

# Nairobi Declaration

## CONSERVATION OF AQUATIC BIODIVERSITY AND USE OF GENETICALLY IMPROVED AND ALIEN SPECIES FOR AQUACULTURE IN AFRICA

Fish are a critical source of animal protein to the people of Africa, and aquatic resources play a central role in sustaining rural and urban livelihoods across much of the region. Yet for the continent as a whole, the per capita supply is declining and current projections of supply and demand indicate that this gap will continue to grow in the coming decades.

If this gap is to be bridged, capture fisheries need to be sustained and the potential of aquaculture realized. In doing so, attention needs to be given to protecting the rich aquatic biodiversity of Africa, especially the rich diversity of freshwater fish and its role in sustaining capture fisheries and providing species for aquaculture.

At present, fish production from aquaculture in Africa is low. However, as the population increases, together with the demand for fish, the aquaculture sector is projected to grow. For this to happen a wide range of constraints needs to be addressed and a greater range of management practices considered. Pond and broodstock management will need to be improved, a wider range of feeds developed, and market access improved.

In addition, there is considerable potential for improving performance of the fish species and strains used. At present, many of the fish used in aquaculture in Africa are derived from undomesticated stocks. This contrasts with crops, livestock and poultry where large increases in production have been achieved through the application of breeding programs and other genetic improvement procedures. However, while improved strains and introduced species have a potential to increase production, there is a clear risk of escape into the wild, and possible negative impacts on biodiversity. If the full potential for sustainable aquaculture in Africa is to be realized, these concerns must be addressed.

### Recommendations

#### 1. Quality seed

Given that aquaculture from small-scale, low-input systems to large-scale intensive systems can achieve potential benefits from genetic enhancement, quality seed should be made available and used in conjunction with proper broodstock and farm management.

#### 2. Genetics in broodstock management

Since genetic resources in cultured populations can be degraded as a result of captive breeding, genetic aspects of broodstock management need to be a basic element within all types of aquaculture and stock enhancement systems.

#### 3. Responsible introductions

Introductions of fish, including genetically improved (altered) strains and alien species, may have a role in the development of aquaculture. Any movement of fish between natural ecological boundaries (for example watersheds) may involve risk to biodiversity and there is a need for refinement and wider application of protocols, risk assessment methods, and monitoring programs for the introductions of fish, including genetically improved (altered) species and alien species. States have an important responsibility in the formulation and implementation of such protocols and associated regulations, the establishment of clear roles and responsibilities, and capacity building. Such efforts should be linked to obligations pursuant to the Code of Conduct for Responsible Fisheries, the Convention on Biological Diversity, and other relevant international agreements.

#### **4. Conserving wild stocks**

Unique wild stocks of important tilapia species still exist in many parts of Africa. Priority areas should be identified and managed as conservation areas in which the introduction of alien species and genetically altered species should be prevented.

#### **5. Trans-boundary problems in fish transfer**

The majority of issues and problems associated with the movement of fish and the use of genetically altered species are common to most African countries and they are encouraged to: (a) look beyond their borders for examples of workable policies and legislation, adopt them where appropriate to fill national policy gaps, and harmonize them where necessary; and (b) use existing regional bodies or form new bodies to assist in coordinating management activities and taking into account ecological realities, in particular trans-boundary watersheds.

#### **6. Strengthening access to information**

Baseline information on fish genetic diversity, environmental integrity, and aquaculture practices exists, but it is neither comprehensive nor easily accessible. The existing mechanisms for collection and dissemination of information on fish genetic diversity, environmental integrity, and aquaculture practices need to be strengthened.

#### **7. Controlling pathogen movement**

Internationally accepted codes and protocols for reducing the risk of trans-boundary movement of pathogens (including parasites) through the movement of fish including alien species do exist, but they do not address any specific needs regarding genetically improved (altered) species. States and other relevant bodies should evaluate the existing codes and protocols for reducing the risk of trans-boundary movement of pathogens (including parasites) through the movement of fish including alien species and genetically improved (altered) species, and adapt them for African conditions.

#### **8. Raising awareness of risks of fish introduction**

Policy-makers, enforcement agencies, stakeholders and the general public need to be made aware of issues related to, and the need for, policies on the movement of alien species and genetically improved (altered) species, and this should be high on national agendas.

#### **9. Engaging stakeholders**

Some policies relevant to the movement of fish seem to be difficult to implement, are unknown to the users, create conflicts of interest, or are viewed as restrictive, in part because they have been formulated with limited consultation and participation. The formulation of policies and legislation concerning fish movement should seek to engage all stakeholders in a participatory process. In addition, governments should establish advisory groups with links to independent and scientifically competent expert bodies such as the FAO, IUCN, and the WorldFish Center.

#### **10. Liability for adverse environmental impacts**

Although economic benefits can be derived through the use of alien and genetically altered fish species in aquaculture, in many cases, those to whom benefits accrue do not bear the costs associated with adverse environmental impacts. In view of this, there should be a provision for the liability, compliance (for example incentives), and restoration within policies and legislation concerning the movement and use of alien and genetically altered fish species in aquaculture.

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