national coordination committees as an intermediate step to a single food safety agency. UNIDO experience suggests that this step provides a useful learning phase, where stakeholders can build mutual understanding of the relevant issues and find their own niche in the overall system.

Comparing sectors, the fish industry appears to be the most developed. Of the 12 countries where the fish industry is the main focus of UNIDO programmes, seven have established the ministry responsible for fisheries as the main institution responsible for safety management. In this exporting sector, where there is a strong market pressure for reform, producers and exporters associations have been heavily involved. This is the case in Morocco, Senegal, Guinea, Uganda, Kenya and Tanzania.

Enhancing public awareness, information and education

The general population's awareness of food safety issues is very low. The technical assistance provided by UNIDO to the African countries (all UNIDO food projects cover this aspect) addresses the enormous need for information, education and advice in food safety matters, for all stakeholders across the food chain. All relevant stakeholder groups are identified and national cooperation mechanisms or frameworks with the food safety authorities established. Tailor made awareness strengthening and training programmes targeting key players in the overall production chain are being implemented. 'Training of Trainers' programmes are used as an important tool to communicate food safety facts to all extension workers in the agricultural and health sectors.

Although the traditional awareness strengthening and training workshops or seminars are relatively effective, their impact on the general public remains limited. Recently UNIDO has embarked on new approaches, such as the organization of yearly national food safety weeks, involving events such as school and market competitions, TV spots and debates. UNIDO has also established a so-called 'quality award', which is becoming a yearly event in some developing countries. The results to date are encouraging, and call for an increased focus on education in food safety. UNIDO is considering developing information packages for teachers and schools to help them introduce curricula on basic food safety principles in school programmes.

Industry can also play an active role in increasing food safety awareness. The active role played by producers' or exporters' associations, especially in the fish industry, has been instrumental in disseminating information on HACCP-based food safety assurance systems and their implementation among fish suppliers. Moreover, the capacity created in the fish industry has been used extensively to promote food safety assurance in other food sectors.

Legislation, regulations and standards to conform to international requirements

Ensuring conformity with international requirements is a very important activity in UNIDO's technical assistance programmes in Africa (76 percent of the projects cover this aspect with 85 percent of them focusing on the fish industry sector). UNIDO assistance consists of helping to review regulations and subsequently updating them in conformity with international requirements and standards.

The results obtained so far are promising. Of the 25 countries assisted, half of them (all exporters of fish products) have updated their regulations, a quarter are progressing towards harmonizing their regulation with international requirements, while the remaining quarter intend to do so.

The review of fish regulations in several countries has created a dynamic that has led to the preparation of horizontal food legislation, based on risk assessment, to replace or serve as an umbrella to detailed vertical regulations. Proposed regulations are discussed with and validated by all relevant stakeholders before they go through the official approval channels. In most cases it takes years to have regulations approved and put into effect, especially laws that require parliamentary approval. However, responding to market pressure UNIDO has been helping in the adoption and enforcement of interim regulations, while the full legal basis is being secured. This has turned out

to be an effective transitory phase allowing the countries concerned to meet market requirements.

Strengthening inspection and auditing services

Improving skills and competencies by training staff involved in food control is part of all UNIDO technical assistance projects. The focus is on risk analysis and a modern inspection philosophy: self-control based on HACCP and/or other safety assurance systems. High priority is given to human resources development and the systematic training of all staff in food safety issues. Training targets the staff of inspection authorities and technical support institutions, including research and development and training institutions. Training is focused on system auditing, the establishment of well structured and operational border inspection posts, including at main ports and airports, and the introduction of internationally harmonized inspection and certification systems for all agricultural and fishery products destined for export. UNIDO has helped, in addition to training, in the preparation of inspection manuals or guides. It has also provided adapted inspection kits to a pilot group of inspectors, and has established pilot inspection zones for demonstration and practical training of inspectors.

ICT support is provided to help improve communication between local and national authorities, international organizations and relevant import countries. This enables an early warning or rapid alert system. Risk assessment in all enforcement measures and a food safety management system based on HACCP are promoted throughout the food chain.

Almost all (96 percent) of UNIDO technical assistance projects involve training. At least 30 inspectors and/or food safety auditors (excluding laboratory personnel) per country were trained. A total of 750 staff were trained over the last 10 years, most of them fish inspectors or auditors. Most of the food inspectors and/or food safety auditors trained are involved to some extent in fish inspection. In 18 countries (from the 25 assisted) the trained inspectors and/or food safety auditors have shown a high level of competence in performing scientific and risk based control functions and therefore are able to meet most of the industry's needs in implementing HACCP and ISO quality management systems. As a consequence the use of international expertise has been considerably reduced.

Monitoring programmes and improving scientific support

Scientifically based risk assessment is the foundation of advice given to food safety authorities. There is an ongoing need for African participation in international standardization forums, so that Africa can participate actively in the formulation of standards rather than just adopting them. This participation has to be backed by strong scientific expertise, which is currently not available or weak in several African countries. Technical food safety committees established in conjunction with Codex Committees offer a starting point, but the full involvement of research and development or training institutions (universities, specialized institutes, etc.) is still constrained, mainly due to budgetary constraints.

UNIDO projects assist in strengthening the surveillance or monitoring systems of the countries, to generate information on the prevalence and levels of biological and chemical contamination of feed and food. This is a prerequisite for risk analysis and for establishing a risk based food safety policy. To support the implementation of such a programme, UNIDO promotes the establishment of scientific panels or committees to perform relevant risk assessment. Training is extended to scientific staff in the implementation of the food chain approach and in the establishment of procedures and forums for risk assessment and risk communication. ICT support is also provided to keep updated information on food safety hazards.

Although it is included in most UNIDO projects (88 percent) in Africa, risk assessment programmes have shown progress in only about half of the countries. Moreover, it is far from being a systematic activity, even at the level of food operations (with the notable exception of those exporting fish products).

Strengthening the laboratory infrastructure

Most of the African countries assisted by UNIDO have more than one laboratory reporting to various ministries and institutions. However, most of them are poorly equipped and staffed. The laboratories were assessed and one to two per country were selected for appropriate reorganization and restructuring, as well as for assistance at the accreditation stage. To ensure the financial sustainability of the laboratories, the selection took into account the need for the institutions to be able to provide various food safety tests. A quality assurance programme, including facilitating laboratories to participate in an inter-laboratory testing system and preparation for accreditation, was introduced. Training of all laboratory staff in routine analysis and quality management based on ISO/IEC 17025 is carried out as a priority activity.

The results obtained so far are very good. From the UNIDO projects that have been implemented in Africa, 21 (84 percent) include the strengthening of food testing laboratories. So far, 18 laboratories (in 13 countries) have considerably improved and have obtained or will soon receive international accreditation for specific analyses, while seven laboratories (in seven countries) have made progress in implementing GLPs. The remaining laboratories (five in five countries) have operational difficulties. From the laboratories assisted only one is private and, therefore, self-sustainable. The others rely for a large part of their operational expenses on government subsidies and project donor funds and are, therefore, far from self-sufficient.

In addition to strengthening laboratory capacity UNIDO has assisted in the establishment of accreditation bodies and systems. As the development of such an infrastructure at the national level cannot be financially sustainable, UNIDO has helped establish regional accreditation bodies (UEMOA-West Africa and potentially COMESA and SADC). For the other small groupings such as the EAC and the CEMAC (Central African countries), sustainability is an issue. In the meantime, regional accreditation schemes could be developed for EAC in connection with SADC (continuing using SANAS and other foreign accreditation bodies) and for CEMAC in cooperation with the UEMOA accreditation body. UNIDO is also promoting the active participation of these regional groupings in the International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC) whereby they would become members of their multilateral agreements.

Food safety and quality assurance systems to enhance competitiveness

Only a few food suppliers in Africa (most of them in the fish industry sector) are implementing a food safety assurance system. This is where UNIDO concentrates its main capacity building efforts, as assistance to industry and private sector in general is one of the main pillars of its mandate. HACCP based self-control systems enabling farmers, producers, traders, importers and retailers to conform to existing regulations and standards are introduced and disseminated with priority given to establishments exporting or intending to export their food products.

The results obtained, particularly in the fish industry, are very good. All 25 UNIDO programmes over the last 10 years provided extensive assistance to food suppliers including to around 350 food-processing operations. Sixty percent of these (210 enterprises) were in the fish industry sector. The review of UNIDO reports shows the following:

- On average, three years are required to introduce and fully implement the HACCP system.

- 170 enterprises (around 48 percent of the total) have introduced and are implementing a formalized GHP and HACCP system, 90 percent of them in the fish business. Less than 10 percent (17 enterprises) have the HACCP certified by a third party.
- 80 enterprises (around 23 percent) are progressing well in GHP implementation and most of them have a HACCP manual prepared. However, in auditing substantial corrective measures are still required. Thirty of these enterprises are in the fish business.
- The bulk of the 100 remaining enterprises, only a small proportion in the fish business (8 percent), are small enterprises targeting the domestic and/or regional markets. They have started to introduce basic hygiene principles. However, the investment required for upgrading physical facilities and equipment is often prohibitive. Based on a step-by-step approach, a plan of action tailored to the specific situation and financial capacity of each enterprise is being implemented with UNIDO assistance. It is estimated that it will take five years for most of these enterprises to be able to fully implement GHP and HACCP principles.

CONCLUSIONS

The capacity building efforts undertaken by UNIDO through the implementation of food safety programmes in 25 African countries have harvested promising results. Some overall conclusions can be drawn.

- Political will and related incentive policies are critical factors for the development of an effective food safety and quality assurance system.
- Adopting a holistic and participatory approach by involving the various stakeholders is a must for achieving the sought objectives.
- Ensuring the sustainability of a food safety system requires a sustainable safety and quality infrastructure and support services (institutional capacity building) that are demand driven. Likewise, capacity building efforts targeting the supply side (enterprises) need to be considerably increased.
- Although the constraints are often the same, the methodology to address them varies depending on the country concerned and the target beneficiary. Capacity building activities have to be tailored to each specific situation. The traditional replication system, or 'one size fits all' approach, has serious limitations.
- To achieve conformity/compliance in food safety, pressure from both market requirements (consumers) and regulation enforcement (inspection) is required.
- The needs of developing countries in general, and Africa in particular, for technical assistance in food safety and quality are huge and diverse. More coordination between development agencies to create synergies and to make the best use of resources available for technical assistance is required.
- The ability to learn from experience and to increase synergies with other multilateral and bilateral technical assistance interventions is a crucial element for increasing the future impact of UNIDO programmes.

ANNEX
Coverage of food safety aspects in UNIDO's food programmes in Africa

Countries	FS policy-strategy	Awareness Informat.	Laws/ Regulations	Food Safety management	Inspection-Auditing	Scientific support	Labs	Suppliers	Others
Algeria F	X	XXX	X	X	XXX	X	XXX	XXX	X
Angola FF	XX	XXX	XX	XX	XXX	XX	XX	XXX	X
Benin F	XX	XXX	XX	X	XXX	X	XXX	XXX	XXX
Burkina Faso	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Cameron FF	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Côte d'IvoireF	XX	XXX	XX	X	XXX	X	XXX	XXX	XXX
Egypt		XXX		X	X	X		XXX	XXX
Ethiopia	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Eritrea FF	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Ghana FF	XX	XXX	X	XX	XXX	XX	XX	XXX	XXX
Guinea FF	XX	XXX	XX	XX	XXX	X	X	XXX	XXX
Kenya FF	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Madagascar		XXX	X	X	XXX	X	X	XXX	XXX
Mali	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Mauritania FF	XX	XXX	XXX	XX	XXX	XX	XXX	XXX	X
Morocco FF		XXX			XXX	XXX	XXX	XXX	XXX
Mozambique F		XX			XXX			XX	XXX
Niger	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Nigeria		XXX			XXX			XXX	XXX
Senegal FF	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Sudan		X			X			XXX	XXX
Tanzania FF	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Togo FF	XX	XXX	X	X	XXX	X	XXX	XXX	XXX
Tunisia		XXX	X	X	XXX	XX	XXX	XXX	X
Uganda FF	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Total: 25 (16)	17 - 68%	25 -100%	19 -76%	18- 75%	24- 96%	22 – 88%	21-84%	25-100%	25-100%

XXX: Important component of the programme
XX: Covered more or less although not foreseen as a separate component in the programme
X: Not foreseen in the programme and very few activities carried out.
F: Indirect and small coverage of the fish sector
FF: Fish is the main focus

Approaches to achieving seafood safety in East Africa

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ABSTRACT

Nile perch constitutes over 80 percent of fish exports from the East African region. Prior to the mid-1990s, over 70 percent was exported to the European Union (EU). The EU bans on fish exports from the East African region in the late 1990s, while inflicting serious economic losses on fishers, exporters, and local economies, provided an impetus for the development of comprehensive fish quality and safety management regimes. These include an overarching legislative framework, harmonization with EU regulations, public participation in monitoring safety standards, the development of industry and export groups, and significant regional co-operation. This paper gives details of the various mechanisms for ensuring fish quality and safety and outlines new developments and challenges facing the region's fish industry.

INTRODUCTION

The East African Community (EAC) consists of three countries; Kenya, Uganda and Tanzania, linked together by Lake Victoria. Tanzania has the largest share of the lake at 51 percent, while Uganda has 43 percent and Kenya 6 percent. Kenya and Tanzania have a coastline giving them a rich marine fisheries resource. Uganda is landlocked, but is endowed with many rivers and inland lakes, in addition to Lake Victoria, which are also rich fisheries resources.

FISHERIES RESOURCES IN EAST AFRICA

Lake Victoria is the major economic fisheries resource of the three countries from which the world traded fish commodity, Nile perch, is harvested. Other commercially important fish from Lake Victoria include Nile tilapia and fresh water sardines, *Rastrineobola argentea,* which are traded in both regional and international markets.

Marine fisheries are under-exploited by both Tanzania and Kenya. The marine fish trade commodity in these two countries includes prawns, lobsters, octopus and assorted finfish. Kenya also processes and exports tuna loins. However, there is no established land-based industry for tuna, despite its abundance in both Kenyan and Tanzanian exclusive economic zones. Most of these resources are exploited and processed by Distant Waters Fishing Nations.

THE NILE PERCH INDUSTRY

Nile perch is an exotic fish introduced into Lake Victoria in the 1960's and again in early 1970. The Nile perch fishery started to gain its economic importance in the 1980's, when Kenya ventured into frozen fillets as an export commodity in international markets. Nile perch has gained so much economic importance over the past ten years that it is now the most important fish export commodity in the East African region. For example, Nile perch accounts for about 53 percent of the total fish production in

Kenya and over 80 percent of Kenyan fish exports. It provides direct employment to over 200,000 Kenyans.

THE FISH INDUSTRY IN EAST AFRICA

The fish industry in the three EAC states plays a very important economic role through employment creation, income generation, foreign exchange earnings and its contribution to food security and poverty reduction strategies. Fish production, fish trade, industrial processing and export, and related enterprises such as packaging, boat building and net making, directly supports about four million East Africans. The fisheries sub-sector contributes about 3 percent to the GDPs of Uganda and Tanzania and about 0.4 percent to Kenya's GDP. Fish is also an important source of Government revenue and as an export commodity earns the three countries substantial foreign exchange: US$50 million for Kenya, US$82 million for Uganda and over US$100 million for Tanzania annually.

Most of the fish landed in Uganda, Kenya and Tanzania comes from Lake Victoria. The lake contributes approximately 49 percent of the total fish landed in Uganda, 92 percent of the total fish landed in Kenya and 61 percent of the total fish landed in Tanzania.

FISH EXPORTS

Nile perch constitutes over 80 percent of fish exports from the East African region. Over 70 percent of this fish was exported to the European Union (EU) member states prior to the series of EU fish bans in 1996, 1997 and 1999. There has been some diversification since the bans but the EU remains the most important export market for Nile perch from the three EAC states.

Catering to the EU market, and a desire to sustain their world market share, were the drivers behind the three states' efforts to ensure the highest safety and quality standards of their fish and fish products.

A COMPETENT AUTHORITY (CA) FOR FISH AND FISH PRODUCTS

One of the requirements of the EU market is the establishment of a Competent Authority (CA) in countries wishing to export fish to the EU. The CA ascertains that the handling of fish targeted to the EU market by any third country complies with EU standards, and that fish processing establishments adhere to their Hazard Analysis and Critical Control Point (HACCP) plans.

To ensure the sustainability of fish safety, quality and trade, the three EAC states all now have well organized Competent Authorities. In Uganda, the Fisheries Resources Department of the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is the agency responsible for statutory inspection, certification and control of fish and fishery products. In Kenya, the Ministry responsible for the Fisheries Department is the Competent Authority in matters related to fish safety and quality assurance, while in Tanzania, the Department of Fisheries in the Ministry of Natural Resources and Tourism is the Competent Authority.

All three CAs have well-trained and experienced inspectors, who are also adequately trained in HACCP-based inspections. These inspectors are charged mainly with inspection of fish production areas, fish processing establishments and markets, and certification of products and the fishing environment.

In order to meet the requirements of EU Directive 91/493/EEC and to streamline their operations to achieve efficiency, the EAC governments have done the following:
- appointed and established CAs in each country to create a one-stop-shop for licensing, management, quality control and the development aspects of fisheries;

- enacted fisheries legislation related to health and safety and harmonized with EU and other international fish safety legislation;
- provided technical assistance to export processing establishments to help them meet required international processing standards, and to develop and adhere strictly to HACCP plans instituted in all their operations;
- facilitated the formation of fisheries sector associations for fish traders, especially fish processors and exporters associations, with enforceable codes of practice as a means of self-regulation.

THE EU BANS ON FISH EXPORTS FROM EAC

The EU bans on fish exports from East Africa between 1998 and 2000, while inflicting enormous economic losses on fishers, traders and governments in the region, forced the industry to focus more on safety issues. Prior to the bans, the governments lacked comprehensive legislation to enforce the necessary safety and quality standards. Moreover, certification systems were not well defined, obliging processors and traders to deal with several government agencies on fisheries matters.

The poor definition of CAs and their roles was partly responsible for the three EU bans on Lake Victorian fish exports. The three bans experienced by the East African countries were as follows:

- 1997: based on claims of *Salmonella* contamination. This was limited to exports to Spain and Italy;
- 1998: in response to a cholera outbreak in East Africa and Mozambique;
- 1999: based on the suspected presence of pesticides residues in Lake Victoria. This third and final ban was lifted in April 2000 for Tanzania, August 2000 for Uganda and November 2000 for Kenya.

HARMONIZATION WITH EU REGULATIONS

The EU Council Directive 91/493/EEC of 22 July 1991 lays down the health conditions for marketing fish and fishery products in the EU. Third countries fulfilling the conditions of this Directive are listed in the Commission Decision 97/296/EEC of 22 April 1997, which is regularly revised and updated. In the last few years many third countries have been included. The European Commission (EC) classifies third countries into two categories ('lists') for the importation of fishery products for human consumption.

The first category (List I) includes countries whose processing systems and health standards are at least equivalent to the EU's and whose CAs have been audited by an EU inspection team. The countries in the second category (List II) are those that have not been audited by the EU inspectors, but have supplied the Commission with written guarantees that they meet import conditions. Fish products from List II may enter the EU market under bi-lateral agreements with individual EU member but may be required to comply with additional national legislation of the importing state.

The three East African countries have had their CAs, fish processing establishments, and landing sites inspected by teams from EU Directorate General for Health and Consumer Affairs (DG SANCO). The three countries are therefore harmonized with EU standards, are in compliance with relevant requirements, and are all now on List I. Tanzania was the first to be upgraded to List I in 1997. It enjoyed this status until March 1999 when EU imposed a ban on fish products from Lake Victoria. The ban was lifted in Tanzania in April 2000, after which the EU inspectors visited the country twice to ascertain that safety measures were in place, before reinstating the country back to list I. Uganda was placed in List I in 2003 and Kenya in 2004. The main impediment for Kenya and Uganda to achieve List I status was the lack of clarity on the definition and the roles of their CAs. The EU inspection teams were concerned that inspection

and certification roles were not clearly defined and were administered by a range of government agencies.

FISH QUALITY AND SAFETY ASSURANCE MEASURES

A legislative framework
All three countries have developed fish quality and safety legislation that ensures fish and fishery products placed on any market are safe for human consumption.

Sampling and analysis of samples for monitoring purposes
Sampling for pesticide residue analysis has been an on-going programme since the last EU ban on fish exports from Lake Victoria. The CAs in the region have been collecting samples of water, fish and sediment from identified landing sites in Lake Victoria, to check on a regular basis for pesticide residues. This exercise is carried out to fulfil the written guarantees given to the EU by CAs to monitor pesticide residues in water, fish and sediments. It is also envisaged that the programme will assist the CAs in building a database on the status of the fish and the fishing environment that would in turn assure consumers of the safety and quality of fish in Lake Victoria. Results of analysis to date have been satisfactory. They have shown no detection of pesticides at the 'level of detection' (LOD). In addition, microbiological analysis of fish samples and swabs collected from fish contact surfaces, is regularly conducted by CAs in fish processing establishments.

Public participation in the safety and management of fisheries resources
The three East African countries have now adopted 'Beach management units' popularly known as BMUs, as primary grassroots or community institutions to monitor fish industry compliance with fisheries management requirements. The role of a BMU includes the following:
- ensuring that fishers carry out fishing and fish handling responsibly and hygienically;
- dissemination of information on responsible fishing and handling methods to the community and stakeholders;
- ensuring that hygiene standards at the landing site are maintained; and
- managing environmental issues.

Upstream control of fish safety and quality
To address some of the post-harvest safety management issues, the three East African countries have also taken steps to improve fish handling facilities at fish landing sites. Funding for the improvement of these facilities follows an integrated approach whereby the responsible Government, fish processors, local communities and donors all make contributions.

To ensure the traceability of fish from fishing grounds to the consumer, the three East African countries have introduced local 'Health Certificates' at landing sites. The certificate accompanies raw fish from landing site to the processing establishment, to ensure that fish for export is collected at designated areas that have been certified by CAs.

PRIVATE SECTOR FISH PROCESSING AND EXPORT ASSOCIATIONS
One of the useful outcomes of EU harmonization was the implied requirement to have an organized private sector capable of self-regulation. Fish processors and exporters from the three countries have organized themselves into strong member driven associations. These associations include: the Association of Fish Processors and Exporters of Kenya (AFIPEK), the Uganda Fish Processors and Exporters Association (UFPEA), and the

Lake Victoria Fish Processors and Exporters Association of Tanzania (LVFPAT). These associations are also members of the East African Fish Processors Association and have been instrumental in ensuring standards are maintained by developing a Code of Conduct for its members. These associations have also acted as useful interfaces with governments on fisheries co-management and trade issues.

The above associations are focused on exports only, a sector which accounts for less than half of total fish landings. The need for business linkages between large and small-scale players in fisheries cannot be overemphasised. The associations are expected to play a key role in developing these linkages, as well as in facilitating the development of small-scale fish trade and industry.

RECENT FISH TRADE DEVELOPMENTS AND CHALLENGES

Trademark
Nile perch is now registered as "Lake Victoria perch" through the Lake Victoria Fisheries Organization (LVFO). This is expected to give the popular product a clear brand and a niche in world markets.

Value addition
The three EAC states need to examine the potential for value addition to maximise revenues derived from Nile perch products. This would also enhance the sustainable management of the resource, as less fish could potentially be harvested for the same amount of earnings.

Value-chain reduction
Fish reaching the EU market from this region often goes through four or more steps before it is retailed to the consumer. This means a substantial difference between retail and export prices. The value of Nile perch fillets to the East African exporters is US$3-4 a kilo, but they retail at between US$15-17 a kilo in supermarkets in the EU. Reducing the steps between export and retail could enhance sales by delivering a cheaper product, and could increase the subsequent revenues from Nile perch products accruing to the three EAC countries.

Slot size
Imposing limitations on exports of whole Nile perch and fillets below certain sizes and weights, if implemented, would discourage the fishing of juvenile stock and would encourage stock recruitment, thereby contributing to the increased sustainability of fishing in Lake Victoria. The region is implementing slot-size harvesting with very encouraging results.

Sanitary and phytosanitary (SPS) issues
The procedures and time required to implement SPS issues in the fish industry, and to implement transparent verification mechanisms, are sometimes problematic. Unilateral demands, such as the sudden introduction of new standards, continue to hurt the region's fishery economy. A case in point is the current practice whereby an exporter whose consignment has suffered a rapid alert (marked as having a pathogen or unauthorized substance) has no access to the sample in question for independent verification. Even when there is access, the ensuing results are not considered if the verifying laboratory is not EU based. It also takes much longer to remove the rapid alert posted on the Internet, following compliance, than it takes to place it there.

Certification and harmonisation of fish inspection and quality assurance standards

A regional task force (RTF) composed of six members, two from each of the East African countries was formed in 2000 to develop certification and harmonization of fish inspection and quality assurance. The RTF developed three draft documents:

- a Code of Practice (COP) for fishing, fish handling and processing fish in Lake Victoria;
- an Inspectors Guide;
- a manual of standard operating procedures for fish inspection and quality assurance.

The East African Community made a decision in 2003 to harmonise their sanitary and phytosanitary measures. A joint regional harmonisation team consisting of the members of RTF and members of the Regional Working Group on Fish Quality and Assurance was established to produce fish and fishery products sanitary standards, measures, and procedures. The joint team, through consultative meetings, has developed:

- a Code of Practice for Fish and Fishery products: Part I Capture Fisheries, Part II, Aquaculture; and
- an Inspectors' Guide, Part 1 and II.

The third draft report, the Manual of Standard Operating Procedures (MSOP), Part I to IV, is in the final stages of development. The drafts will be presented to stakeholders for adoption at a workshop to be held later in 2005.

CONCLUSIONS

The EU bans on fish exports from the East African region in the late 1990s provided the stimulus for the three EAC states to improve their safety and quality control mechanisms. Enormous improvements have been made, including harmonization with EU regulatory requirements. Further advances are being driven by active cooperation between the three EAC governments. The future sustainability of the Nile perch resource and its economic benefits to the EAC countries will depend on further cooperation in the region, including in seeking value chain reductions, value additions, and the development of an organized private sector capable of self-regulation. Business linkages between small and large-scale players in the industry will also be crucial.

Uptake of HACCP in developing seafood industries in Asia and the South Pacific

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ABSTRACT

Collaboration between government and industry is the most effective way of protecting consumers from food-borne health hazards. When food is traded globally importing countries must have confidence in exporting countries' food safety management programmes. Although many processing plants in developing countries in Asia and the South Pacific currently would not comply with Hazard Analysis and Critical Control Point (HACCP) and other international requirements, these countries are attempting to introduce HACCP-based food safety systems to ensure that their processes and products meet the requirements of global markets.

INTRODUCTION

Food trade plays a significant role in the economic development of all countries and is a major contributor to the improvement of social, political and economic conditions worldwide. Most countries have some comparative advantages in the production of different raw or processed foods, which can help in promoting domestic or export trade. At the same time food imports are often the most cost-effective way to obtain supplies of other needed raw or processed foods. The continuous growth in food trade has been brought about by advances in food manufacturing and processing technology, which has in turn, led to increased product shelf life and product security. Rapid transportation and improved shipping and handling methods have reduced shipping time and distance barriers allowing traders access to new and distant markets for their products.

Technological advancement has without doubt, improved food quality and safety. However, trading food in today's global trading environment, where there are virtually no boundaries, has also given rise to problems and causes for concern. Food products are shipped today from one part of a country to another in a few hours. However, abuses occurring along the way, during transportation and storage, may render good quality food unsafe by the time it reaches the final consumer. As the volume of food trade increases, there is increased potential for exposing consumers to food quality and safety related problems.

Food safety laws are enacted to protect consumers against unsafe products, adulteration of food, and fraud, and to protect the honest food producer and trader against the dishonest. They also facilitate the movement of goods within and between countries.

THE REQUIREMENTS FOR FOOD QUALITY AND SAFETY

In order to be a successful food exporter, a country must produce foods that are both sought after and acceptable to consumers in other countries, and which comply with the statutory requirements of those importing countries. Compliance with the statutory, compulsory or mandatory requirements of importing countries is an unavoidable and essential prerequisite to successful and profitable food exporting. However, compliance is becoming increasingly demanding because of the preoccupation of the global community with food safety and health hazards. In addition, an increasing number of importing countries are demanding inspection and examination procedures, as well as certification by governments in exporting countries that products and process are in compliance with those importing countries own quality and safety standards.

A SHIFT IN RESPONSIBILITIES FOR FOOD CONTROLS

These changes have resulted in a redefinition of food control reflecting a shift of responsibility to industry. The current internationally accepted system of control is the Hazard Analysis and Critical Control Point (HACCP) system based on a definition of food control as 'a mandatory regulatory activity of enforcement by national or local authorities in collaboration with the food industry to provide consumer protection and ensure that all foods during production, handling, storage, processing and distribution are safe, wholesome and fit for human consumption, conform to quality and safety requirements and are honestly and accurately represented in their labelling as prescribed by law'.

This redefinition of food control requires food manufacturers to assume responsibility for their products by adopting procedures that ensure adequate levels of safety and quality. These procedures include:

- The appointment of Food Safety and Quality Control Officers to supervise the safety and quality aspects of products by maintaining continuous surveillance during all links in the production process. This was something previously undertaken by food control agency inspectors.
- The mandatory adoption by processors of food safety programmes including Good Hygiene Practice (GHP), Good Manufacturing Practice (GMP) and HACCP.
- The maintenance of detailed records of production procedures for inspection and evaluation by audit inspectors, without which food is considered adulterated according to the regulations of some major importing countries.

THE CURRENT SCENARIO IN ASIA AND SOUTH PACIFIC

In many countries in the Asia Pacific region only 30-35 percent of the existing processing establishments would comply with HACCP and other international requirements. Even in processing plants where those measures have been implemented, several deficiencies can be observed in the actual application of food safety management systems. There are several areas where major concerns exist. For example, HACCP records sometimes do not contain:

- the name of the processor;
- the names of the reviewers;
- the date of review;
- the name of the product;
- the intended use of the product; and
- do not comply with CFR 123.9.

Moreover HACCP plans often contain:

- unscientific 'critical control points';
- incorrect 'critical limits';

- incorrect monitoring procedures; and
- insufficient or incorrect corrective actions.

Monitoring and recording deficiencies also exist. For example:

- Sulphite monitoring often has not occurred. In few instances where the analysis has been conducted, the method of sampling and testing has been improperly documented.
- Monitoring chlorine in water is reported as <2ppm, <20ppm etc. which can be even '0'. The true value needs to be recorded.
- Temperature is not measured correctly during monitoring.
- Temperature recordings for *Scombroid* species are not adequate. Cumulative time and temperature are neither included as a 'critical limit' nor monitored and recorded.
- Cooked product fails to meet 'Time and Temperature requirements, the 'process of deviation' is not recognized, and there is no provision for 'corrective actions'
- The frequency of monitoring is not recorded.

HACCP plans are also sometimes combined when the potential hazards are different. Confusion still appears to exist in terms of identifying significant hazards, whether they are biological, chemical or physical. Clearly, HACCP training is inadequate in many cases. The United States Food and Drug Administration (FDA) has noted deficiencies in all areas of sanitation. Yet in the monitoring records of the facilities concerned, often no such deficiencies are recorded.

CONCLUSIONS

Most governments throughout the world have made a serious commitment to protecting their consumers from food borne diseases and other food related hazards. This commitment is growing and is viewed increasingly by consumers as an essential part of government responsibility. For this reason most countries have operational food laws or are in the process of developing them. They also have food control agencies to implement those laws. Until recently inspectors and other officials of those agencies carried out full inspections, on a continuous basis, to ensure the safety and quality of food products. However, now their activities are mostly restricted to audit inspection; checking the controls manufacturers themselves apply to their production processes and products to ensure compliance with mandatory or statutory requirements. This concept of audit inspection needs to be strengthened and practiced as the industry becomes more self-regulating.

As a result of these global developments, fish safety has become a priority in many developing countries. In response to FDA and EU regulations, HACCP based food safety systems are gradually changing from a 'paper programme to a programme in practice' throughout the Asia Pacific region. This needs to be encouraged and supported.

The importance of food safety controls cannot be overemphasized. A collaborative effort between government and industry is the most effective way of protecting consumers from food borne health hazards and ensuring honest and fair practices in the trading of food.

Rebuilding capacity after the Tsunami: lessons learned

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ABSTRACT

The massive earthquake and subsequent tsunami that originated off the west coast of northern Sumatra on 26 December 2004 killed an estimated 300 000 people and devastated the livelihoods of millions of people. Members of the Food and Agriculture Organization (FAO) of the United Nations gave the Organization the mandate to take on a coordinating role in the rehabilitation and reconstruction of fisheries and aquaculture, the worst hit production areas. FAO developed a four-level timeframe response to the tsunami crisis, from relief to development. The aim of FAO post-tsunami assistance is optimising sustainable outcomes by restoring coastal ecosystems and by "building back better" the livelihoods of the affected communities.

INTRODUCTION

The massive earthquake and subsequent tsunami waves that originated off the west coast of northern Sumatra on 26 December 2004 killed an estimated 300 000 people and devastated the livelihoods of millions of coastal people, many of them poor fishers, farmers, and their families (APFIC, 2005). Rapid assessments after the disaster confirmed that the fisheries sector was the worst hit, with crops, livestock and coastal eco-systems, including mangroves and tree crops, also suffering serious damage. Strong support from donors has allowed FAO to provide direct assistance to those victims in the form of boat repair kits and engine parts for fishing boats, fishing nets and other gear, seeds and farming tools, and repair of irrigation and drainage infrastructure. Above all, FAO has provided technical assistance and expertise for optimizing sustainable outcomes in "building back better" the livelihoods of the affected fishing and farming communities, and restoring the coastal ecosystem, including mangroves and other crop trees. This paper:

- provides an overview of the impact of the tsunami on fisheries in the affected countries of the Indian Ocean;
- summarizes the major challenges faced by all those involved in the reconstruction and development of the fisheries sector; and
- presents the FAO strategic response and framework to the Tsunami crisis, in particular introducing the role of the FAO Fisheries Tsunami Task Force.

IMPACT OF THE TSUNAMI ON FISHERIES AND AQUACULTURE

The earthquake off the coast of Sumatra of 26 December 2004 was the fourth largest in the world since 1900 and the largest in nearly half a century (World Bank, 2005). It triggered large tsunami that surged with devastating force against at least 12 countries, among which Indonesia, Sri Lanka, India, Thailand and Maldives were the most seriously affected.

FIGURE 1
Countries that have been affected by the tsunami
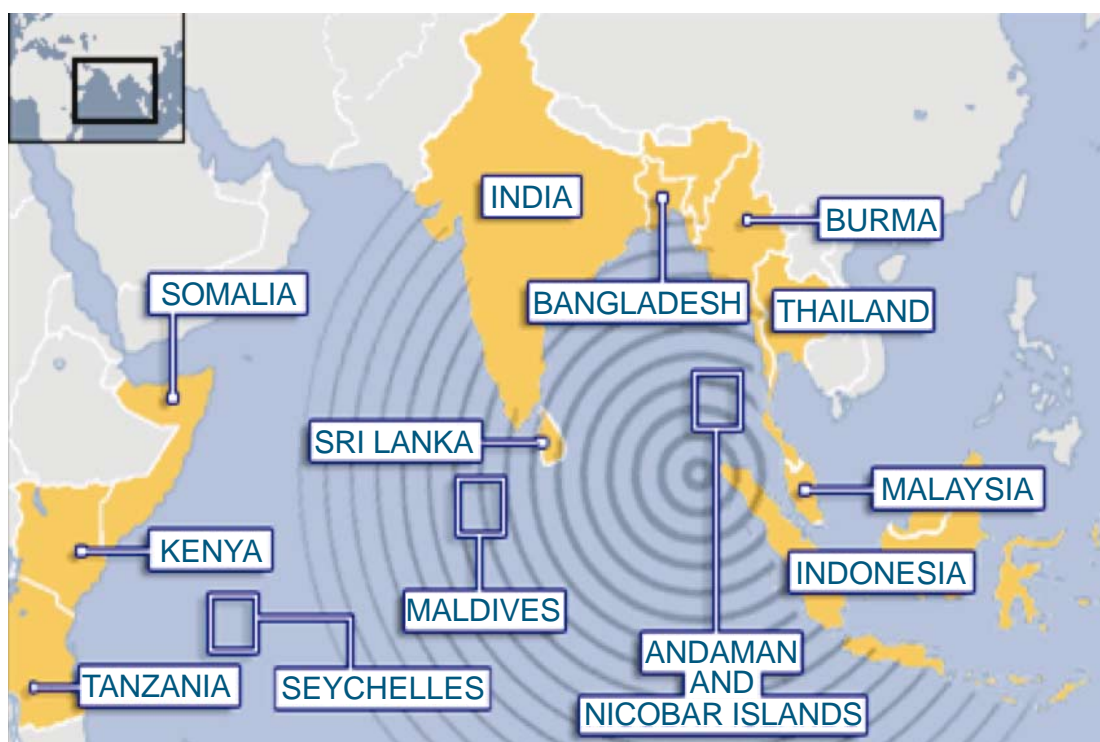
During the initial stages of the disaster, FAO sent field teams to assist with rapid damage and needs assessments to India, Indonesia, Malaysia, Maldives, Myanmar, Seychelles, Somalia, Sri Lanka and Thailand. These teams also assisted in the emergency coordination responses in affected countries. Several assessments and subsequent strategies were carried out and elaborated in collaboration with the World Bank, the Asian Development Bank (ADB) and the International Fund for Agricultural Development (IFAD).

FAO estimates put the human cost of the tsunami at just under 300 000 people killed (or still missing) with a negative impact on the livelihoods of around five million people (FAO 2005a, b). The cost of recovery for the affected areas could be over US$1.5 billion (ADB 2005). The majority of those affected had agriculture or fisheries based livelihoods or were employed in associated enterprises. The degree of damage to lives and property varied within and between countries and communities, with some suffering the complete loss of villages, homes, fishing and aquaculture infrastructures (including port and post-harvest facilities), fishing boats and gear, aquaculture facilities (including ponds, cages, hatcheries and brood stock) and markets, as well as other assets important to local livelihoods. Table 1 summarizes the impact of the tsunami on each affected country. These brief summaries are developed further below.

Indonesia

Although the disaster was geographically limited, Indonesia was the worst affected country. The tsunami devastated the coastal areas of North Sumatra, especially the northern and western communities of Aceh Province. The number of dead or missing was estimated at 230 000 and the number of displaced people in Aceh at over 400 000. Over 50 percent of the active fishers were killed. The total estimate of damages and losses is in the order of US$4.45 billion, nearly two thirds of it in the private sector

TABLE 1
Impact of tsunami in the most affected countries

Country	General impact			Impact on fisheries		
	Dead and displaced people	**Economic loss**	**Human casualties**	**Economic loss**	**Fishing inputs**	
					Equipment	**Infrastructure**
Indonesia	230 000 people dead/missing. Over 400 000 displaced in Aceh Province.	US$4.45 billion. Private sector: 2/3 of total economic loss.	50% of active fishers killed.	US$140 million (exc. lost production).	2/3 of boats/gears destroyed /damaged.	½ of infrastructure destroyed/ damaged. 48 000 ha of brackish water aquaculture ponds seriously damaged.
Maldives	80 people killed, 20 missing. 12 000 displaced. 1/3 of population severely affected (housing-food-water).	US$470 million (nearly 2/3 of GDP) Main activities affected: tourism/ fisheries.		US$25million.	120 fully damaged/ lost fishing vessels, 50 partially damaged vessels.	Lost equipment of 337 cottage fish processors and 37 commercial ones.
Sri Lanka	31 000 people killed.	US$1 billion. Main activities affected: housing, tourism, fisheries, transport.	Most victims were fishers. 90 000 fishers displaced.	US$120 million (exc. damage to housing/ assets).	Over 20 000 vessels destroyed or damaged.	Damage to 200 landing sites, 10 fisheries harbours, 37 anchorages and associated fishery inputs.
Thailand	5 000 people killed (half of them foreign tourists).	Main activities affected: tourism and fisheries.		Loss of income for 30 000 fishery-dependent households.	Damage to 4 500 fishing boats and 4 900 fishing vessels.	Damage or destruction of some 400 fishing villages. Damage to more than 6 000 cage farms, 42 shrimp farms, 83 public harbours/piers.
Somalia	150 people killed. 50 000 people severely affected (housing-food-water).			Fisheries were most affected as height of fishing season.	470 boats, 16 engines lost, 24 912 nets, 3 730 traps, 587 diving sets destroyed.	
Yemen				US$2.8 million. Loss of income for thousands of fishers.	600 boats, 1 600 fishing nets, 17 000 fishing traps lost/ damaged.	Damage to infrastructure, beaches, natural harbours and jetties.

including housing, commerce, agriculture, fisheries, and transport. Some two-thirds of fishing equipment including boats and gear, and half of the fisheries and aquaculture infrastructure were destroyed or damaged. Up to 48 000 hectares of brackish water aquaculture ponds were seriously damaged. Fisheries sector output in the affected districts are showing a decline, estimated at as much as 60 percent as a consequence of physical loss, the large number of fishers killed, and the post-trauma fear of recommencing fishing. Direct damage to fishing and aquaculture assets, excluding income losses due to lost production, has been estimated at about US$ 140 million.

Maldives

The entire population of the Maldives was affected as the country's more than 1 100 islands became inundated. Twenty of the 198 inhabited islands were largely devastated. Over one-third of the total population of 280 000 was severely affected; their homes destroyed or severely damaged and their water and food supply undermined. Eighty people were killed and twenty remain missing. About 12 000 people continued to be displaced as of March 2005. Tourism and fisheries, which are the main economic sectors of the Maldives, were severely affected by the tsunami. The direct damage to fishing and fish processing equipment and indirect income losses in the fishery sector have been estimated at US$25 million. Direct losses to fisheries include: 120 fully damaged and lost fishing vessels, 50 partially damaged vessels, and lost equipment of 337 cottage fish processors and of 37 commercial processors. In macroeconomic terms, the Maldives was the worst affected country. The damage to productive assets, housing and infrastructure is estimated at US$470 million, but this figure amounts to nearly two-thirds of the country's gross domestic product.

Sri Lanka

In Sri Lanka, the devastating tsunami struck 12 out of its 14 coastal districts, killed over 31 000 people, destroyed, fully or partially, some 140 000 houses, and damaged natural ecosystems and coastal infrastructure. Vulnerable groups, such as poor fishing communities living close to the shore in simple houses and shelters, have borne the brunt of the negative impacts. Most of the people killed were fishers and their families. In addition, some 90 000 fisherfolk have been displaced due to the loss of housing and other household assets.

Overall economic damage is estimated at close to US$1 billion (approximately 4.4 percent of GDP), with losses concentrated in the housing, tourism, fisheries and transport sectors. The total damage to the fisheries sector, excluding the damage to housing and assets of the affected fishing population, is estimated at US$120 million. Extensive damage has been caused to 200 landing sites, 10 fisheries harbours and 37 anchorages as well as to the associated fish handling facilities, fishery co-operative buildings and vehicles in the affected areas. More than 20 000 of the country's fishing fleet of about 28 000 vessels were either fully destroyed or damaged to varying degrees. Fishing inputs such as outboard motors, ice storages, fishing gear and nets have also been destroyed, as has the fisheries infrastructure. The ten most affected fisheries districts of the country account for over 72 percent of total marine landings. Over 60 percent of the national fleet and an estimated 80 percent of the active fishers were registered in these districts.

Thailand

In Southern Thailand, along the coast of the Andaman Sea, more than 5 000 people were killed, about half of them foreign tourists. People working in fishing and allied activities and in tourism were the most affected. Overall, the livelihoods of several hundred thousand people have been affected by the tsunami. Large-scale damage was inflicted upon some 400 fishing villages, including the damage or destruction of 4500 fishing boats. About 30 000 poor households that depended on fisheries lost their means of earning a living. The estimated damage reported included over 4 900 fishing vessels, more than 6 000 fish and shellfish cage farms, and 42 shrimp farms. In addition, 83 public harbours or piers were affected. Severe damage was also caused to private jetties and piers for private boats, and fishery-associated businesses, such as ice plants, gas stations, fish landing sites, markets, and ecotourism ventures.

Somalia

The north eastern coastline of Somalia was the worst affected area in Africa. The tsunami hit people already vulnerable because of civil war, chronic droughts and floods. An estimated 150 people have died, and at least 50 000 more have been directly affected through damage to houses, boats, wells, and water reservoirs. As the tsunami coincided with the height of the fishing season, the impact on fishing livelihoods and fish consumers was exacerbated. The community has suffered big losses of boats, engines, nets, traps and other fishing equipment. In total, more than 220 fibreglass boats, 250 wooden boats and engines were totally lost while others needed repairs to reverse further losses. Some 24 912 nets, 3 730 traps and 587 diving sets were destroyed.

Yemen

The most affected parts of Yemen were the two remote districts of Socotra (an island) and Al Mahara (on the south east coast). As the waves hit the beaches, most people were in the villages and only a few deaths have been recorded. The main damage was to fishing boats, engines and gear. Most boats were anchored outside the beaches, with their outboard engines mounted. Around 600 boats and engines have been lost or damaged, together with some 1 600 fishing nets and 17 000 fishing traps. There was also damage to infrastructure, beaches, natural harbours and jetties. The total value of the direct damage is now estimated to be US$2.8 million. Thousands of fishers have lost their main source of income.

FAO RESPONSE

In the first week after the disaster, FAO, like other specialized agencies of the United Nations responded swiftly to provide relief and rehabilitation assistance in the areas of agriculture, fisheries and forestry. In addition to an immediate approval of three Technical Cooperation Projects for a total of US$1.5 million and the dispatching of FAO staff to the affected areas, it launched, in cooperation with other United Nations (UN) agencies and through the UN Office for the Coordination of Humanitarian Affairs (OCHA), a flash appeal for US$29 million to fund its assistance in agriculture, fisheries and aquaculture. The resources were necessary to enable the provision of technical assistance and coordination. In the case of fisheries, this included assisting in supplying fishing gear, repairing and replacing fishing boats and engines, and rebuilding or repairing landing sites, fish storage and processing facilities and fish markets, and rehabilitating aquaculture ponds. A flash appeal review was launched three months later once a better estimate of the damage was available and FAO increased its appeal for assistance to US$103 million.

Several donors, including Japan, Norway, Germany, the United Kingdom, Italy, Canada, Belgium and China, funded 45 projects valued at US$75 million. Around 60 to 70 percent of these funds were earmarked for fisheries rehabilitation and reconstruction. Even developing countries such as Laos, Palau, Algeria and Zambia contributed to this international effort. In this context, it is important to realize that the level of funding received by FAO is relatively small when compared to the overall resources collected by the many organizations and agencies involved and estimated at several US$ billion. In Indonesia alone, some 124 International Non-Governmental Organizations (INGOs), 430 local NGOs, dozens of UN agencies, various government agencies and many others have been working in tsunami relief and rehabilitation. The Red Cross and Red Crescent Movement alone raised US$1.8 billion, while other INGOs raised hundreds of millions, largely through web-based fundraising (WB 2005).

Overall Strategic framework

Regional meetings and two important events organized in March 2005 at FAO in Rome, namely the FAO Fisheries Ministerial Conference (12 March 2005) and the 26th Session of the Committee on Fisheries (7-11 March 2005) paved the way for the development of a four-pronged timeframe response to the fisheries crisis caused by the tsunami. Figure 2 shows the framework used to address the continuum of assistance: from relief to development work (with the indicated timeframes defined from the date of the disaster). Four important phases were identified:

- Immediate (first 6 months) with emphasis on damage assessments and emergency work in the context of the original UN Tsunami Flash Appeal.
- Short-term (12 months) with emphasis on rehabilitation assistance in the context of the Mid-Term Review of the UN Tsunami Flash Appeal.
- Medium-term (12-24 months), through the preparation of strategic frameworks (or sectoral master plans) and specific FAO action plans for rehabilitation.
- Long-term (over 24 months and up to 5 years) through reconstruction programmes and projects that include elements of longer-term planning.

FIGURE 2
FAO four-level timeframe response to the Tsunami crisis
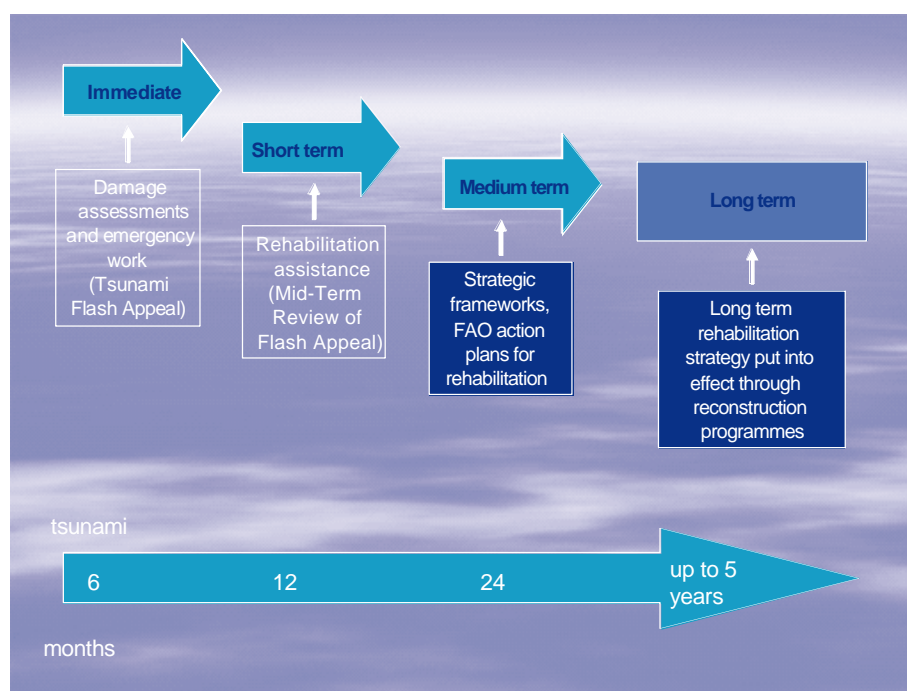
Guiding principles for reconstruction

FAO strove to build its tsunami-related work on the following guiding principles throughout all the reconstruction phases:

- Recognize the sovereign right of each country affected.
- Base all interventions on livelihood enhancement and poverty alleviation.
- Adopt participatory approaches, and to the extent possible rely essentially on inputs and skills and capacities used prior to the disaster and available locally.
- Promote activities compatible with sustainable fisheries, agriculture and forestry management practices. Environmental sustainability must underpin reconstruction strategies.

- Adopt flexible and adaptive methods in order to respond to the multiple dimensions and complexity of the tsunami disaster.
- Strengthen national and local institutional capacity.
- Adopt a collaborative approach with international or regional development partners and donors for improved planning, implementation and coordination and information sharing.
- Adopt multisector and integrated approaches (linked to the interdependency of communities and socio-economic linkages between sectors and geographic areas), especially in view of the fragile coastal ecosystems affected by the tsunami.

Regional strategy

Through the Consortium to Restore Shattered Livelihood Communities in Tsunami-devastated Nations (CONSRN)[1], FAO has been instrumental in the development of a regional strategy for the rehabilitation and reconstruction of the fisheries and aquaculture sector in Asia. This strategy contains six objectives that form the basis for CONSRN partner activities in the region (APFIC 2005):

- To develop a responsive and well regulated policy and institutional environment for fisheries and aquaculture at national and local level, which involves communities and recognizes the importance of local level needs in planning, monitoring and regulation.
- To ensure that appropriate physical assets are provided to the tsunami victims in a timely, equitable way to replace what they have lost while ensuring sustainable use of natural resources in the future.
- To restore the natural environment while ensuring coastal communities impacted by the tsunami continue to have equitable access to inputs and the sustainably managed natural resources on which their livelihoods are based.
- To ensure that appropriate financial mechanisms are in place for those affected by the tsunami.
- To ensure, through the adoption of a participatory approach and capacity building, that the coastal systems of tsunami affected countries are managed in a sustainable way to the benefit of all in the communities. Specific objectives should include:
  - to improve and diversify the livelihoods of coastal resource users;
  - to improve the efficiency of rehabilitation investments through ensuring the conservation of natural barriers, which can act as protection;
  - to achieve sustainable management of the natural resources on which community livelihoods depend;
  - to ensure conflicts between user groups are resolved; and
  - to ensure the needs of the poor, marginalized groups, and small scale fishers and fish farmers are included.
- To ensure the development of communities and community organisations which are empowered to take part effectively in post-tsunami planning and rehabilitation activities.

Progress and achievements

FAO has assisted the Governments of Indonesia, the Maldives, Myanmar, Seychelles, Somalia, Sri Lanka, Thailand and Yemen in the assessment of damage to their fisheries and aquaculture sectors and related relief and rehabilitation needs.

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[1] Members of the Consortium are: Asia-Pacific Fishery Commission (APFIC); the Bay of Bengali Programme – Inter-governmental Organisation (BOBP-IGO); FAO Regional Office for Asia and the Pacific (FAO-RAP); Network of Aquaculture Centres in Asia-Pacific (NACA); Southeast Asian Fisheries Development Center (SEAFDEC); and WorldFish Center (WorldFish).

The FAO Fisheries and Aquaculture Department developed a Web site on fisheries and aquaculture interventions in tsunami-affected areas that seeks to provide consolidated information on needs in the fisheries and aquaculture sector and on relief and rehabilitation measures, and serves as a focal point for all stakeholders and donors. This Web site is part of the overall FAO tsunami Web site, and is connected to the UN Atlas of the Oceans website maintained by FAO on behalf of UN agencies. The purpose of this site is to coordinate the agencies' information on ocean-related activities, and on the activities developing around the tsunami issue.

During the first year, FAO's emergency programme for the tsunami-affected countries amounted to US$52.7 million to fund 46 projects. FAO dispatched some 35 international fisheries experts to work with nationals to provide technical assistance and coordination and assist governments in damage assessments, relief and rehabilitation efforts. The field experts were backed by some 20 officers from FAO headquarters in Rome and the Bangkok regional office, as well as the national FAO offices, all dealing with technical, logistical and operational issues. In addition to the initial relief effort, FAO was asked to provide policy advice to government institutions to develop national plans for fisheries rehabilitation and reconstruction for the medium to long term. Support has been gradually shifting from repair of boats and engines and provision of gear and engines towards technical assistance, training on boat building, development of safety standards for boat building and coordination. It is foreseen that the reconstruction of fisheries will take at least three to five years. FAO is developing project proposals to ensure that fisheries in the tsunami affected countries are "built back better"

FAO Members gave the Organization the mandate to take on a coordinating role in the rehabilitation and reconstruction work in the fisheries and aquaculture sector. FAO was also designated the coordinator of emergency and rehabilitation efforts in fisheries by the national authorities in Sri Lanka and Indonesia. As a result, the FAO Fisheries and Aquaculture Department is actively assisting affected countries in the development of country-driven national strategies and implementation frameworks. These frameworks are developed by governments with multi-agency assistance provided by the International Financing Institutions (IFIs) and the UN system. Each country framework has a fisheries component and incorporates a livelihood-based approach and other cross-cutting issues such as food security, gender, and the protection of the coastal and marine environment, reflecting the fact that fishing and farming communities were, in most countries, the worst affected by the tsunami.

The FAO Fisheries and Aquaculture Department also cooperates with the UN Development Group[2], other UN organizations, other inter-governmental organizations (IGOs), fisheries networks, NGOs and civil society. During the 26th meeting of the FAO Committee on Fisheries (COFI), held in Rome in March 2005, about six hundred participants from national governments, UN agencies and observers from IGOs and NGOs discussed the rehabilitation of fisheries in the Indian Ocean. Following the COFI meeting, fisheries ministers met to discuss tsunami rehabilitation and adopted the 2005 Rome Declaration on Fisheries and the Tsunami, which emphasizes a joint commitment to assist affected countries with concerted rehabilitation and reconstruction activities.

As part of the overall FAO efforts to assist the affected countries, close collaboration has been maintained with IFIs including the World Bank, the Asian Development Bank (ADB) and the Islamic Development Bank (IDB). FAO is collaborating with IFIs in the areas of:

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2   Formed by the United Nations Development Programme (UNDP), the United Nation's Children Fund (UNICEF), the United Nations Population Fund (UNFPA) and the World Food Programme (WFP).

- needs and damage assessments in agriculture and fisheries sectors;
- formulation of rehabilitation and recovery strategies;
- participation in missions to help design project or programme interventions; and
- facilitation of the exchange of technical and operational information.

So that the benefits of FAO's know-how and resources reach the largest number of fishers, fish farmers and their families affected by the tsunami, a key task of the staff of FAO's Fisheries and Aquaculture Department is to assist those who are responsible for planning and implementing relief and rehabilitation activities at both national and regional levels. At the national level, staff and consultants of the FAO Fisheries and Aquaculture Department form part of national task forces established by governments to coordinate all tsunami related assessment, relief and rehabilitation measures.

LESSONS LEARNED AND CHALLENGES
Emergency relief versus rehabilitation and development
Despite the massive and immediate worldwide support, there is a widely held impression that little was done during the first eight months following the tsunami. People are desperate to return to normality but the recovery process is very complex. In the case of fisheries, FAO was caught between immediate needs and longer-term reconstruction. There were immediate demands to deliver outputs (gear and boats) and to show results rapidly, as expected by the donors. This had to be balanced against the need for coordination to avoid duplication and careful planning to ensure medium and long-term issues in reconstruction and development were addressed.

Involvement of communities
Another important lesson is the need to develop community-based strategies and participatory processes. The involvement of fishers, through their fisheries associations (e.g. Panglima Laot in Aceh Province) and other similar schemes, enabled rehabilitation operations and provided livelihood restoration opportunities, such as cash-for-work schemes, training carpenters in boat building, and contracting local NGOs to assist in project operations. This increases the risk of misappropriation of resources and/ or malpractice, depending on whether or not transparent and robust procurement practices and other checks and balances exist.

Coordination of assistance
Coordination among the providers of assistance is vital, but problematic unless planned at the highest levels of government, and at UN level. There is still an urgent need to support the capacity of the governments of affected countries in their efforts to coordinate, monitor and plan livelihood rehabilitation (specifically related to cross-cutting issues in all three sectors; agriculture, fisheries and forestry). Examples of national initiatives in the affected countries include the Aceh and Nias Rehabilitation and Reconstruction Agency (BRR), established by the Indonesian Government and reporting directly to the President, and the Task Force for Rebuilding the Nation (TAFREN) in Sri Lanka. FAO's role is to provide technical advice to support coordination, monitoring, evaluation, information sharing and planning for the medium to long terms. Such support will assist the longer term planning for rehabilitation and ensure the most effective and efficient use of resources.

Flexibility and accountability
Flexibility of procurement and operations in project implementation in emergency situations is not always compatible with the establishment of proper checks and balances for accountability and the principles of good governance. Flexibility involves a certain level of risk that many organizations are not always able or willing to take.

Risks of rebuilding

A real risk for the reconstruction of tsunami-affected fisheries is the danger of creating or exacerbating unsustainable fisheries, through overfunding and/or insufficient coordination. There is already evidence of fishing overcapacity through the introduction of inappropriate fishing craft and gear. If appropriate and sustainable fishing practices are to be rebuilt, there is a need to provide alternative livelihoods for some fishing communities, especially in countries with a history of overcapacity.

CONCLUSION: FUTURE ACTIVITIES AND THE ROLE OF FAO

The 2005 Rome Declaration on Fisheries and the Tsunami called upon FAO to "play a leading role in advising and supporting the international community in matters relevant to sustainable fishing and aquaculture rehabilitation" (FAO Council 2005). FAO support to tsunami-affected countries should be increasingly focused on the sustainable use of natural resources through, among other things, the empowerment of small-scale fishers, local communities and resource users. The following specific activities are priorities for FAO, chiefly in the medium to long term of its four-level timeframe response (Figure 2):

- the establishment of a new Steering Group to include representatives from donor and recipient countries as well as representatives from the FAO Fisheries Department and FAO-RAP;
- the provision of advice and support by FAO Fisheries Department staff and consultants to the national governments' task forces;
- assistance in the development of national and regional rehabilitation and reconstruction strategies; and
- the provision of technical and policy guidance to plan and coordinate all rehabilitation efforts in fisheries and aquaculture.

Despite shortcomings due to insufficient human and financial resources, and the many and sometimes conflicting demands from donors and recipients, FAO benefits from several comparative advantages in assuming its role as tsunami rehabilitation coordinator in fisheries and aquaculture. These include its international representativeness, its technical expertise, its neutrality, and its ongoing mandate to facilitate the implementation of the Code of Conduct for Responsible Fisheries.

REFERENCES

Asian Development Bank (ADB). 2005. Rebuilding lives after the tsunami. Special Issue. AsDB Review. Vol. 37. Manila: Asian Development Bank. 32 p.

Asia Pacific Fishery Commission (APFIC). 2005. Regional strategic framework for rehabilitation of fisheries and aquaculture in tsunami affected countries in Asia. FAO Regional Office for Asia and the Pacific (RAP) publication 2005/9. Rome: FAO. 28 p.

The Food and Agriculture Organization (FAO). 2005a. Assessment of rehabilitation and reconstruction needs in the tsunami affected post-harvest fisheries sector Sri Lanka. Non serial publication. Available from FAO (http://www.fao.org).

The Food and Agriculture Organization (FAO). 2005b. FAO's response to the earthquake and tsunami disaster. Available from FAO (http://www.fao.org). Posted March 15th 2005.

The Food and Agriculture Organization (FAO). 2005c. Situation Reports: Regional Tsunami. Non serial publications. Available from FAO (http://www.fao.org). Posted August 25th 2005.

The Food and Agriculture Organization (FAO) Council. 2005. Hundred and Twenty-Eighth Session. Rome, 20-25 June 2005. Outcome of the Ministerial Meeting on Fisheries (12 March 2005). Available from FAO (http://www.fao.org).

The United Nations Office for the Coordination of Humanitarian Affairs (OCHA). 2005a. Mid-Term Review of the Flash Appeal 2005 for Indian Ocean Earthquake - Tsunami. Non serial publication. Available from OCHA (http://ochaonline.un.org). Posted September 14th 2005.

The United Nations Office for the Coordination of Humanitarian Affairs (OCHA). 2005b. Post-tsunami update. June 2005. Non serial publication. Available from OCHA (http://ochaonline.un.org).

The World Bank 2005. Rebuilding a better Banda Aceh and Nias. Non serial Publication. 121 p.

Regulatory convergence in a global marketplace

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ABSTRACT

The global seafood market is characterized by high consumer expectations and extensive product diversity. National food regulators have a responsibility to ensure a safe food supply. Yet prescriptive regulation stifles industry and innovation. Twentieth century notions of food regulation are not keeping pace with the changing food supply or consumer expectations, and their associated management strategies are not effective in dealing with the rising incidence of food-borne illness.

Regulatory convergence is occurring at the international, regional and national levels. The Codex Alimentarius Commission (CAC) is crucial for setting frameworks for national food regulation. Australia is an active participant in Codex committees. Through Food Standards Australia New Zealand (FSANZ) Australia also encourages countries in the Asia Pacific region to adopt Codex approaches.

At home, Australia has adjusted its governance and organizational structures to adopt a whole-of-government approach to the regulation of food. FSANZ has developed a national seafood standard; a mandatory standard that applies hygiene and food safety regulation to the primary and processing ends of the industry. An entire food industry is now covered by nationally consistent food safety regulation. FSANZ has also initiated a country of origin food standard that requires the labelling of seafood and other unpackaged products, both local and imported.

This paper outlines the process of regulatory convergence and its relevance to Australia, arguing that the process will enable the seafood industry to compete more effectively in the global marketplace and will help to maintain consumer confidence in seafood products.

INTRODUCTION

A global marketplace, with its high consumer expectations and growing diversity of product, is where twentieth century notions of food regulation are becoming increasingly irrelevant. Prescriptive regulation by government cannot provide industry with the incentives to innovate and experiment with new food technologies and products.

Traditional management techniques that attempt to control and minimise potential hazards in the food supply do not appear able to provide the levels of safety demanded by consumers or the capacity to respond adequately to new pathogens and changing consumption patterns. On top of this, one nation's food emergency can immediately threaten public confidence in a food commodity elsewhere because of the speed of modern-day communications.

Even an island nation like Australia imports half of the seafood it consumes. This means that Australia has a vested interest in the strategies being adopted by its trading partners to ensure the safety of seafood produce, in addition to the need to regulate its own domestic catch. The same must apply to every country represented at international seafood conferences. Without a shared understanding of approaches and practices, there is a danger of inhibiting trade and confusing consumers. This is not desirable. It also makes sense for trading partners to adopt similar approaches to food safety regulation.

This paper explores regulatory convergence as a concept that recognises the growing interconnectivity of regulatory systems at global, regional and national levels. It also examines the Codex-endorsed, whole-of-chain approach to food safety as a management tool to combat the growing incidence of food-borne illness around the world. The paper then raises two issues of current interest to Australia's seafood industry: the development of a new national standard for seafood, designed to replace existing piecemeal regulations, and country of origin labelling.

REGULATORY CONVERGENCE
Regulatory convergence is the coming together of ideas, principles, legal requirements, enforcement mechanisms and organisational structures used by government to protect the general population from unsafe food. It is worth noting that, these days, governments usually only intervene in food matters where there has been a failure, or potential for failure, in the marketplace (a food safety issue) or where it wants to use food regulation as a means of implementing public health policy (for example the addition of thiamine to bread). Increasingly, governments do not feel the need to regulate for quality. This is a matter for the consumer and the marketplace.

International convergence
Convergence can occur at international level, through the work of the Codex Alimentarius Commission, or through bi-lateral and multi-national agreements, which are normally consistent with Codex approaches. Codex provides a reference framework through which individual nations can develop their own food standards, according to individual circumstances.

Australia is very active in the work of Codex, in the context of food regulation, public health, industry, agriculture and trade. This Codex involvement encourages the various portfolios of the Australian Government to cooperate on food matters; an essential element of regulatory convergence.

Regional convergence
At a regional level, regulatory convergence is illustrated by the adoption by Australia and New Zealand, more than a decade ago, of a shared set of food regulations for food labelling and composition in the Australia New Zealand Food Standards Code. This harmonization of food standards recognized that the two countries are essentially a single market in traded foods, with common business interests across both sides of the Tasman.

One independent government agency, Food Standards Australia New Zealand (FSANZ), sets food standards for the composition and labelling of foods that apply in both countries. New Zealand maintains its own arrangements for food safety standards. Of course, similarities of history, culture, language and world-view have contributed greatly to this level of bi-national cooperation. However, FSANZ is experiencing significant interest from ASEAN (Association of South East Asian Nations) countries and those in the broader APEC (Asia Pacific Economic Cooperation) community for collaborative ventures. These ventures range from the adoption, either in whole or in part, of the Australia New Zealand Food Standards Code into a country's regulations

or the training by FSANZ of regulatory officials in Codex-based approaches and systems.

Nearly 70 percent of Australia's food exports go to APEC member countries. Food imports to Australia from APEC countries exceed AUD$3 billion a year. It is therefore in Australia's national interest to facilitate a greater understanding and, if possible, a convergence of regulatory approaches with this important bloc of trading partners.

National convergence

Regulatory convergence at the national level involves a much greater engagement of government portfolios concerned with food than has occurred in the past. When Australia and New Zealand entered into their partnership in 1996, the health portfolios of the respective countries dominated the food regulatory process. In 2002, a new Food Regulation Ministerial Council was formed to provide policy guidance to FSANZ. Agriculture, trade and industry interests are represented in the Council, in addition to health. Moreover, although Australia has national food standards, enforcement of these standards is the responsibility of the States and Territories, often through local governments.

States and Territories have harmonised their own regulatory arrangements for food in parallel with national changes. For example, the State of New South Wales now has its own Food Authority, incorporating elements from its health and agriculture departments.

Structural change obviously needs to be reinforced by cultural change before it can become fully effective. After three years, the various elements of Australia's food regulatory system have been successfully bedded down. Regulatory pathways seem to be well aligned. This bodes well for food regulation. Just as globalization is inevitable, regulatory convergence will gather pace to match a rapidly changing world and the soaring aspirations of consumers for safe food. Twenty-first century management systems are needed for a 21st century global food supply. Regulatory convergence is part of the solution.

WHOLE-OF-CHAIN APPROACH TO FOOD SAFETY

It could be asked: what does regulatory convergence have to do with the way seafood businesses conduct their operations? After all, it's a long way from the sharp end of a trawler in the Pacific to a Codex desk in Rome or Geneva. The connection is food safety, or food hygiene as it is sometimes called, and the related issue of food-borne illness.

Food-borne illness is on the rise. Some of the rise is most likely due to better reporting and monitoring activities of national governments. However, it should not be forgotten that background levels of food-borne illness continue to present a burden to national economies and significant distress to individual sufferers. Spikes in illness from outbreaks related to a specific food product or food outlet add to the total burden. Australia has not been immune to food emergencies of this type. They have the potential to cripple an entire food industry sector. Even the threat or perceived threat of a food hazard, for example BSE, and non-food diseases such as foot and mouth disease or avian flu, has the ability to erode consumer confidence in the food supply and the capacity of the government to protect the population. Once again, an entire industry can be adversely affected.

Traditional management strategies to ensure a safe product for consumers have involved regulation at the manufacturing and retail end of the supply chain. Hazard Analysis and Critical Control Point (HACCP) based food safety plans for the handling, processing, transportation and delivery of foods (including prepared meals) are now an entrenched feature of the Australian food scene. But food-borne illness continues to exist around the world.

In 2002, the Food Regulation Ministerial Council decided that it would adopt a recommendation by Codex that countries should adopt a whole-of-chain approach to food safety. Instead of relying on manufacturers and food outlets to reduce the pathogen load in food to safe levels, risks would be identified along the whole supply chain for a commodity, including primary production activities. Appropriate management controls would be put in place at critical points in the chain. The rationale is that pathogen levels will be reduced to manageable proportions by the time a food is prepared for final delivery to the consumer.

One benefit of Codex's whole-of-chain approach is that all the hazards involved in a supply chain for, say seafood, are identified and understood, from the boat to the consumer. And, of course, public confidence is always reinforced when an industry acts decisively to strengthen the safety of its products. So, the link between the trawler and the Codex bureaucracy in Rome or Geneva is real. Time will tell whether the new approach to food safety will provide the level of protection expected by consumers. Time will also tell whether those countries that are quick to adopt international practices gain a marketing edge for their food products.

NATIONAL STANDARD FOR THE SEAFOOD INDUSTRY

Two other issues are of particular interest to Australia's seafood industry; the new food safety standard developed by government and industry, and the topical issue of country of origin labelling.

When the government made it clear that it was adopting a whole-of-chain approach to food safety, the Australian seafood industry put up its hand to be the first primary industry to work with FSANZ to develop a national standard. Some States were already starting to develop their own standards, while the industry itself had well-regarded codes of practice in place and were enthusiastic to build on these nationally.

Three years later, the Primary Production and Processing Standard for Seafood is now law and will come into effect two years from now. A gap in the seafood supply chain not covered by existing national food safety regulations has therefore been plugged. This is the first time in Australia that an entire food sector has been covered by national requirements.

The scientific evaluation carried out by FSANZ into the seafood supply chain has been applauded by overseas experts as the most comprehensive study attempted anywhere in the world. Such appraisals confirm that FSANZ has covered all the bases and should enhance public confidence in the safety of seafood sold in Australia. In practical terms, the new standard extends existing food safety provisions in the Australia New Zealand Food Standards Code to primary production.

Basic hygiene requirements have been applied to the whole of the seafood industry, including harvesting and primary processing. People working the trawler in the Pacific must be aware of appropriate personal hygiene and good hygienic practice like workers in other parts of the food chain. Allowances have been made for the availability of facilities and equipment on boats, but the general principles apply.

For oysters and bivalve molluscs, the new standard requires seafood businesses to implement HACCP-based food safety plans. There is also a requirement to harvest only from appropriate waters. There is nothing new in this for oyster growers. The novel features of the new standard lie in the mandatory and national nature of the regulations. State-by-state regulations will gradually be phased out in favour of the national standard. This is regulatory convergence at work within a country. FSANZ has already started to develop similar food safety standards for the poultry, meat, and dairy industries.

It is a moot point whether Australia would have embarked on this ambitious programme of food safety regulation without the imprimatur of Codex. But having the

Codex principles as an international benchmark provides a comfort that Australia will not be out of step with best international practice or its WTO obligations.

Involvement in meetings of the Codex Alimentarius Commission have shown the benefits of international collaboration and the sharing of information on approaches to regulatory issues of mutual interest. FSANZ's engagement and collaboration in programmes conducted by international agencies such as FAO and the World Health Organization (WHO) are also useful for regional capacity building. FSANZ's experience suggests that Codex is the right response to the challenges of a global food supply. Conversely, it could be concluded that the countries and food industries that neglect to participate in Codex affairs will be left behind.

FSANZ learned a lot while developing a whole-of-chain approach to food safety for the seafood industry. Its experience will be useful to nations in the Asia-Pacific region as they modify their food regulatory regimes to accommodate a changing environment. To this end an interpretive guide for the new seafood standard has been prepared, mainly to assist enforcement agencies, but also to help peak bodies develop their own industry guides. The document, Safe Seafood Australia, has been released as a first edition. Comments on the guide have been invited from seafood businesses and other stakeholders in the standard, which will feed into a second edition to be issued towards the end of 2005.

COUNTRY OF ORIGIN LABELLING

The right of the consumer to know the source of a product, has concerned the Australian seafood industry for some time. Country of origin labelling has obvious access-to-trade and cost implications. At present, the Australia New Zealand Food Standards Code requires imported packaged foods to carry a statement identifying the country in which the food was made or produced. This provision also applies to the importation of unpackaged fish, vegetables, nuts and fruit. However, there is no requirement to label unpackaged local food as Australian (or from New Zealand).

In late 2003, the Food Regulation Ministerial Council asked FSANZ to review these regulations. The Council stipulated that the new food standard should ensure consistent treatment of domestic and imported foods, that the views of all stakeholders be sought, that consumers have access to accurate information, and that any labelling system should not lead to price hikes.

FSANZ held two rounds of public comment on a new Country of Origin Labelling standard. For the second round, in May 2005, FSANZ proposed that the country of origin information could be provided to the consumer 'on request' at retail outlets, rather than on food labels. This was an attempt to address inconsistencies between the current regulations and Australia's WTO obligations, and to achieve consistency in the Food Standards Code, where unpackaged foods are generally exempt from labelling. It would be an understatement to say that the general public, primary producers and the governments of Australia did not greet this proposal with wild enthusiasm. The Australian seafood industry was also not slow to articulate its objections to a perceived watering down of the present requirements.

Clearly community expectations were not met. And this is the dilemma: to provide a benefit to consumers through labelling, while being mindful of Australia's WTO responsibilities for fair trading and possible reciprocal action by its trading partners. Alternative options for achieving FSANZ objectives were then explored.

FSANZ subsequently completed a further round of consultations with consumers, growers, retailers and food manufacturers. The FSANZ Board is to consider a revised draft Country of Origin Labelling standard, prior to a discussion of the matter at the October 2005 meeting of the Ministerial Council.

FSANZ, the standard-setting agency for Australia and New Zealand, has had to re-evaluate its approaches in the light of broader community views. Standard setting

is not a popularity contest. However, for regulations to work, there needs to be a consensus of acceptance for a food standard in the community, or the system will fail. FSANZ's consultation processes and their ability to provide stakeholders in the food regulatory system with a real input into regulatory decisions, appear to have been very effective. This is where peak bodies such as the Australian Seafood Industry Council and Seafood Services Australia come into their own. They are an integral part of the regulatory process.

CONCLUSIONS

The challenges facing food regulatory systems in the 21st century owe as much to the international environment and trade as to national inward-looking considerations. Food regulations should reflect the minimum necessary standards to achieve the desired outcomes. They should be outcomes-based rather than overly prescriptive to encourage food industries to innovate; to achieve the goals of regulation as they see fit. It is not the role of government to intrude unnecessarily. At the same time, however, government has a legitimate role in protecting the population from microbiological, chemical and physical hazards in the food supply. This role extends to making sure that consumers are properly informed about the content and nature of the food they buy.

Australia's federal system of government led to a fragmented approach to food regulation that it is only now overcoming. Regulatory convergence has been forced on Australia by the global food supply and by the growing solidarity of consumers around the world in demanding that this food supply be safe. A consequence of regulatory convergence has been the extension of FSANZ's standard-setting work to the primary sector.

Historically, food standards in the Australia New Zealand Food Standards Code applied largely to processed foods. Over the years, excellent working relationships have been established with food manufacturers and retailers. Food safety standards applied to secondary processing, retail, and the delivery of foods and meals. Then, in 2002, with the new whole-of-government approach to food regulation, FSANZ's responsibilities were extended to the primary sector. New relationships have been established with a whole new range of stakeholders, some of whom were unfamiliar with the Food Standards Code, and many of whom had only a limited knowledge of FSANZ and the food regulatory process.

Government agencies at national and State levels concerned with agriculture and primary industries offered considerable support in forming these new relationships. Contact with the seafood industry came mainly through the development of the Primary Production and Processing Standard for Seafood and the participation of so many elements of the industry on the Standard Development Committee. It was a difficult process. There were no models for such a standard or for the level of industry participation in the scoping and planning phases of the standard. However, the partnership was successful because all parties could see the benefits of the standard, especially the added assurance that it would give to international markets and the confidence that would give domestic consumers of seafood.

Difficult though the process may have been, perhaps the most difficult part is yet to come; the implementation phase. Government and industry now have to sell the new standard to seafood businesses and put in place training programmes and other forms of assistance that will enable them to be compliant by 2007.

The global food supply is a reality. Regulatory convergence, within an international framework, is an unstoppable process.

Regulatory options for processing vessel inspections

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ABSTRACT

The traditional Canadian fish processing industry has evolved over the past 20 years in response to changes in supply and demand. One area of change is the increased utilization of at-sea processing technology for the harvest of northern shrimp, posing a significant challenge for the Canadian Food Inspection Agency (CFIA) in assessing the regulatory compliance of the vessels involved. These vessels have a unique processing environment and normally operate for long periods of time in very remote areas such as the Davis Strait off the coast of Greenland. The industry implemented specific quality management controls relevant to this environment, while the CFIA assessed the vessels at the time of unloading. This approach however did not provide information on the actual at-sea operating conditions that is essential for determining regulatory compliance.

To address this lack of information, the CFIA considered two options; CFIA fish inspectors could accompany the vessels to sea, or a third party could be used to collect information on the operating conditions while at-sea. A feasibility study determined that the first option was not practical mainly because of resource constraints. The second option, of using fisheries observers who must be present for quota management reasons anyway, was found to have many benefits. The observers were trained by the CFIA and were then given a list of operating conditions to observe while at-sea. Observers would report their observations to CFIA upon return. The CFIA would then consider this information in their overall assessment to determine compliance. This option proved to have significant potential as the resource requirement was minimal and the information collected was valuable to both the CFIA and the processing vessel operator. The implementation of this option is ongoing and is being considered for future application to other processing fleets and for use in the issuance of export certificates for foreign markets.

INTRODUCTION

Canada, due in part to its close proximity to some the most lucrative fish stocks and commercial infrastructure, has developed a large and very diverse fish and seafood processing sector. Annually over 42,000 fishers harvest some one million metric tonnes of fish from Canadian waters representing a landed value of CDN$2 billion. This fish, along with a growing portion of imported fish, is processed in about 1000 federally registered establishments situated throughout each of the ten provinces and three territories, resulting in a total processed value of product of CDN$5 billion.

Canada is a significant exporter of fish and fishery products to international markets. The vast majority of these products (80 percent) are exported to some 95 countries abroad representing a value in 2000 of CDN$4 billion. The principle market is the

United States of America representing around 65 percent of export value. Japan (12.9 percent), the European Union (EU) (8 percent) and China are other major markets.

Traditionally the fish processing industry in Canada was a land-based industry. Fishers would harvest various local species (cod, salmon, lobster, shrimp etc.) and then bring the fish to land- based processing establishments. After processing, the fish would be exported to markets around the world. This situation has evolved over last 15 years due to the many challenges fishers and processors had to address. Traditional fish stocks have become depleted (e.g. northern cod) so processors have shifted their capacity to different stocks (e.g. crab). They have also changed their sourcing of raw material by importing product for further processing. Market needs have also changed with consumers demanding fresher product with less processing. Demands for specialized products have created niche markets. Some processors subsequently shifted from land based operations to at-sea processing technology to exploit stocks not traditionally available.

This paper describes the experience of the Canadian Food Inspection Agency (CFIA) in dealing with a specific at-sea processing sector, northern shrimp, and the options considered for the regulatory verification of the vessels involved.

NORTHERN SHRIMP AT-SEA PROCESSING

The annual value of exports from the Canadian northern shrimp-processing sector is approximately CDN$250 million. Primary markets are the EU and China. There are currently 14 large vessels harvesting this stock year round in the North Atlantic. These vessels are fully self-contained processing establishments, harvesting and processing on-board packaged ready-to-eat product. As with any land-based establishment in Canada producing fish products for export, these vessels must meet the requirements of the Fish Inspection Regulations (FIR). The FIR specify that establishments must be registered with the CFIA, meet construction and equipment requirements, and have in place a Quality Management Program (QMP).

THE CANADIAN QUALITY MANAGEMENT PROGRAM

The QMP was the world's first regulatory Hazard Analysis and Critical Control Point (HACCP)-based system, originally developed in the late 1980's, and becoming mandatory in 1992. The QMP was re-engineered in 1999 to fully incorporate the principles of HACCP and to meet changing market requirements such as the United States Seafood HACCP rule. The QMP is based on ISO principles, where processors are required to develop and implement a documented series of controls for all food safety hazards and other regulatory requirements. A processor's documented QMP plan is based on a reference standard which is designed around three key food safety and regulatory control elements: a Perquisite Program; Regulatory Action Points; and HACCP. Processors are required to assess their particular products and processes, identify the applicable potential food safety hazards and related regulatory requirements, and develop and document controls on how they will ensure that the products produced will be safe and compliant with those regulatory requirements.

As the Competent Authority (CA) for Canada, the CFIA must assess each registered establishment to ensure that processors are operating in accordance with their documented QMP plan and that the implemented controls are effective. The CFIA accomplishes this though its regulatory verification activities conducted on several fronts and at various times. There are two key opportunities for the CFIA to assess the fish-processing sector: at the time of initial registration, and during the operating season.

At the time of initial registration with the CFIA, processors are required to submit their documented QMP plan outlining the applicable controls. The CFIA assesses the construction and equipment to be used in the processing facility and

the controls presented. This stage is referred to as 'system verification'. If these two areas are found to be acceptable then the processor is registered and is permitted to commence processing. It is during actual processing that the CFIA can best ascertain the effective implementation and maintenance of the controls. This activity, referred to as 'compliance verification' (CV), is the on-site assessment of the implemented QMP plan and is based on ISO 10011 audit principles.

Compliance verification has a two-fold objective: to verify that the processor's QMP plan been implemented as designed, and to verify that the system is effective in meeting the requirements set out in the reference standard. The compliance verification is organized using a typical audit approach including the planning, opening, execution and closing phases associated with an audit.

The planning phase involves the establishment of a CV team to develop checklists based on the company's QMP plan, in advance of the on-site verification. Checklists contain specific activities to test the application and effectiveness of the QMP plan. The CV begins with an opening meeting with the plant management to discuss the audit scope and plan. The CV is then conducted by having the inspector following the audit plan established with the CV checklist and collecting objective evidence to determine compliance of the QMP elements assessed. Objective evidence can be qualitative or quantitative information and can be gathered by:
- recording or copying information contained on company records;
- recording facts related during an interview with a plant employee;
- making Inspector observations;
- collecting samples for laboratory analysis;
- inspecting product;
- investigating corrective actions; and
- performing tests.

If objective evidence demonstrates that a specific element is not effective in meeting the requirements of the reference standard, then this is deemed a 'non-conformity'. Evidence suggesting dangers to health and safety or potentially fraudulent activities, are referred to as 'critical non-conformities'.

The CV is closed when the company initiates an acceptable corrective action plan for each non-conformity. The inspector will verify at the next CV that the company has taken the appropriate corrective action.

QMP CHALLENGES WITH THE NORTHERN SHRIMP-PROCESSING SECTOR

Registered vessels that process shrimp in the north Atlantic present some unique inspection challenges that do not have to be considered for the traditional fish processing sector. Harvesting, processing and packaging of ready-to-eat products occurs onboard the confines of vessels that operate in extreme weather conditions over extended periods of time in an environment which requires specific controls. The limited space available for the processing area results in exceptions to the construction and equipment standards normally met by all land based facilities to accommodate low ceiling height, overhead electric and hydraulic lines, and painted steel floors and walls. Operating conditions are also challenging as these vessels normally process continuously while at-sea thus leaving little opportunity for the traditional cleaning between shifts. The processing method used also requires very large volumes of water, but there is no access to approved water supplies as is required for traditional processing establishments. The vessel owners address these challenges by instituting enhanced sanitation controls to ensure that operating conditions do not impact on the product safety or quality.

As explained above, processors are required to document and implement these controls as part of the QMP, while the CFIA is responsible for verifying the effectiveness of those controls. However, the very nature of this processing sector

renders this responsibility a particular challenge. Vessels fish in isolated areas as far north as the Davis Strait off the coast of Greenland, on voyages that last up to 30 days. It is not realistic for the CFIA to be present during their actual operations.

The current regulatory verification approach involves an assessment when the vessels return to port to unload their product. At this point the CFIA inspectors will assess record keeping and compliance with construction requirements, and will also conduct product inspection. This approach however gives an incomplete assessment; it cannot verify conditions during operation, which is a key objective of the compliance verification. There are also other logistical challenges with this approach. It is difficult to coordinate due to a short turn around time and variable schedules at port. Moreover, the vessels do not necessarily return to a port near CFIA offices.

As the CA for Canada, the CFIA also has the responsibility to provide assurance to foreign authorities of compliance with food safety and other requirements. The challenges and the limitations of the regulatory verification approach for this sector means that the CFIA does not have the same information on compliance compared with the information it has on land based operations. The CFIA in consultation with the industry agreed that the approach was not adequate and that the sector might be vulnerable to challenge or increased scrutiny due to this regulatory gap. It was decided therefore to conduct a study to test alternative regulatory verification approaches. The results of that study are presented below.

ALTERNATIVE REGULATORY VERIFICATION APPROACHES

The first option to be considered and tested involved having a CFIA inspector conduct compliance verification on board the vessel during its operation at sea. This approach provided a very complete assessment of the operating conditions, but was inefficient. The inspector was dedicated to a single establishment for up to 30 days to perform compliance verification activities that required only 15 to 20 hours of direct time. Moreover, in a time of limited resources the inspector was taken away from other regulatory verification activities, which impacted on the overall delivery of the fish inspection programme. It was agreed that this inefficiency, as well as other considerations such the occupational safety of and appropriate compensation to the inspector, meant that this option was not viable in the long term.

Another option was explored involving a mechanism to gather objective evidence on compliance during actual operating conditions. This option involved the utilization of a third party to collect necessary information.

As part of the quota management responsibilities, the northern shrimp fleet is required to have onboard, at all times, an independent observer who assesses harvest volume, by-catch, etc. It was suggested that these observers would have the capacity to collect information and report on the operating conditions while at sea. This was an interesting proposal but presented some significant challenges, in particular related to the use of non-government personnel to perform regulatory verification activities. After extensive discussion with all stakeholders it was agreed to conduct a feasibility study.

AT–SEA OBSERVERS

The feasibility study involved training observers on the QMP and its related programme aspects, which are of concern while operating at sea. The basic concept was that the CFIA would continue in its current compliance verification approach but, prior to commencement of a voyage, the inspector would provide a trained observer with a series of activities that were based on the processor's QMP plan, to be conducted during processing at-sea. These activities consisted of conducting observations at anytime over the course of the voyage. The observer did not have the authority to do anything more than just record what was observed. Examples of recorded observations

included information about clean up and sanitation activities, the operation of freezers, and how employees recorded monitoring and corrective actions during the vessel's operation. When the vessel returned to port, these observations are reported to the CFIA to supplement the normal CV approach. This information is then used to determine compliance or to initiate further investigation.

After the initial study it was found that there were several benefits to this approach that warranted further policy analysis. These benefits included the following:

- The industry for the first time had an independent view of the operating conditions while at sea, and was able to take action to improve those aspects that required attention.
- There was an awareness benefit gained by the presence of the observer. Even though the observers may or may not be tasked with recording observations for a CV on every voyage, the production workers were more cognizant of regulatory requirements and consistent application was enhanced.
- Most importantly, this option provided an efficient use of resources without impacting on the fisheries management duties of the observers. In a time of limited resources and expanding regulatory responsibilities, this is a very important consideration.

Although it was agreed by all participants that this option had great merit there were some qualifying considerations. Training of the observers is essential. It would be difficult to use the information collected by the observer without adequate training. It was also recognized that verification of the observers' activities was also required. Having CFIA inspectors accompany the vessels to sea on a set basis would be of great benefit in providing this verification.

It was also recognized that role definition was crucial. Observers must understand their role and stay within its defined limits while conducting their activities. Inspectors must also be aware of their roles, and understand how the information collected fits into the regulatory verification context.

Other opportunities associated with the continued development and implementation of this approach will be explored further. These include using the approach to collect information to improve export certification procedures. The approach will also be evaluated to determine its application to other fleets and other programme aspects. For example, other processing fleets, such as those harvesting and processing scallops and clams, do not have observers working full time. Further work is required to determine how this concept could be applied elsewhere.

CONCLUSION

The study outlined above demonstrates that it is possible to 'think outside the box' to find sources of information that can be used by regulators to assist them in fulfilling their regulatory responsibilities in an efficient and non-confrontational manner. Even more importantly, the study demonstrates how challenges can be identified and addressed in partnership with industry and other stakeholders. This is encouraging for all those involved in the seafood industry. It shows that it is possible to work together as seafood professionals to deal with new and emerging challenges as the industry grows and adapts to changing conditions and market demand.

Human resources in seafood processing: the Canadian experience

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ABSTRACT

The Canadian seafood industry faced many challenges in the early 1990s including; the cod moratorium in the Atlantic, the downsizing of the industry, local and international labour market pressures, and changing global market conditions. The National Seafood Sector Council (NSSC) was created as part of the Canadian sectoral management approach, whereby companies, managers and workers come together to explore solutions to common concerns. The NSSC collaborates with relevant stakeholders to develop appropriate human resources strategies that meet the specific needs of the seafood processing labour market, recognizing that a well-trained labour force is a key component of ensuring the future overall competitiveness of the industry.

INTRODUCTION

This paper describes how the Canadian seafood industry is addressing a key pillar of competitiveness from a human resources perspective. It provides an overview of the seafood industry in Canada and some of the challenges facing it. It outlines how these challenges are being met, in the context of a 'skills and learning environment' and an enhanced training culture, and based on a sector management approach.

Frank Sonnenberg (1996) said it well in his book on organizational management when he stated that, " …Learning and change go hand in hand. Without a focus on learning, change is slow and costly to implement, something no organization can afford in the word we are living in today." Nowhere is this more true than in the seafood industry, where organizations are having to adjust to changing global product markets and local and international labour market pressures.

A BRIEF OVERVIEW OF THE CANADIAN SEAFOOD INDUSTRY

Canada is the fifth largest seafood exporter in the world. Approximately 90 percent of its production is exported. Seafood products are exported to over 120 countries, with the United States of America as the largest market, followed by Japan, Denmark and Germany.

Crustaceans account for the single largest component of Canadian exports. The three main seafood exports are lobster, crab and salmon (both farmed and wild). There is also a freshwater capture fishery valued at approximately $C75 million, and includes products such as pickerel yellow perch, whitefish, northern pike and lake trout. Canada also now imports a considerable amount of raw material for further processing, particularly in groundfish.

The future stability of the Canadian industry depends on the sustainability of the resource and on increased productivity. A skilled and efficient labour force is an important part of this equation.

CHANGING CONDITIONS

Global markets continue to change at an accelerating pace. The emergence and development of low cost processing and large export players in other nations means stiffer competition. Global pressures in the marketplace to meet international quality standards have also accelerated. Clients demand increased quality from vendors.

Canada also faces the challenge bought about by its geography. It has a large land base with many remote communities. Access to services in these remote communities is problematic.

Competitiveness in today's world will depend on reducing costs, improving operating efficiencies and producing higher value added products. A knowledge-based economy requires increased innovation and technology.

LABOUR MARKET ISSUES IN THE SEAFOOD INDUSTRY

Canadian manufacturers face a wave of retirements over the next decade. With an aging workforce the seafood industry, like others, will lose its experienced workers on retirement. Alongside this is the lack of new recruits. Since the cod moratorium in the Atlantic in the early 1990s there has been little new recruitment into the seafood industry. The challenge for the future is to attract and retain workers.

Several years ago it became clear that the Canadian labour market had to respond to new needs and expectations and had to function with increasing efficiency. The need to improve competitiveness required a co-operative effort by the key players in the labour market. That meant individual plant owners, corporate leaders, labour organizations, educators and government representatives working together to create the conditions necessary for firms to become more productive. It was argued that the sector council approach, with an emphasis on skills and learning, was a means to increase productivity and enhance overall prosperity.

THE NATIONAL SEAFOOD SECTOR COUNCIL

The National Seafood Sector Council (NSSC) is one of over 30 sector councils in Canada. Councils operate on a voluntary basis and cover diverse sectors such as tourism, aviation maintenance, steel manufacturing and trucking.

The activities and strategic directions of NSSC are identified through comprehensive stakeholder research. Its human resources initiatives are led and driven by the industry. While addressing the particular human resources needs of the industry the NSSC also supports the overall Workplace Skills Strategy of the Government of Canada. That national strategy seeks to improve competitiveness on the basis of a highly skilled labour force, with a focus on workplaces that are committed to skills development.

The NSSC collaborates with processors and workers and key regional groups across Canada, to build consensus and to develop appropriate human resources strategies that meet the specific needs of the seafood processing labour market.

The NSSC has a team of regional representatives that are mainly located in fishing communities across Canada. Our representatives provide services to processors at the local level. They disseminate information to processors, make presentations to the industry on new NSSC initiatives, and help to create new partnerships with economic development centers. Their job is to keep the region informed about human resources issues and to enhance the local training culture.

AN ENHANCED TRAINING CULTURE

The overall goal of the NSSC is to enhance the training culture across Canada. To this end, a multi-pronged approach is employed in the delivery of training. While NSSC does not usually deliver training directly, it encourages the uptake of training through a national network of training providers, which includes community colleges (TAFES) and private trainers, particularly in remote areas.

NSSC work to date has focused on developing training tools to enable production workers to enhance their skills, including in the sensory evaluation of fish, Hazard Analysis and Critical Control Point (HACCP) management, and in ergonomics in processing. The training products are in compliance with regulatory standards, and are informed by standards set by processors themselves. Training materials can be used on a flexible schedule. Training can occur in remote communities and can be organized around industry processing needs. The approach helps to keep the industry up-to-date and progressive and is mutually beneficial for processors and workers.

The NSSC has also introduced a certification project to develop a national certification standard in Sanitation and Hygiene for production workers in the Canadian seafood processing industry. The project includes assessment tools to review and subsequently adapt NSSC training tools in line with certification standards. The benefits of investment in training will accrue to both employers and employees.

By way of comparison, The Canadian Sector Council Program is similar, in purpose if not in the way it functions, to the Australian National Training Framework. Both national entities seek to ensure that the skills of their respective labour forces are sufficient to support internationally competitive commerce and industry. Sector councils in Canada face many of the same industry challenges being addressed under the Australian Qualifications Framework model. One of the obvious advantages in the Australian model is the close collaboration between the territories, state and national government on skills upgrading and training support, particularly to factories at the local level. In Canada, while there is federal support for the development of training tools to meet industry needs, there is no permanent agreement on how the various provincial jurisdictions work together on the actual delivery of training support.

CONCLUSIONS

The competitiveness of the Canadian seafood industry depends on reducing costs, emphasizing operating effectiveness and producing higher value-added products. Seafood processors will need to increase innovation and to engage new technologies if they are to thrive in a knowledge-based economy. A well-trained workforce is an essential part of that equation.

The challenges faced by processors in coastal communities are formidable, especially if approached individually. The sectoral approach to skills and learning offers a measure of support that can ease the burden for individual processors, production workers and their affiliates. An investment in skills can contribute to overall productivity and competitiveness, with returns accruing across the industry.

In its 10th anniversary year the NSSC is developing partnerships in human resources development with the broader food manufacturing sector. To this end, the NSSC is currently conducting labour market research of this much larger industry. This research is still in the formative stages, but initial findings suggest that the human resources challenges facing the seafood industry are shared by the wider food processing industry. Working together to develop strategies for addressing these challenges is likely to produce synergies and to be mutually beneficial.

REFERENCES

Sonnenberg, F. 1996. *Managing with a conscience: how to improve performance through integrity, trust and commitment.* New York, USA, McGraw-Hill.