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**GENERAL FISHERIES COMMISSION FOR
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GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN

COMMITTEE ON AQUACULTURE (CAQ)

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**InDAM: NARRATIVE REPORT OF THE THE FIRST YEAR OF
ACTIVITIES (Draft)**

INTRODUCTION

This paper represents the narrative of the activities carried out in the Project “*Indicators for Sustainable Development of Aquaculture and Guidelines for their use in the Mediterranean*” (InDAM).

The project attempts to support the Committee on Aquaculture (CAQ) of the General Fisheries Commission for the Mediterranean (GFCM) in its efforts to address some of the priority issues identified, as endorsed by the GFCM at its 31st Session (January 2007). During the 32nd Session of the GFCM (Rome, February 2008) the project workplan presented by the CAQ was approved by the Commission.

The InDAM Project is funded with the contribution of the European Union (EU) DG Mare, it started on 9th December 2008 and has a duration of 48 months. The funds are annually provided on the basis of the achievements and workplan that are yearly based. A strategic revision can be performed every year on the basis of the priority gaps identified.

The narrative report includes: summary and context of the action; the activities carried out during the reporting period; difficulties encountered and measures taken to overcome problems; changes introduced in implementation; achievement/results. The report also includes the workplan for the second year of the project, with expected outputs and a description of related activities.

SUMMARY AND CONTEXT OF THE ACTION

InDAM was designed and developed within the Working Group on Sustainable Aquaculture (WGSA) of the GFCM Committee on Aquaculture. The project focuses on the practical use of the indicators for sustainable aquaculture and their adaptation to the Mediterranean Sea, and on the development of appropriate guidelines.

Project objective

The GFCM-CAQ Working Group on Sustainable Aquaculture (WGSA)-InDAM Project aims at providing countries with a comprehensive decision-support tool for the development of sustainable aquaculture based on a set of indicators, reference points and guidelines adapted to the Mediterranean region. A further aim of InDAM project is to establish a regional reference system for the development of sustainable marine aquaculture in the Mediterranean Sea by intergrading the governance, economic, social and environmental dimensions into coastal zone management and by using the ecosystem approach for aquaculture (EAA) in the selection of indicators.

The InDAM project specifically focuses on Mediterranean finfish species, conditions and environment, with the aim of developing practical indicators and relative reference points and standards for direct and concrete use by the various stakeholders (farmers, users of the coastal zone, decision-makers, NGOs, etc.) within a shared definition and framework of the sustainable development of Mediterranean aquaculture. To reach such objective, InDAM used a participatory methodology involving relevant stakeholders in the process of screening and selecting the indicators.

Strategy and methodology applied during the first year of activities

The strategy of the project is to assist the GFCM countries in the elaboration of a consensus definition of and guidance toward aquaculture sustainability in the Mediterranean region. This includes the use of a multi-disciplinary and participatory methodology for the selection of sets of indicators.

This first year of activities of InDAM focused on the identification of a methodology, the identification of a list of indicators and the organization of experts and stakeholders meetings. The first period of activities were devoted to review the experience of the recent research initiatives in the development of sustainable indicators; this permitted the identification of an agreed methodology to be applied, including the use of a common understanding on the terminology adopted at regional level. Successively, a preliminary list of indicators was identified for each relevant dimension of sustainable aquaculture development (governance, economic, social and environmental) at regional (Mediterranean) level and two pilot projects were implemented in Mugla (Turkey) and Monastir (Tunisia), aiming at receiving feedback from stakeholders on the indicators identified. A selected bibliography and a database on indicators of Mediterranean aquaculture were prepared and released through the SIPAM information system and a series of technical documents on keys issues were produced in support of the project. Finally the achievements of the pilot studies as well as consideration on the methodologies applied were made for the identification of priority issues to be addressed during the second year of activities of InDAM toward the application and use of indicators for marine finfish aquaculture in the Mediterranean region.

These activities and methodology have implied the involvement of the other CAQ subsidiary bodies: WGMA (Working Group on Marketing on Aquaculture), WGSC (Working Group on Site Selection and Carrying Capacity) and SIPAM, as well as various Mediterranean experts within the different disciplines involved in aquaculture. Particular cooperation was established with the experts of IFREMER, IUCN, INRA-Cirad and Montpellier 1 University involved since years on the issues of sustainable indicators. Furthermore, experts from research institutions of Greece, Tunisia, France, Spain, Turkey, Croatia, Italy, Morocco actively participated in InDAM activities.

InDAM Project took advantage of the outputs of several projects and initiatives dealing with European/Mediterranean aquaculture sustainability, the identification of indicators at different levels, the

main ones being EVAD (Evaluation of sustainability of aquaculture systems) and the IUCN (International Union for Conservation of Nature) initiative in the preparation of guidelines for sustainable aquaculture in the Mediterranean Region. The results of the project CONSENSUS (Defining indicators for sustainable aquaculture development in Europe) and others were also considered.

The pilot study carried out in Turkey was possible thanks to the direct participation of the Ministry of Agriculture and Rural Affairs of Turkey (MARA) and the contribution of experts (economists, biologists, aquaculturists and environmental engineers from different national institutions such as Ministry of Environment, Ministry of Tourism and Culture, Ministry of Agriculture and Rural Affairs, MARA Research Institutes), fish farmers, academicians, representatives from civil society organizations and aquaculture's professional organizations. In Tunisia the pilot study was possible thanks to the direct participation of the Ministry for Agriculture of Tunisia and the contribution given by aquaculture stakeholders (representatives of national and regional administration of fisheries and aquaculture of the Ministry for agriculture and marine resources, the Ministry of environment and sustainable development, interprofessional groups, scientists in aquaculture, university members, the World Wildlife Foundation (WWF), that gave a contribution to the discussion.

A wide participation to the WGSA-InDAM meetings also permitted the involvement of different stakeholders in sharing the results of the project, discussion on the methodology and the identification of the indicators (the list of participants to the different meetings is attached in Appendix).

ACTIVITIES CARRIED OUT DURING THE REPORTING PERIOD

The activities carried out during the first year of InDAM followed the work programme that integrates the following outputs of the whole InDAM Project as outlined below.

OUTPUT 1- *A consensus definition of “sustainability” of aquaculture development in the Mediterranean within the framework of an ecosystem approach to aquaculture is established*

Activity 1.1 Preparation and organisation of the first meeting of the project starting with the establishment of a regional network

A meeting of the WGSA on *Selection of indicators for the sustainable development of aquaculture in the Mediterranean Sea*” was held in Montpellier (France) from 27 to 28 November 2008, with support from IFREMER and the University of Montpellier, Faculty of Economic Sciences. The workshop aimed at reviewing the experience of recent research initiatives and methodologies in the development of aquaculture indicators. During the meeting the methodological approach and time frame of InDAM were also discussed and agreed by the experts, as well as the pre-identification of the principles representing the conceptual framework in which sustainable aquaculture should develop, following the Principles Criteria-Indicators (PCI) approach.

The outcome of this meeting was presented to the Sixth Session of the CAQ (Tirana, Albania 17-19 December 2009). The CAQ reaffirmed the importance of the identification of indicators for sustainable aquaculture and that these indicators should be understandable for all stakeholders. It was acknowledged that this identification process may be long.

Activity 1.2 Establish a consensus definition of the methodological approach for the application of an “ecosystem approach to aquaculture” appropriate to the Mediterranean context and fitting the long term purpose of the project.

The identification and selection of indicators for sustainable aquaculture were carried out during the expert meeting held in Montpellier in February 2009. With reference to sustainable aquaculture the meeting mainly focused on: finalizing the principle, the criteria and preliminary list of multidisciplinary

indicators and reference points in relation to agreed methodology; identifying issues concerning the implementation of one or more pilot studies to test and refine the indicators identified.

The PCI method was considered by the WGSA as essential to link the indicators to the Principles of Sustainable Aquaculture. Reference was made to the selection of the objectives for the establishment of a reference system for the indicators and their application at local level in the InDAM context.

The Principles were considered essential in achieving the establishment of a sustainable reference system and methodological framework in the Mediterranean Sea context for the identification of indicators. It was agreed that the Principles for Sustainable Aquaculture should represent the conceptual framework for the identification of Criteria and consequently of indicators.

During the meeting held in February 2009 in Montpellier the participants were organised into three sub-groups (Social-Governance, Economic and Environmental) according to their expertise, to define the agreed Principles for sustainable aquaculture, the Criteria, the Indicators and whenever possible the definition of measurement parameters and reference points. Based also on the experience of the EVAD approach, a first list of 155 Indicators was proposed and each indicator was discussed individually. The indicators were associated to the selected Principles for one of each of the pillars of sustainability (Governance, Economic, Social and Environmental).

The selection of the indicators was not limited to the fishery sector level but was also considered within a more integrated approach at territorial level and consequently with the vision of a method such as ICZM (Integrated Coastal Zone Management).

Activity 1.3 Gather existing relevant documentation relevant to the definition of sustainability in aquaculture development

A series of documents were gathered and produced by the experts involved in InDAM activities. The documents focused on the key issues related to the use of indicators for sustainable development within aquaculture. The documentation addressed the elaboration and use of indicators, analysed the profusion of reference systems and initiatives to elaborate sustainable development indicators for aquaculture and particular emphasis was given to the co-construction of the indicators also followed by InDAM. Particular attention of the documentation was given to the relation between governance system and aquaculture sustainable development in which the role of regulatory system, the appropriation of the sustainable development, the role of representation, and the learning process are highlighted. The documents also considered the analysis of the standards and indicators for sustainable development of aquaculture. Much of the documentation produced and gathered was used as ground information for InDAM activities and was included in a data-base as indicated in Activity 2.1.

Activity 1.4 Set a definition of sustainable development of aquaculture with the view of establishing a clear understanding and, as far as possible, consensus among future users of the indicators

The definition of sustainable aquaculture was discussed and considered by the experts according to the work carried out within the Activities 1.1-1.3., in which the 155 preliminary indicators were identified in a common selection process.

Experts agreed that during the indicators selection phase, at least two geographical levels of indicators should be considered, according to the two main InDAM purposes and practical use and application. The first should be considered as tool at disposal of the GFCM countries to monitor the development of sustainable aquaculture and the second at local level and as a communication tool between farmers and local communities.

In the first case the indicators identified at regional level should be considered appropriate for the whole Mediterranean areas and for the description of aquaculture sustainability at regional level. A second level of application of indicators should be considered at local level (or scale) and more linked to the local community in which some specific indicators could be changed according to the requirement and condition for the sustainable development of aquaculture in a specific area. However WGSa-InDAM experts also agreed that the process for the identification and application of indicators should be considered only through a consensus process among stakeholders at regional and at local scale.

The finalisation of the indicators identified in Montpellier (February 2009) continued in a cooperative manner and within two pilot case studies. The two pilot studies were planned to better finalize the table of indicators identified by the experts. The pilot studies were performed in two selected coastal areas at different level of aquaculture development and experts agreed to make one pilot case study in Turkey (Mugla) and one in Tunisia (Monastir).

The pilot study consisted mainly of one or two local multi-stakeholder technical meetings followed by a bottom-up approach and were attended by representatives of different interested parties in order to discuss and have feedback on the work carried out at regional level. Among the stakeholders selection attributes for the identification of indicators were chosen and agreed upon (such as: data availability, statistical robustness; local acceptability) for the selection of indicators at local level.

Activity 1.5 Organise a Working Group/Workshop to discuss the content and aims of the preliminary selected indicators

A Workshop on Guidelines and application for sustainable development of aquaculture was held as final meeting of the first year of the InDAM Project. The workshop was held in Salammbô (Tunisia) on 19 and 20 November 2009 and was hosted by the INSTM (Institut National des Sciences et Technologies de la Mer). During the Workshop, discussion was made on the principles of the indicators of sustainable aquaculture selected during the first year of InDAM Comparative analysis between the principles selected and the principles available in the scientific literature on the development of the sustainable aquaculture was made. During the workshop the results and follow up of the two pilot studies carried out in Turkey (Mugla) and Tunisia (Monastir) were presented and discussed. The agreed InDAM methodology to identify indicators, as well as the principles, criteria and indicators identified for each dimension of sustainable aquaculture, were also presented and discussed. Discussion was also made on the approach and methodology applied, for the stakeholder involvement, and the feedback received the indicators for environmental, economic, governance and social dimensions identified by the WGSa. During the meeting the draft *guidelines' scheme for the application of indicators (Governance, Economic, Social and Environment Dimension)* were presented and discussed.

OUTPUT 2 - Relevant documentation on aquaculture sustainability is gathered and regularly updated and proper synergies between other projects related to sustainable development of aquaculture and the Working Group on Aquaculture Sustainability of the GFCM are identified and developed

Activity 2.1 Establish an annotated bibliography of all available existing documents and projects (past, present, future) with particular reference to the Mediterranean region

A bibliography review considering the different dimensions of aquaculture (governance, ecological, economic and social) was made and was incorporated it in a structured data base.

The first database, InDAM-db, stored the most significant scientific documents on indicators of sustainable aquaculture related to the Mediterranean Region. An annotated selected Bibliography on the same topics was also prepared. A databank was designed by the GFCM Secretariat, and prepared by

referring to the most significant scientific literature, collecting and compiling the information from various sources (documents and projects). Data were organized according to the four dimensions of sustainable aquaculture (Governance, Economic, Social and Environmental), referring to the most important scientific literature of the last decade and to the most relevant scientific issues on the subject. The InDAM databank includes 239 records, divided into the four dimensions of sustainability: Governance (31 records); Economics (24 records); Social (32 records) and Environmental (231 records).

Each record can provide information on more than one dimension. Fig.2 and Fig.3. show the web pages and example of the information reported for each record. The main indicators used for the analysis and description of each dimension of sustainability are reported in Table 1¹.The indicators are not to be considered as final. They can be subject to modifications and/or other indicators can be added in the future.

Activity 2.2 Establish a survey of all regional and national R&D programmes, research and project initiatives to understand and monitor aquaculture-environment interactions in the Mediterranean region, and

Activity 2.3 Develop, when appropriate, links and synergies with identified relevant projects or other interested initiative related to sustainable development of aquaculture

Data were collected from projects on aquaculture sustainability in the Mediterranean Sea and related issues. In particular InDAM has taken advantage on some results achieved from these projects and from the document produced: *Consensus* that delivered 296 indicators, *EVAD*, “*Guide de co-construction d’indicateurs de développement durable en aquaculture*” and the cooperation established with the experts involved in this project that represented an important methodological ground for the InDAM activities. Links have been also established with the experts involved in the recently started EU funded project AquaMed. AquaMed is a project titled “The future of research on Aquaculture in the Mediterranean region” within the seventh EU Framework Programme. Relation and cooperation has been established with IUCN on the activities focused on sustainability. Relation has been also established with the FOESA, the Spanish Aquaculture Observatory Spanish Biodiversity (by Spanish Biodiversity Foundation) that funded a project on “Identification of Sustainable Aquaculture Indicators for the Mediterranean Sea”.

OUTPUT 3 - The most suitable and workable sets of indicators and reference points guiding the sustainable development of Mediterranean aquaculture are established

Activity 3.1 Define the target audience that will use the indicators and uses typology

In consideration of the activities carried out, the target audience considered for this first year of InDAM is composed of:

- The Working Group on Sustainability of Aquaculture of CAQ and the network of experts from the different disciplines (Governance, Economic, Social and Environmental), established during the InDAM initiatives and meetings:
- The research Institutions that hosted InDAM activities and experts of which are collaborating to InDAM;

¹ Figures and Tables can be found respectively at pag. 81; 82 and 77 of the *Technical report “INDICATORS FOR SUSTAINABLE DEVELOPMENT OF AQUACULTURE (WGS-IndAM first year)* “in support to the activities of first year of InDAM and available at http://151.1.154.86/GfcmWebSite/private/indam/Draft_Technical_Document_InDAM.pdf as indicated at pag 1 of this Narratiive report.

- The local communities and various stakeholders involved in the activities of the pilot studies held in Monastir (Tunisia) and Mugla (Turkey) and represented by the different competent Ministries (Agriculture, Fishery, Environment, Tourism, Research), national research institutions, local experts (socio-economists, biologists, aquaculturists and environmental engineers), academicians, fish farmers, representatives from civil society organizations and aquaculture's professional organizations;
- The experts and network established within the CAQ- Working Group on Marketing, Working Group on Site Selection and Carrying Capacity that are directly involved when the indicators are discussed;
- The SIPAM network that are also informed and that established relation with the activities of InDAM;
- The CAQ and its Coordination Committee of the Working Groups called to review and discuss the results, main achievements and activities of WGSA carried out within InDAM and recommendations;
- The GFCM member countries during the statutory session are advised for management purposes on aquaculture by the CAQ-CMWG on the status of identification of indicators for the development of sustainable aquaculture.

Activity 3.2 Establish sustainable development reference systems and methodological framework to the Mediterranean context including the development of a weighting system for different audiences and different aquaculture systems.

As result of the first year of activities, the PCI approach (Principle, Criteria and Indicators) has been considered as the reference system of the identification of indicators. The principles were associated to the four dimensions of sustainability (Governance, Economic, Social and Environmental) and to Criteria were identified to breakdown the selected Principles into specific issues to be addressed for sustainable aquaculture. Criteria and relative indicators were identified to describe the sustainability level of marine aquaculture in the Mediterranean and the Black Sea areas. Reference points can indicate the particular state of the issue to be monitored and could be qualitative or quantitative. The participatory, multistakeholder and multidisciplinary approach were essential to generate discussion and achieve the appropriation of the indicators application and in particular for all the aspects related to the governance dimension of aquaculture.

In addition, the pilot case studies are essential to establish a local reference system for the development of aquaculture sustainability and its integration into coastal zone management. A weighting and scoring table system for the evaluation and contribution of the indicators identified were considered by WGSA usefulness for sustainable aquaculture management. Furthermore a tool-based traffic-light approach on a significant index was suggested to be used and to test in the application of indicators and in the monitoring of aquaculture activities.

Activity 3.3 On the basis of experts contribution and of scientific available information establish a preliminary list of multidisciplinary indicators appropriate for the Mediterranean aquaculture.

Activity 3.4 Identify for each of the indicators selected the level of contribution to sustainability; the feasibility for its implementation; the methodology applied for its measurement, including possible reference points.

The preliminary exhaustive list of 155 indicators of aquaculture sustainability was identified on the basis of the experts participating to the project and the previous programmes and experience carried out in and

outside the Mediterranean region. This first list of indicators was set during the meeting held in February 2009 in Montpellier and was discussed and prioritized at local level within the context of Mugla and Monastir pilot studies. The feasibility for its implementation was also discussed, analysed and scored by the stakeholders during the pilot studies.

The preparation of guidelines on the methodology applied for the measurement of each indicator including possible reference points was discussed and proposed during the workshop held in Salammbô (Tunisia) on 19 and 20 November 2009 on *Guidelines on the application of indicators for sustainable aquaculture development*. The workshop agreed that the Guidelines would need to be simple and concise and that the use of graphics and drawings would be appropriate to illustrate certain concepts and their easy grasping.

MAIN OUTCOMES

Within the reference to the above mentioned Outputs and Activities carried out during the first year of InDAM, the outcomes of the meetings, the pilot studies carried out in Tunisia and in Turkey as well as the reports, reviews and databank prepared by experts are included in a technical report (annexed to this narrative report) that will be edited for finalisation and printing during the InDAM second year of activities. The technical document was prepared for presentation during the third Coordination Meeting of the Working Group held on 22-24 February 2009 in Rome, and as technical document at disposal during the 34th Session of the GFCM 14-17 April 2010 in Athens (Greece). Two additional InDAM scientific contributions in French have been added to this report.

A selected bibliography and an InDAM data base on indicators for the sustainable development of Mediterranean aquaculture were prepared and are ready to be posted on SIPAM portal.

The following reports and reviews are available in the technical document attached:

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- *Indam Project* (Introduction, background, activities, conclusion and recommendation of first year of activities)
- ;
- *The pilot study in Turkey* (H.Deniz (MARA, Turkey), F.Rad (University of Mersin, Turkey), G. Yucel-Gier (University of Izmir, Turkey))
- *The pilot study in Tunisia* (S.Ben Salem, A.Elouar, M.Hadjali Salem, M.Zouari)
- *Indicators for aquaculture sustainability for the Mediterranean* (as identified in the Montpellier II meeting and the InDAM pilot projects)
- *Bibliographic references and database on indicators for the sustainable development of Mediterranean aquaculture* Within the context of CAQ – WGSC and in support to the activities of InDAM , a series of meetings and events were organised:
 - *Key issue and some postulates concerning the use of indicators for sustainable development: the example of aquaculture* (S. Mathé, H. Rey-Valette and E. Chia)
 - *Aquaculture sustainable development and governance system* (E. Chia, H. Rey-Valette and S. Mathé)
 - *Pour la mise en ouvre du développement durable de l'aquaculture en Méditerranée : les conditions de gouvernance* (S. Mathé and H.Rey-Valette)

Within the InDAM project, the CAQ-WGSA organized a series of meetings and events:

- The workshop on the *Selection of indicators for the sustainable development of aquaculture in the Mediterranean Sea* was held in Montpellier (France) on 27 and 28 November 2008, with the support of IFREMER and the Faculty of Economic Sciences, University of Montpellier The main outcomes as well as the conclusions of the workshop were also presented to the seventh session of the CAQ held in Tirana, Albania (17-19 December 2008).

- The expert meeting on *Indicators for the sustainable development of aquaculture in the Mediterranean Sea* was also held in Montpellier (France) from 24 to 26 February 2009 with the support of IFREMER and was hosted by the Faculty of Economic Sciences, University of Montpellier.
- The workshop on *Guidelines and application of indicators for sustainable development of aquaculture* was held in Salambo (Tunisia) on 19 and 20 November 2009 and was hosted by the INSTM (Institute National des Sciences et Technologies de la Mer).
- Two technical meetings were organized to finalize the two pilot studies, respectively in Turkey and in Tunisia. The technical meeting of the Pilot Study in Turkey was held from 28 to 29 September 2009 at the Provincial Directorate of Agriculture in Mugla, Turkey. The technical meeting of the Pilot Study in Tunisia was held from 13 to 14 October 2009 in Monastir, Tunisia.

ACHIEVEMENTS/RESULTS OF THE FIRST YEAR OF INDAM

Firstly the methodologies for the implementation of the project as well as the work made by the experts and the work carried out by the WGSAs within the InDAM project permitted a definition of sustainable reference framework based on agreed principles for the four pillars of sustainability on aquaculture. Through a multidisciplinary approach this permitted also the identification of preliminary list of 155 indicators for sustainable aquaculture in the Mediterranean Sea has been selected at regional level by the WGSAs corresponding to four (Economic, Environmental, Social and Governance) dimensions of Sustainable Aquaculture. Secondly the participatory and multistakeholder approach developed and implemented by the two first pilot studies at Monastir (Tunisia) and at Mugla (Turkey) permitted to receive feedback from stakeholders on the basis of the attributes and priorities among the indicators identified by the WGSAs at regional level. Thirdly an online data base of relevant bibliography on sustainability on aquaculture and indicators for sustainable aquaculture was implemented and a web portal on the InDAM project activities was prepared (hosted on the SIPAM website). Finally a series of documents and technical reviews in support of the InDAM activities were prepared by experts of WGSAs, dealing with key issues on the use of indicators for sustainable development of aquaculture and on the governance systems in aquaculture.

Furthermore the implementation of the activities of InDAM permitted the establishment of a network of experts and stakeholders from different Mediterranean countries, to share and discuss on the main aspects related to the indicators for development of sustainable aquaculture in the Mediterranean areas.

The priorities issues of the CAQ-WGSA identified through the activities and the achievements of InDAM were presented and discussed during the 34th Session of the GFCM. The need for the establishment of a regional sustainable reference framework for the development of aquaculture bearing in mind the regional dimension of aquaculture activities in the Mediterranean was recalled during such session.

WORKPLAN FOR THE FOLLOWING PERIOD OF InDAM INCLUDING OUTPUTS AND RELATED ACTIVITIES

As follow up of the first year of activities of InDAM, the workplan of the WGSAs was discussed during the workshop on *Guidelines and application of indicators for sustainable development of aquaculture* held in Salambo (Tunisia) on 19 and 20 November 2009 and finalized during the Coordination Meeting of the Working Group of CAQ. The workplan was presented to and endorsed by the 34th Session of the GFCM (14-17 April 2010 in Athens, Greece).

The workplan for InDAM second year of activities is hereunder listed:

OUTPUT 1

Consensus on the definition of “sustainability” of aquaculture development in the Mediterranean within the framework of an ecosystem approach to aquaculture is established.

Activity 1.1 Implementation of Pilot case studies for the selection of indicators on aquaculture at local level

During the first year of activities of InDAM two pilot case studies on the identification of indicators on aquaculture were implemented at local level and precisely in Mugla (Turkey) and Monastir (Tunisia). The aim of these studies was receiving feedback from local stakeholders on the whole list of indicators identified by the WGSA. For the second year, as also requested by the WGSA, this experience should be further extended to other countries in order to divulgate the action toward a general consensus on the definition of sustainability of aquaculture in the Mediterranean area. The new case studies should take advantage from the Tunisian and the Turkish experiences and will be supported by a multidisciplinary cooperation framework in which experts from different disciplines (economist, biologist, etc.) will be involved in the discussion. The new pilot case studies will be carried out in two countries or more countries.

The performed pilot studies consisted mainly of one or two local multi-stakeholder technical meetings followed by a bottom-up approach for the identification of indicators and were attended by representatives of different interested parties in order to discuss and receive feedback on the work carried out at regional level. Among the stakeholders selected attributes for the identification of indicators were chosen and agreed upon (such as: data availability, statistical robustness; local acceptability) for the selection of indicators at local level.

Activity 1.2 Definition of Regional minimum set of the indicators for sustainable aquaculture.

An experts' meeting will be organised with the aim to address the issue of the minimum set of regional indicators and the implementation of sustainable indicators at global and local scale within the context of coastal zone management. In particular, the meeting will aim: a) to review and analyze the indicators identified by InDAM; b) to select a minimum set of indicators to be considered for the whole Mediterranean region which will be proposed to the CAQ and consequently to the GFCM; c) to discuss on the follow up of the Pilot Actions in the Mediterranean countries ; d) to discuss and review the relationship of the Indicators identified at Regional Scale with those identified and applied by WGSC, WGMA and SIPAM and other relevant institutions working on Mediterranean Aquaculture Indicators.

Activity 1.3 Organization of a regional meeting of the WGSA on the pilot case studies.

At the end of the second year of InDAM a regional meeting will be organized and held to discuss the results achieved in the year, to synthesize the outcomes of the pilot case studies implemented in the Mediterranean and to discuss on the application of the indicators to finalize the outputs discuss on the status of finalization of the guidelines for the application of the indicators for the sustainable development of marine aquaculture.

OUTPUT 2

Relevant documentation on aquaculture sustainability is gathered and regularly updated and proper synergies between other projects related to sustainable development of aquaculture and the GFCM - Working Group on Aquaculture Sustainability are identified and developed.

Activity 2.1 Implementation of a programme for the dissemination of InDAM results, outputs and documentation.

A programme for the dissemination of achievement of InDAM will be implemented. This will include the production of a summary of the main the technical documents on indicators for sustainable aquaculture and indicators produced by the experts and a translation in local languages (Arabic and Turkish foreseen for the first translations) of the summaries. The SIPAM web section dedicated to the WGSa-InDAM will be updated and improved and the database, InDAM-db, storing the most significant scientific documents on indicators of sustainable aquaculture related to the Mediterranean Region, will be updated and related information disseminated within the Mediterranean countries.

Activity 2.2 Finalisation and publication of the document “Indicators for Sustainable Development of Mediterranean Aquaculture (WGSa - InDAM first year)”.

The technical document which includes the main technical contributions carried out during the first year, the results of the two pilot studies, and the main achievements of InDAM year 1 will be further edited, finalised and printed. The document will be published as GFCM Studies and Reviews for a wider diffusion among the GFCM members and a broad circulation among the Mediterranean countries will be ensured as well.

Activity 2.3 Development of synergies with relevant projects related to sustainable development of Aquaculture.

In order to maximize the work efforts made and to identify synergy on sustainable aquaculture and indicators, cooperation will be further strengthened with the other institutions involved on the application of sustainable indicators in the GFCM areas (i.e. IUCN, FOESA, AquaMed).

OUTPUT 3

The most suitable and workable sets of indicators and reference points guiding the sustainable development of Mediterranean aquaculture are established (as a result of regional multidisciplinary cooperation and feedback from stakeholders).

Activity 3.1 Prepare guidelines on the application of indicators for sustainable aquaculture, according to the methodologies applied and to the agreed schemes.

Guidelines for the application of the Sustainable indicators and reference points and standards will be prepared during the second year of InDAM. These will serve as practical tool for the application of the indicators at local level and within the GFCM countries. The guidelines would provide a series of main governance, economic, environmental and social indicators identified in the various country pilot projects supported through the InDAM project. The guidelines would hence provide information on how such indicators are selected and prioritized. Among other, the essential information of each indicator and its application would be provided in the form of a fiche including the following information: definition; relevance to sustainability; rationale; methodological aspect (i.e. measurement of the indicator); reference value; measurement frequency; information and data required (i.e. data source, availability), references. The Guidelines will also include a Glossary of the terms used for the different indicators. For the

preparation of these guidelines the CMWG suggested the creation of a team of experts on each dimension of sustainability.

Activity 3.2 Test the indicators reference system at local level: follow up of the pilot case studies carried out

In Tunisia and Turkey and in particular in the areas (respectively Monastir and Mugla) where the first pilot case studies were carried out during the first year of InDAM, the reference system of indicators will be tested with the participation of the different stakeholders already involved. The local experts in cooperation with the farmers and local authorities will monitor the activities of aquaculture, this will serve also to make a first practical evaluation of the selected indicators based on the available data and collected at local level and for the evaluation of the drafted guidelines.

Appendix I

**PARTICIPANTS TO THE InDam
PROJECT MEETINGS AND EVENTS**

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