



GENERAL FISHERIES COMMISSION
FOR THE MEDITERRANEAN
COMMISSION GÉNÉRALE DES PÊCHES
POUR LA MÉDITERRANÉE



COMMITTEE ON AQUACULTURE (CAQ)

**WORKING GROUP ON SUSTAINABILITY INDICATORS (WGSA)
INDICATORS FOR SUSTAINABLE DEVELOPMENT OF AQUACULTURE
AND GUIDELINES FOR THEIR USE IN THE MEDITERRANEAN (InDAM)**

**Final report on the Tunisian Case Study (Phase II) for the Selection of a set of
indicators for the sustainable development of aquaculture in the Mediterranean**

November 2011

By

Mohamed Hadj Ali Salem, Houssam Awadh Hamza and Skander Ben Salem

I. INTRODUCTION

The 35th session of the GFCM (Rome, May, 2011) has recommended to CAQ, its subsidiary body in charge of aquaculture, to continue the exercise on the selection of indicators for sustainable development of aquaculture in the Mediterranean, within, amongst other tasks, a second phase scheduled to be realized in Tunisia and Turkey as two separate case studies. The first phase of those case studies were implemented during 2009, which led to the selection of 52 indicators amongst the 154 which have been identified by the two meetings previously held in Montpellier, France in 2007 and 2008.

The methodology used for the selection of indicators for sustainable development of aquaculture in the Mediterranean took into consideration 4 attributes, i.e. the data availability, the data reliability, the relevance and the understandability of the indicator.

In order to go further with the indicators selection, a second phase of the above mentioned case studies was decided amongst the GFCM-CAQ program of activities for 2011. The aim of such a second phase is to allow the stakeholders to comment on the selected indicators, to contribute to refine those indicators and to finalize a set of acceptable indicators that are deemed to be applicable at local (national) level. This exercise allows formulating a policy, at local scale, to apply, refine, validate and reevaluate the selected indicators. The ultimate objective of such a work is to select a set of indicators applicable at the regional (Mediterranean) scale.

II. METHODOLOGY

The methodology used to conduct the Tunisian case study was based on the following main points:

1. Constitution of a panel of three experts composed by MM. Hadj Ali Salem Mohamed (Professor), Hamza Houssam (Aquaculture Engineer) and Ben Salem Skander (Assistant Researcher),
2. Preparation of fact sheets for the indicators on the basis of the outputs coming from the work realized within the first case study phase (Monastir technical consultation, October 2009 and Salammbô InDAM Working Group, November, 2009) as well as the expertise of the experts,
3. Preparation of a protocol for the indicators assessment:

- Organizing a technical consultation with the participation of different stakeholders to review, evaluate and comment the indicators as described in the fact sheets (previously prepared by the panel),
 - Organizing a Refining meeting with the contribution of a selected number of stakeholders with the aim of reviewing the selected indicators taking into consideration the applicability of the indicators and the requirements of the field study,
 - Organizing and coordinating a field study with a limited number of Stockholders, especially farmers (on a voluntary basis) taking into account their size and geographic coverage to validate the selected indicators and to discuss the possible reference points,
 - Finalization of a set of selected indicators applicable at the local/national level
4. Presentation and discussion of the refined indicators in the working group on indicators of sustainable aquaculture development in the Mediterranean scheduled to be held at Malaga, Spain (November, 14-16, 2011).

III. PREPARATION OF THE FACT SHEETS

In the frame work of the 4 dimensions already agreed for the sustainable development of aquaculture in the Mediterranean (economic, social, environment and governance), 52 indicators were selected during the first phase of the Tunisia case study (Salammbô, November, 2009). To meet the requirements and TOR's of the current study on one part and to reach the objectives already identified for the current phase II in its main components on another part, the panel of experts shared its technical work as follows:

*MM. Hadj Ali Salem Mohamed and Hamza Houssam for the environment and Governance dimensions

*M. Ben Salem Skander for the economic and social dimensions

The panel then proceeded to review/reevaluate the mentioned above 52 indicators in order to select, amongst them; a set of indicators that could be considered for the further steps of the case study phase 2. This exercise led to the selection of a set of 40 indicators dispatched as follows:

19 for the economy dimension,

02 for the social dimension,

17 for the environment dimension and

02 for the governance dimension.

After that, the panel proceeded to the preparation of a number of fact sheets (one for each selected indicator), including the principle, criteria, the name and the explanation related to the indicator as well as how to measure/ calculate it, if possible and where data are available. The information also includes how the indicator can contribute to measure/ appreciate the aquaculture sustainability and to identify the data sources as well as some standards (reference points), when they exist.

IV. ASSESSMENT OF THE INDICATORS:

In order to assess the relevancy of the 40 selected indicators, the panel proposed to organise a technical consultation (Tunis, 11, June 2011) to review, evaluate and comment the indicators as described in the fact sheets (previously prepared by the panel). The final aim of the technical consultation is to rank indicators (by scoring method) on the basis of two attributes (data reliability and data availability) considering that the indicator which obtains a score under 66 percentiles will not be retained in principle or should be modified in the light of the remarks and suggestions expressed by the participants.

1. TECHNICAL CONSULTATION:

The technical consultation was organized at Tunis (within the premises of the National Institute of Agronomy, INAT¹ thanks to the hospitality of its general director, Mr. Hamza Elias with the effective participation of a number of stakeholders (see the list of participants). Fifty participants (**Appendix 1**), with various backgrounds and coming from different aquaculture interested structures (Farmers, feed, drugs and fingerling suppliers, banks, university and administration representatives, researchers, etc) took part to the consultation. The technical consultation underwent in two steps.

As an introduction to the meeting work the experts (panel) have presented the indicators following the PCI approach. The participants then reviewed and commented the indicators as presented in the fact sheets prepared by the panel of experts, including some explanations and information on how to get relevant data and how to calculate the indicators, etc.

¹ The National Institute of Agronomy of Tunisia (INAT) where the technical consultation took place is a high school specialized in agriculture sciences, including fisheries and aquaculture. Its General Director as well as its Technical Manager (Directeur des études) participated to the opening session of the consultation.

In a second step the technical consultation was dedicated to revise the fact sheets on the basis of the discussion outputs, remarks and suggestions of the participants. The revised version of the indicators (**Appendix 2**) was then sent, by e-mail, to the participants (as well as to the farmers who did not take part to the meeting) for their review, appreciation and control. By this way more farmers would have been involved and the field study could be expected to run with an acceptable number of stakeholders.

Thanks to availability of didactic equipment which has been made available, the participants underwent interesting and dynamic discussion and succeeded to finally allow the selection of 24 indicators (**Appendix 3**):

14 for the economical dimension

7 for the environmental dimension

1 for the social dimension and

2 for the governance dimension

2. REFINING WORK:

During this step of the study it was intended to gather some selected stakeholders to refine the selected indicators (as identified during the previously technical consultation which has been organized on June, 11; 2011). Since the feed back from the stakeholders toward the scoring process was not representative to allow ranking the indicators and then to select relevant ones, the panel used the gathered remarks and comments coming from the participants to the technical consultation (June, 11, 2011) as well as from the mail exchanges with stakeholders to update the fact sheets and then to select relevant indicators to be proposed to discussion by the participants to the refining work.

In order to successfully undergo the present step of refining a second meeting with farmers and other stakeholders (20 participants; **Appendix 4**) was organized within the premises of the General Directorate of Fisheries and Aquaculture on September, 28, 2011.

The meeting was opened by the General Director, M. Hechmi Missaoui who welcomed the participants and then presented information on the current status of the marine fish farming in Tunisia. He also stressed the importance of the InDAM project, especially toward the farmers and other stakeholders who can benefit of this exercise to trace their activity and to follow the trends of their projects on the basis of a set of indicators for the

sustainable development of aquaculture. Following this introduction, the participants were supplied with fact sheet and invited to comment, discuss the indicators presented by the panel of experts.

The outcome of this step allowed selecting 13 indicators dispatched as follows (**Appendix 5**):

Economic dimension: 4

Social dimension: 2

Environmental dimension: 6

Governance dimension: 1

3. FIELD STUDY:

At the light of the technical consultation and the refining work outputs, 6 marine farmers (off shore cages) representatives were selected to participate to the field study with the aim of validating the selected indicators.

The whole process of the assessment of the indicators starting by the panel work and ending by the field study allowing the finalization of a set of selected indicators applicable at the local/national level is summarized in tables by dimension in the **appendix 6**.

The selection of farmers was on a voluntary basis and taking into account some criteria such as:

- 1- Scale of the farm (production)
- 2- Numbers of years of activity
- 3- Technical skills
- 4- Farm location (geographical coordinates, distance from a farm to another, distance from the shoreline to the farm, etc.)

Six farms were effectively visited from October, 11, 2011 to November, 3, 2011. During those visits the selected indicators were presented to the farmers in order to gather their comments and advices on their relevancy and applicability. The farmers have showed their interest to the work already done and made comments especially with regard to the following issues:

- Necessity to make available reference points for the whole set of indicators as soon as possible and when available: Some reference points were proposed for example the Mean Interest Rate as a reference point for the profitability, the mean selling price comparatively to unit production cost and the worldwide per capita consumption (currently 17kg/year/inhabitant) for the apparent consumption could be considered for the moment.
- For the Governance dimension, the stakeholders underlined the fact that the public authorities should confirm their commitment through settling AZA to avoid, as much as possible, conflicts of interest. For this AZA no reference point is available; it could remain as "yes or not"
- Some details should be given for indicators linked to the environment dimension such as the sampling methods (depth, distance from the and into the farm, frequency, etc.),
- Graduated-to-staff ratio (expressed in terms of percentage of fish farmers and workers with graduated aquaculture certificate) was proposed as an indicator under the social dimension
- The integration rate (%) which reflects the degree of satisfying the needs of aquaculture by locally produced inputs was proposed in the way to combine two initial indicators (Availability of locally produced fry and Availability of locally produced food)
- The question of certification was preferred to the traceability one as indicator of quality. ISO 9000 and/or ISO 14000 will be considered,
- The environmental indicator "fingerling availability and quality" was merged and included under the economic dimension ("integration rate"), being noted that the quality of fingerling is under the control of farmers.

Appendix 1: List of participants in the technical consultation

Appendix 2: Fact sheets updated after the technical consultation and the mailing exchange with stakeholders

Appendix 3: Most relevant indicators upraised from the technical consultation and afterward presented in the refining meeting

Appendix 4: List of participants in the refining work

Appendix 5: Fact sheets with reference points finalized during the field study

Appendix 6: Summarizing tables on indicators selection by dimension

Appendix 7: photos of the different steps of the pilot study