Pegaso Project
People for Ecosystem based Governance in Assessing Sustainable development of Ocean and coast

Funded by the European Union
under FP7 – ENV.2009.2.2.1.4
Integrated Coastal Zone Management

**Specific Programme FP7**
Collaborative Projects
Large scale integrating Project

# D6.1 Building and enhancing capacity internally Report and associated material and lessons learned from a transdisciplinary project.
# D6.3 Concept documents describing joint present and future initiatives (incl. additional funding) and strategies building scientific capacity in ICPC countries (M3; update M 13; funding opportunities and strategies; M 34 status of developing activities; M46: full network construction and work done). Final Version

| | | | | |
|---|---|---|---|---|
| **Dissemination Level*** | ✔ PU | PP | RE | CO |
| **Project Acronym / number** | Pegaso | 244170 | | |
| **Project title** | People for Ecosystem based Governance in Assessing Sustainable development of Ocean and coast. | | | |

***PU:** Public; **PP:** Restricted to other programme participants (including the Commission Servicies);
**RE:** Restricted to a group specified by the Consortium (including the Commission Servicies);
**CO:** Confidential, only for members of the Consortium (including the Commission Servicies).

## Authorisation

| | |
|---|---|
| **Prepared by** | Stefano Soriani, Fabrizia Buono, Andrea Bordin, Marco Tonino, Monica Camuffo (UNIVE).<br>With contribution from:<br>M. Nader (UOB), M. Aboudagher (UOB), F. Breton (UAB), A.Conides (HCMR), D.Klaudatos (HCMR), N. De Hauwere (VLIZ), A.Gigineishvili (BSC PS), M. Gvilava (BSC PS), S. Kholeif (NIOF), D.Lacroix (IFREMER), Erdal Ozhan (MEDCOAST), Mounir Bencharif (AREA ED) |
| **Approved for release by** | F. Breton |
| **Date** | 10th of March 2014 |

**Disclaimer and copyright information**

The research leading to these results has received funding from the [European Union] Seventh Framework Programme ([FP7/2007- 2013][FP7/2007-2011]) under grant agreement n° [244170]. This document has been produced in the context of the Pegaso project. All information in this document is provided “as is” and no guarantee or warranty is given that the information is fit for any particular purpose. The user thereof uses the information at its sole risk and liability. For the avoidance of all doubts, the European Commission has no liability in respect of this document, which is merely representing the authors view.

## Document Information

### Project

| | | | |
|---|---|---|---|
| Project Acronym | Pegaso | Grant agreement nº | 244170 |
| Project full title | People for Ecosystem based Governance in Assessing Sustainable development of Ocean and coast | | |
| Funding scheme | Collaborative large-scale integrating project | | |
| Project start date | February 1, 2010 | Project duration | 48 months |
| Call topic | ENV.2009.2.2.1.4 Integrated Coastal Zone Management | | |
| Web site | www.pegasoproject.eu | | |

### Document

| | | | | | |
|---|---|---|---|---|---|
| Deliverable number | 6.1A / 6.3 | Due date | 31/10/2013 | Submission date | 10/03/ 2014 |
| Deliverable title | D6.1A Report and associated material and lessons learned from a transdisciplinary project . D6.3 Concept documents describing joint present and future initiatives (incl. additional funding) and strategies building scientific capacity in ICPC countries. | | | | |
| Authors | Stefano Soriani, Fabrizia Buono, Andrea Bordin, Marco Tonino and Monica Camuffo (UNIVE). With contribution from: M. Nader (UOB), M. Aboudagher (UOB), F. Breton (UAB), A.Conides (HCMR), D.Klaudatos (HCMR), N. De Hauwere (VLIZ), A.Gigineishvili (BSC PS), M. Gvilava (BSC PS), S. Kholeif (NIOF), D.Lacroix (IFREMER), Erdal Ozhan (MEDCOAST), Mounir Bencharif (AREA ED). | | | | |
| Reviewers | Emilia Guisado (UPO) , Branka Baric and Gunter English (PAP RAC) | | | | |
| Work Package | WP6 Title Building and enhancing capacity through training and foster knowledge exchange | | | | |
| Work Package Leader | Manal Nader (UOB) | | | | |
| Lead beneficiary | UNIVE | | | | |
| Dissemination level<br>Nature, Nº of pages | Public / Report / 175 | | | | |

# Contents

1. Capacity building ..... 4
2. Training needs ..... 4
2.1 Target groups ..... 5
2.1.1 The Internal Capacity Building ..... 5
2.1.2 The External Capacity building ..... 7
2.1.3 Conclusions for the ICPC workshops ..... 8
3. Participation Training Course - Training of Trainers ..... 9
3.1 Training program ..... 10
3.2 Training post evaluation ..... 11
4. SDI ..... 13
4.1 Training program ..... 13
4.2 Knowledge evaluation ..... 14
4.3 Training post evaluation ..... 24
5. MedOpen ..... 25
5.1 Training objectives ..... 25
5.2 Training post evaluation ..... 25
6. Conclusions ..... 27
Annex 1: Development of a Bayesian Belief Network (BBN) model for the issue of Artificialization of the coast of North Lebanon. Expert's Group Meeting ..... 28
Annex 2: Bayesian Belief Network Study for Köycegiz – Dalyan SPA ..... 46
ANNEX 3: RAPPORT DE L'ATELIER SOUS RÉGIONAL (Algérie, Tunisie, Maroc) SUR LES INDICATEURS GIZC ..... 59
Annex 4: Georgia CASE Site – Guria Coastal Region: Training Workshop Report ..... 100
Annex 5: The future of Greek aquaculture: Building a sustainable industry in the framework of integrated coastal zone management ..... 126
Annex 6: Nile delta northern lakes: Investment scenarios for restoration actions and sustainable development within ICZM frame ..... 139
Annex 7: List of funding agencies ..... 172

# 1. Capacity building

Within the Pegaso project, capacity building is strictly related to the main objective of the project, namely: "*Bridging science and decision making, enabling possibilities of thinking together, sharing the different knowledge from the different Mediterranean and Black Sea experiences and cultures, to build a set of common knowledge on ICZM as geared by the ICZM Protocol"*(Pegaso DOW).
In this framework, capacity building is not only considered as training but also as building awareness, strengthening cooperation and integration, sharing knowledge and skills, and learning common technical capabilities. The conceptual framework the Pegaso Capacity Building Plan is built on is the Ecosystem-based ICZM. Therefore, all the training actions support the spirit of the ICZM Protocol and aim to train internal partners and stakeholders within this integrative framework. The common objective of the trainings is to provide a good comprehension of how tools and knowledge can support the implementation of the ICZM protocol.

# 2. Training needs

One of the results of the first evaluating phase of the CASE activities (August 2011-January 2012) was the request for integrated trainings on ICZM. During the process of development of the Capacity Building Plan (CBP) the need to adapt it to the DoW and to the Pegaso deliverables roadmap was highlighted; as well as the need to develop a CBP feasible, efficient and coherent with the existing budget. Therefore, due to the aforementioned criteria, the CBP considered the following issues:

1. ICZM is the main driver of trainings and Capacity Building within Pegaso.
2. In order to better meet the ICZM Protocol and the ecosystem based principles in the Mediterranean and Black Sea Countries, Pegaso is developing a number of tools.
3. The Pegaso Capacity Building is problem solving process.
4. The Capacity Building Plan is coherent with the available budget and with the WP6 work plan.
5. The Pegaso Capacity Building focuses on regional sea but is also open to exchange experiences among different places and scales.
6. The emphasis of the Capacity Building is on integrated assessment, as its objective is not only to train for a better use of the tools but, especially, to demonstrate how to use these tools for regional assessment and how to link them to decision making.

7. Furthermore, the CBP aims to train decision makers to co-work with scientists. The tools used in the Capacity Building events foster the development of a better vision of the drivers, pressures and impacts and support the implementation of natural reosurces management within the ICZM or MSP Framework.

## 2.1 Target groups

The Pegaso Capacity Building plan has been adapted to meet the need of the ICZM Platform governance, which includes:

1. The Pegaso consortium: all the Partners working within Pegaso.
2. The CASEs: the ten local/sub regional sites where the Pegaso tools are tested. Moreover, the CASEs contribute to the ICZM process ongoing at national level with their local point of view.
3. The Pegaso End User Committee (EUC), which is composed of: The Mediterranean end users (18 representatives of public national or regional institutions, private consultants and a number of economic sectors, which are key in the Mediterranean - tourism, aquaculture, water, biodiversity, maritime activity, etc); the National Focal Points (NFPs) and the Black Sea end users that represent the 6 countries supported by the BSC PS, which form a Black Sea Panel to steer the adoption of a policy similar to the ICZM Protocol for the Black Sea.

### 2.1.1 The Internal Capacity Building

The first part of this document focuses only on the training organized for the CASEs and the Pegaso consortium. In particular, in Section 3 it presents the Participation training course - (Training of trainers). Section 4 presents the Spatial Data infrastructure (SDI) and Section 4 the Virtual Training Course on Integrated Coastal Zone Management (MedOpen). The former took place in Venice from the 31st of October to the 4th of November 2011. The second training was developed in two phases: a first e-learning course (15th April -15th July 2012) followed by a hands on training workshop (22nd- 25th October 2012), while the latter was entirely developed online (14th May – 3rd September 2012).
In order to reach a wider target groups all the trainings materials have been uploaded in the Pegaso website. In the following Table 1 the training material produced during the life-time of the Pegaso project is resumed with the specific web-link to the Capacity building section of the Pegaso website (http://www.pegasoproject.eu/training).

| | |
|---|---|
| **Public Participation - Training of Trainers. San Servolo - Venise (Italy), 31 October-3 November 2011** | |
| **Training minutes** | http://www.pegasoproject.eu/images/stories/WP4/Participation_Training_Minutes_111116_v4.pdf |
| **Training of Trainers** | http://www.pegasoproject.eu/images/stories/WP4/Pegaso-ToT-Participation.pdf |
| **MedOpen Advanced Course - A virtual training course on ICZM with particular reference to the ICZM Process, Online Training, 2012** | |
| **Website** | http://medopen.org/ |
| **Assessment of the training** | http://www.pegasoproject.eu/images/stories/WP2/Pegaso_MedOpen%20Assessment_PAP%20RAC_121010-1.0.doc |
| **Training on SDI E-course using Moodle** | |
| **Course Handbook - Pegaso Spatial Data Infrastructure: training for geonode development** | http://www.pegasoproject.eu/images/stories/CapacityBuilding/course_handbook_sdi_guest.pdf |
| **Module 1: First steps on SDI, Index and general introduction** | http://www.pegasoproject.eu/images/stories/CapacityBuilding/01-introduction.pdf |
| **Module 2: First steps on SDI, Role of the SDI in Pegaso** | http://www.pegasoproject.eu/images/stories/CapacityBuilding/02-role_of_sdi_in_pegaso.pdf |
| **Pegaso Hands-on Training: Introduction and implementation of Spatial Data Infrastructures (SDI's). Oostende (Belgium), 22-25 October 2012** | |
| **Agenda** | http://www.pegasoproject.eu/images/stories/WP3/Agenda.pdf |

**Table 1: Training materials available in the Capacity Building Section of the Pegaso website (http://www.pegasoproject.eu/training)**

### 2.1.2 The External Capacity building

For the external capacity building action plan, the target groups were identified as: external end-users such as decision makers, governmental and non-governmental institutions, research institutions and experts, from all the countries of the Mediterranean and the Black Sea not directly involved in Pegaso but interested in being informed, especially in the **International Cooperation PartnerCountries (ICPC).**

Since the beginning of the Project, Pegaso put a lot of emphasis on the importance to build capacity in International Cooperation Partner Countries (ICPC). During the Negotiation phase of the project, the DG-RES insisted in developing capacities in the ICPC countries. Therefore, Pegaso has supported the enhancement of regional networks of scientists and stakeholders in ICPC countries, by implementing a Capacity Building strategy regarding: *a*) the Pegaso tools and lessons learned, *b*) the assessment of the state and trends for coast and sea in both basins and *c*) the identification of present and future main threats and possible responses to be done at different scales in an integrated approach, including trans disciplinary and transbondary long-term collaborations. In the Maghreb, a specific task force working on Indicators was developed. The task force was led by Algeria. The first meeting was organized in September 2012 in conjuction with the Coast Day (that was celebrated in Algeria), while the second meeting took place in November 2013 (see the Annex for full description).
Some of the Pegaso CASES (Collaborative Application Sites), are located in ICPC countries.

Algeria, Morocco[1], Tunisia[1], Egypt[1] and Lebanon: Mediterranean Partner Countries (MPC) of ICPC. Georgia[2] : Eastern EU and central Asia (EECA) of ICPC.

Furthermore, within the Pegaso capacity Building Plan some trainings were organized in CASEs that are not IPCP, such as Turkey and Greece.

The ICPC workshops were organized after the Third General Meeting of Pegaso in Rabat, because the tools were developed and ready to be implemented. For such reasons the following workshops were organized

1) Development of a Bayesian Belief Network (BBN), a participative Decision support tool, to think on the issue of Artificialization of the coast of North Lebanon. Expert's Group Meeting. UOB -El Koura-Lebanon, September 2013.

The BBN tool was used to identify drivers and influences and their importance in "controlling artificialization". The meeting started with a short presentation introducing the Pegaso Project, and was followed by explaining the BBN Model concept and its purposes.

2) Development of a Bayesian Belief Network (BBN) model for the issue of Preservation of natural capital 5, 6 November 2013 Dalyan, Turkey.

[1]Signed an agreement with the EC covering science and technology

[2]The countries are also part of the European Neighbourhood Policy (ENP)

The objective was to identify the main problems that should be effectively addressed in order to guarantee the sustainable management of the natural capital of the Dalyan-Köycegiz Special Protected Area including the nesting beach of Caretta Caretta.

3) Indicateurs de la gestion integrée des zones côtiers (Atelier sous régional Algerie, Moroc, Tunisie). Alger, Algerie 13-15 November 2013.

The objective of the workshop was to review some of the indicators developed in the framework of Pegaso and to discuss on possible solutions related to data gap and accessibility.

4) Pegaso CASES Training Workshop, GEORGIA. Introduction into ICZM Toolbox – Indicators 19-20 November 2013, Grigoleti, Guria Region, Georgia.

The training workshop aimed at providing a basic understanding of coastal indicators in the view of their application at Pegaso CASES, as well as potentially at national and regional level reporting on the state of the coastal environments.

5) The future of Greek aquaculture. Building a sustainable industry in the framework of integrated coastal zone management. 26-27 November 2013 Athens, Greece.

The main objectives of the workshop are to address the future of the development of a key sector such as aquaculture and the need for its integration within an ICZM approach, and address the needs of indicators as communication tool as well as to follow the sustainable development of aquaculture.

6) Nile Delta northern lakes “Investment scenarios for restoration actions and sustainable development within ICZM frame".10-11 December 2013.

Main objective of the Workshop was to show the interest of some prospective methods to anticipate acute management problems in the human uses of the great lakes of the Nile delta, especially focusing on ICZM and aquaculture sustainable development. Nile Delta northern lakes “Investment scenarios for restoration actions and sustainable development within ICZM frame".

A full description of each workshop is presented is provided in the Annex.

### 2.1.3 Conclusions for the ICPC workshops

The ICPC workshops were planned in the last year of the project, after the 3rd General Meeting of Pegaso in Rabat, in order to rely on a number of tools quite well advanced and already implemented. The organization of the ICPC workshop let draws the following conclusions:

- Pegaso tools have shown the importance of co-working; their implementation has highlighted the importance to gather multi stakeholders’ (scientists, decision-makers, NGOs) in order to foster communication and discussion and foster understanding on how environmental systems work and promote sustainable management.

- Multistakeholder platforms of governance are key elements to make people work together, creating confidence and foster communication. So Capacity Building strategies should be focus on the development and implementation of such multistakeholders Platform of governance.

- The ICPC workshops have confirmed the usefulness of Pegaso projects, participants have highly appreciated because it has promoted new forms of governance. Furthermore, the tools and methods proposed have been positively evaluated in all the workshops.

- Intervention of an external expertise is a key element to trigger dialogue between parts in many countries, and participative methods help a lot in creating the rules of the game. People enter then into the game, and can easily understand the necessity to pass from game's rules to real rules.

- The orientation of Pegaso towards the South and the East of the Mediterranean is an important added value of the project. It has also been coordinated from a Mediterranean country, which is also not so frequent. Its objective has been to give the voice to the South in these capacity building events.

## 3. Participation Training Course - Training of Trainers

The event was targeted to the Pegaso CASES that have expressed their interest and need in training on participatory tools and more specifically CASES team members that were responsible for the realization of participatory approaches within their CASE. The participation training course-training of trainers was organized by UNIVE with trainers from PAP/RAC and Plan Bleu and took place in the island of San Servolo (Venice-Italy) from the 31st of October to the 3rd of November 2011. The CASEs of Bouches-du-Rhône (France), Aegean Sea Islands (Greece), North Lebanon Coastal Area and Sevastopol Bay (Ukraine) CASES declined the invitation to attend the training.
The main objectives of the training could be summarized as followed:

1. To prepare participatory facilitators to apply participatory approaches within their CASE.

2. To understand principles and tools for dealing with stakeholders (stakeholder management).

3. To know how to prepare, conduct and follow-up on participatory events (in relation to CASE Work Plan and stakeholder analysis).

4. To practice facilitation skills.

5. To contribute to capacity building for realization of participatory approaches.

| Institution and role | Participant |
|---|---|
| Representatives of the Nile Delta - Egypt CASE | Suzan Kholeif - Waala Awaad Awaad Ali |
| Representative of the Al Hoceima Coastal Area - Morocco CASE. | Nadia Mhammdi |
| Representatives of the Dalyan-Köycegiz Special Protected Area - Turkey CASE. | Ulas Avsar - Sinem Önder |
| Representatives of the North Adriatic CASE | Monica Camuffo - Fabrizia Buono - Marco Tonino |
| Representatives of the Danube Delta - Romania CASE: and, Danube. | Eugenia Marin - Iuliana Nichersu |
| Representative of the Guria Coastal Region - Georgia CASE. | Amiran Gigineishvilski |
| Representative of PAP/RAC. | Marina Markovic |
| The Participatory Coordinator of the Pegaso project. | Julien Le Tellier |
| PAP/RAC consultant, Trainer. | Gunter Englisch |

**Table 2: Participants of the Training for trainers course**

## 3.1 Training program

The program was based on an interactive training approach, notably on practical exercises for simulation of facilitation situations by role plays. These role plays were recorded and reviewed by video analysis. Personal feedback allowed an intense learning experience for the participants. Traditional lectures were kept to a minimum. Training design was tailor-made to the needs of the participants (as expressed in the participatory checklist attached to the CASE ID document). Participants had to complete some preparatory work before coming to the training: participants familiarized themselves with the contents of several documents (for their specific CASE) such as CASE Identification Document, the stakeholder analysis, the CASE Work Plan and the Participatory Guide on Participatory Methods. Moreover, participants had to complete an exercise on a case study before the training and identified at least one core challenge for their CASE with regard to the application of participatory methods.

| Session | Day 1 (Principles) | Day 2 (Participatory process) | Day 3 (Group facilitation) | Day 4 (Handling of difficult situations) |
|---|---|---|---|---|
| 09:00 h -10:45 h | Arrival & Registration. Welcome. Presentation round. Training Objectives. Definition of basic concepts (Participation, Stakeholder, etc.) | Realisation of a participatory process (incl. preparation and follow-up of a participatory events) | Introduction to group facilitation. The role of the facilitator. Interaction between facilitator and group. The facilitation process. | The Problem Solving Process. Group dynamics. Treatment of difficult situations |
| 11:00 h- 13:00 h | Communication as basis for participatory processes. Communication theory and exercises (including feedback). Importance of body language | Preparation of stakeholder meetings. Facilitation tasks | Facilitation skills. Communication rules. Visualisation of results | Treatment of difficult situations (continued) |

| | | | | |
|---|---|---|---|---|
| 14:00 h<br><br>-15:45 h | Principles of adult learning. Principles of participatory learning and action | Conduct of stakeholder meetings. Self-analysis of interaction processes | Participatory tools, methods and approaches. Introduction of Pegaso guide. Analysis of facilitation performance | Development of action plan for individual CASES. Discussion of capacity building for realisation of participatory processes within the CASE. |
| 16:00 h<br><br>-17:30 h | Stakeholder Management (Principles and tools) | Follow-up of stakeholder meetings | Exercises on participatory tools and methods. Reflection of group interaction processes | Summary and Feedback. Training evaluation |
| 20:00 h[3]<br><br>-<br><br>21:00 h | Communication Theory and Models (1): 4-ears model (F. Schulz von Thun), Feedback techniques | Communication Theory and Models (2): Transaction Analysis (E. Berne) | Communication Theory and Models (3): Neuro-Linguistic Programming (R. Bandler & J. Grinder) | Farewell dinner |

**Table 3: Agenda of the training of trainers course**

## 3.2 Training post evaluation

The trainer at the end of the course commented regarding on the outcomes:
*"The participants of the training course have acquired the basic skills and techniques of group facilitation and stakeholder management. They are now able to start implementing a participatory process within their CASE. However, it is recommended that further advanced training is offered to the participants in order to support the related learning and self-reflection process. A way of delivering this advanced training could be to use the next CASES meeting for training of facilitators 'on the ground' in the application of selected participatory methods. In this context, it would be necessary to foresee some time before and after the CASES meeting for training of facilitators. This training should be targeted to the participants who attended the first training. Other Pegaso meetings could be later used for the same purpose".*

Participants, also at the end of the fourth day of training were asked to evaluate the Training for trainers course. In particular they were asked to evaluate the course in relation to: a) the topics considered, b) the methodology adopted, c) the documents provided as well as d) the trainer. From the results of the evaluation (table 4) it is clear that participants have appreciated the highly participative nature of the training, the use of different kind of learning methods and in particular the learning by doing approach used by the trainer. On the other hand they suggested having more case studies examples as well as references and additional readings. The trainer therefore gave his availability to answers to doubts and to give suggestions on material and references to all the participants by mails. Furthermore, participants asked for further support in the implementation of participation strategy in their CASEs.

3

| | What was good? | What could have been better? |
|---|---|---|
| **Topics Contents** | Loved it! Dense enough for 1 week - Well organised agenda - Practical tips - We learned about all aspects - It was great, but I think it would be better to give case studies just for more practice - Contents are enough for the aim of the training. | Homework evaluation - Add some examples about real examples for negotiation - 3-Ego States could be part of the obligatory session - Invite some stakeholders or end users. CASE specific. |
| | **What was good?** | **What could have been better?** |
| **Training Methodology** | Methodology made by very good specialists - Exercises - Involving assistance – Innovation - Focussing on learning by doing instead of ppt - Very good alternation of theory with practical exercises - Accurate methodology - Very effective - Very efficient energisers - Participatory enough! - Very good, interesting & creative - Video recording - Good switching between theory and practice - Actually I like the time span between sessions and repeating what we did learn plus spreading the sheets on the walls. | More exercises - Better preparation for exercises - Meal, coffee, wine + field trip - More examples - Explaining the behaviours - Reality in the CASES. More no. of days - |
| | **What was good?** | **What could have been better?** |
| **Documents** | Informative enough! - Detailed information - More than enough - | More materials would be great - It is better if we have some theoretical info on discs (big material) - More suggestions - More case studies - A lot of practical examples - References - Previous experience from other groups - More bibliography - It would be better if every day session has a separate presentation & the ppt should have some figures, photos, animations - more practical examples. |
| | **What was good?** | **What could have been better?** |
| **Trainer** | Excellent, patient, active listening and respect for all participants - Patient enough! - You did very well – just keep it - Professional & optimist attitude - Professional trainer - Used the participatory methods – Excellent! - Trainer is super – Pedagogic – Supportive - Thank you (expressed in Arabic language). | Only available during our holiday - Next time please: 1 free afternoon - Good is the enemy of the better- More X-mas Cookies! |

**Table 4: Post evaluation of the training of trainers**

# 4. SDI

Pegaso's Description of Work document introduces the relevance and responsibility for the implementation of a Spatial Data Infrastructure (SDI). The task consists in the development and implementation of participants' geonodes for the Pegaso's SDI. In order to build a geonode in each organization, the SDI course aimed at the development of capacities at a basic level for partners involved in the project to achieve the complete implementation of their geonodes. The provision of the E-learning based course was a first step in the capacity building plan in WP3 which was completed in the hand's on practical course in Oostende in October 2012. The training targeted Pegaso partners, especially those involved in geonode development (CASEs). The training methodology consisted of a e-learning training course through a model platform and a hand's on practical course. In both trainings, ppt, examples and practical exercises were provided. The training covered the topics of SDI, geoportal, interoperability and web services. The lead trainer and organizer were VLIZ, UPO and UAB.

## 4.1 Training program

| Session | Day 1 (Introduction) | Day 2 (Configuring partner`s environment) | Day 3 (Using data from different SDI's for your own GIS application Group facilitation) | Day 4 (Creating a metadata and creating a geoportal) |
|---|---|---|---|---|
| 09:00 h - 11:00 h | What is a SDI (components, benefits and challenges) | Introduction to GeoNetwork Catalogue and CSW: Installing an adapted version (to Pegaso) of the GeoNetwork software | Using data from different SDI's for your own GIS application | Metadata and the creation of Metadata records. Introduction to metadata Using the Geonetwork form & the INSPIRE web Form, Creating Services Metadata |
| 11:00 h - 12:00 h | The Pegaso SDI: the why, how, what and demonstration | Introduction to GeoServer, WMS and WFS Installing Geoserver and activating WMS, WFS and other services (until 13:00) | Guidelines for publication and data harmonization Pegaso's data harmonization: definition of styles, symbols and scales. | |
| 13:30 h - 14:30 h | SDI`s basic Services and functionalities: Discovery, View, Download, Processing | Practical exercises Spatial indicators for ICZM in the Mediterranean using Geoserver & Geonetwork : Publishing data to a WMS, Styling portrayals, transforming data, downloading data using WFS (from 14:00) | Practical exercise Data harmonization of selected spatial indicators for ICZM in the Mediterranean. Exercises on participatory tools and methods. Reflection of group interaction processes | Creation a Geoportal Internet: Resources for creating Web pages, Installing the Pegaso Geoportal (until 15:00) |
| 14:30 h - 17:00 h | Use case of SDI`s focusing on the functionalities, basic technologies and standards used (ISO standards, OGC Standards, INSPIRE...)<br>The EnviroGrids SDI<br>The ICAN SDIthe International Coastal Atlas Network | | | Practical exercise: exercise, creating a Web page for hosting a local SDI |

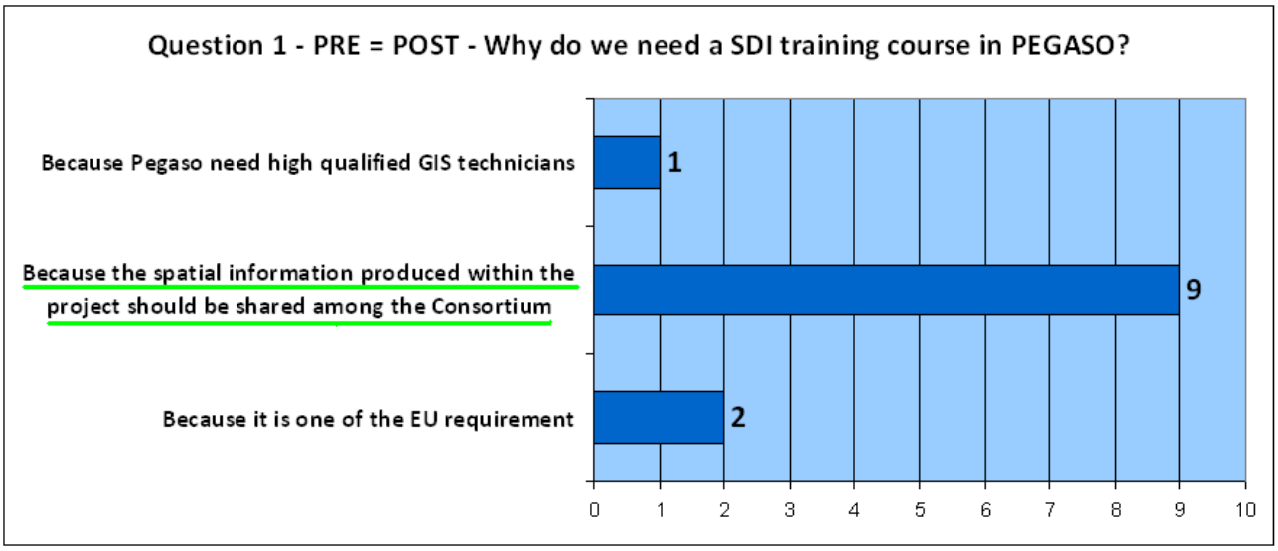
**Table 5: SDI hand's on practical course program**

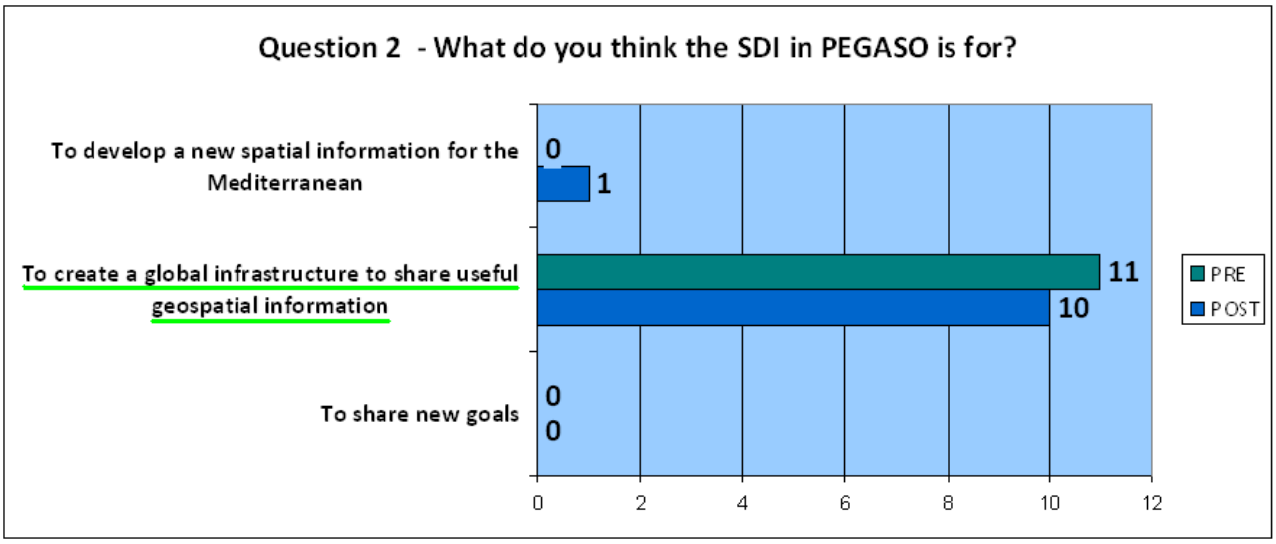
## 4.2 Knowledge evaluation

**Relevance and the aims of the SDI**

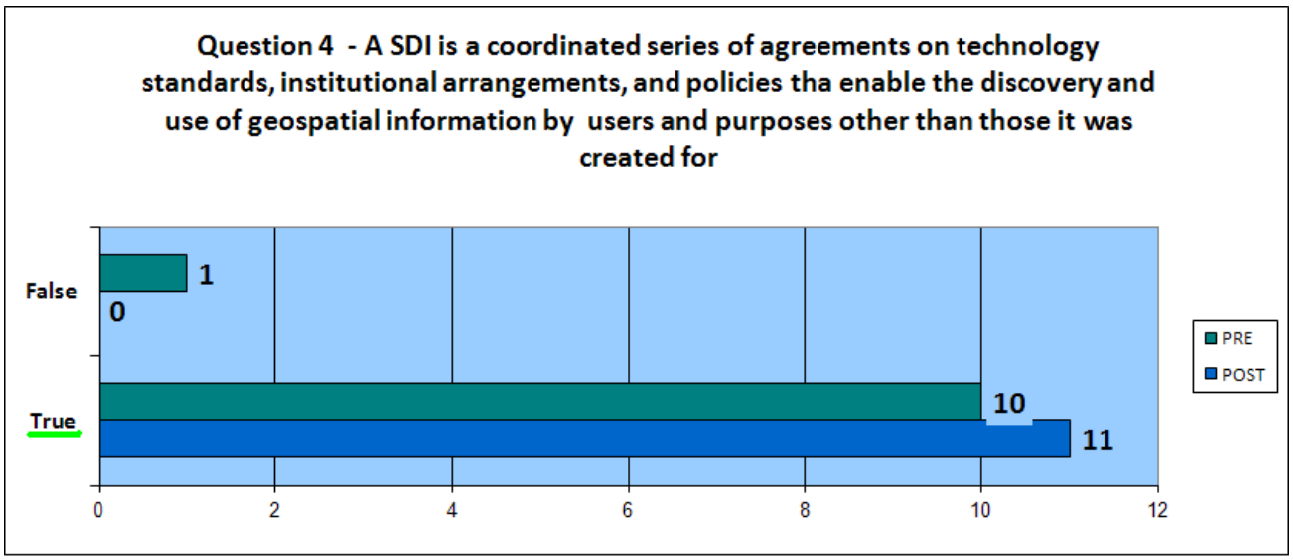
Participants were asked to fill in a pre and a post evaluation questionnaire of the training. Below are presented the results of both questionnaires.

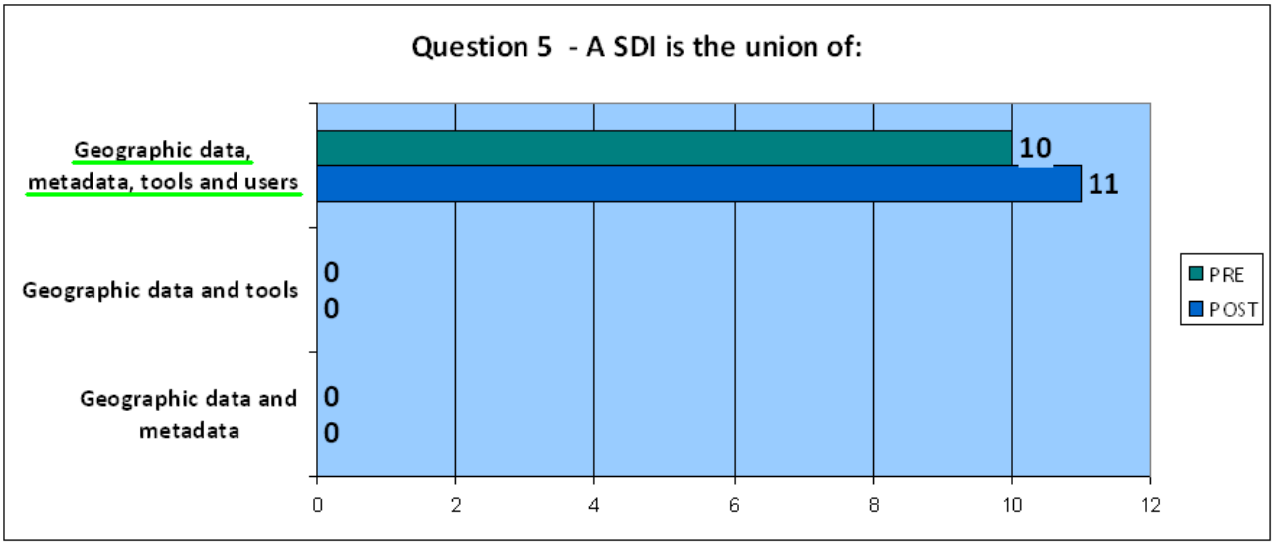
Most of Pegaso training participants recognized, before and after the course, the need of a SDI training (question 1 and question 2): sharing geospatial information among the consortium through a global infrastructure is considered after the course an important issue for 10 out of 11 participants.



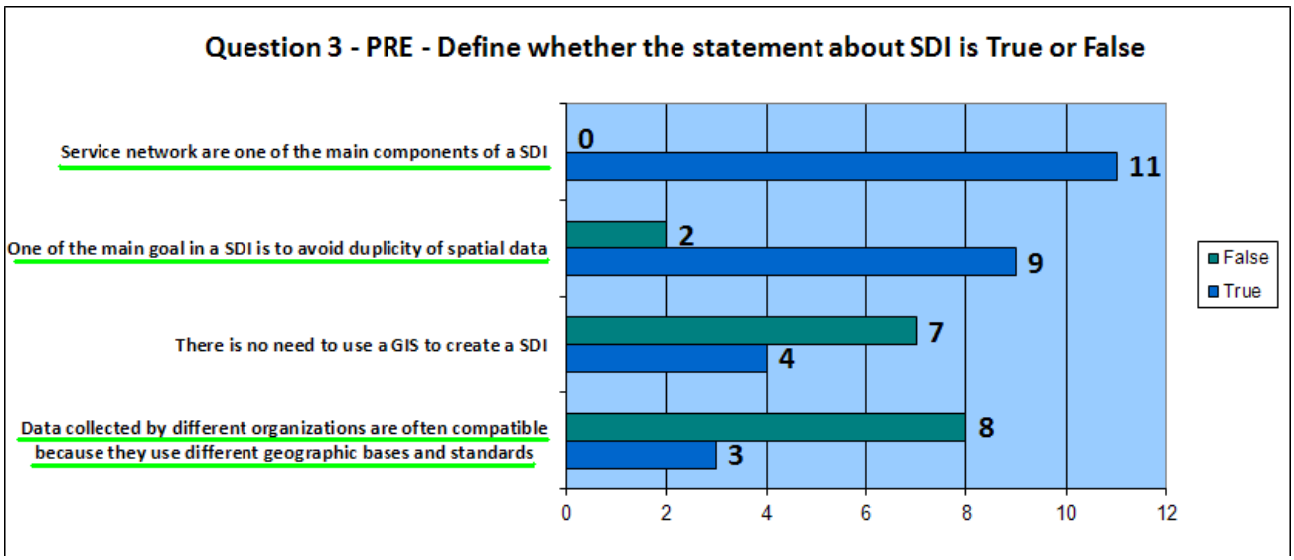



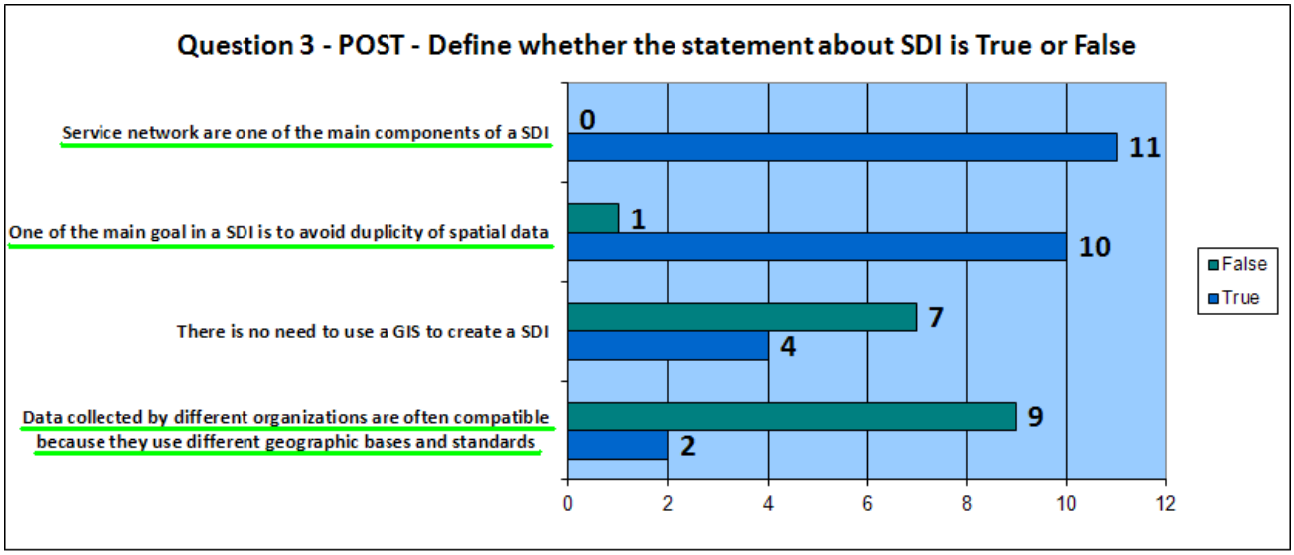

Question 4 and Question 5 attest the knowledge regarding the meaning of SDI general definitions. Participants have shown to have a robust knowledge regarding it even before the course.



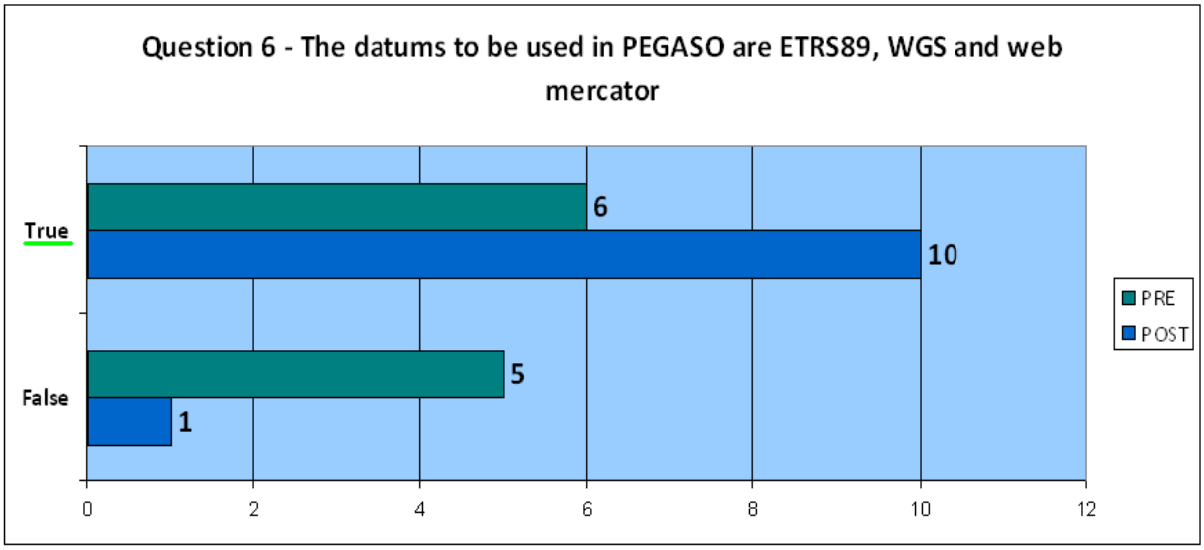

In more advanced questions, while there were no doubts in recognizing the service network as one of the main components of a SDI, participants started facing some doubts, both before and after the course. However, the majority demonstrated to be aware of the main goal of SDI, to recognize the need to use a GIS to create them, and to have knowledge about the problems of compatibility of data. Only one participant in the posted evaluation changed his opinion about the 2nd and 4th answers of the question 3.

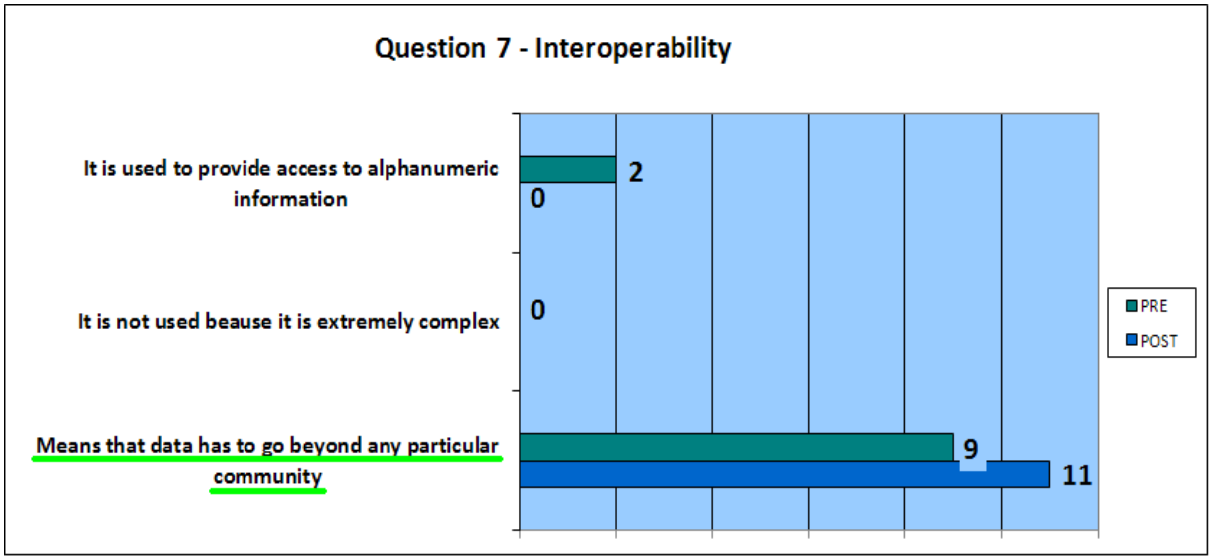


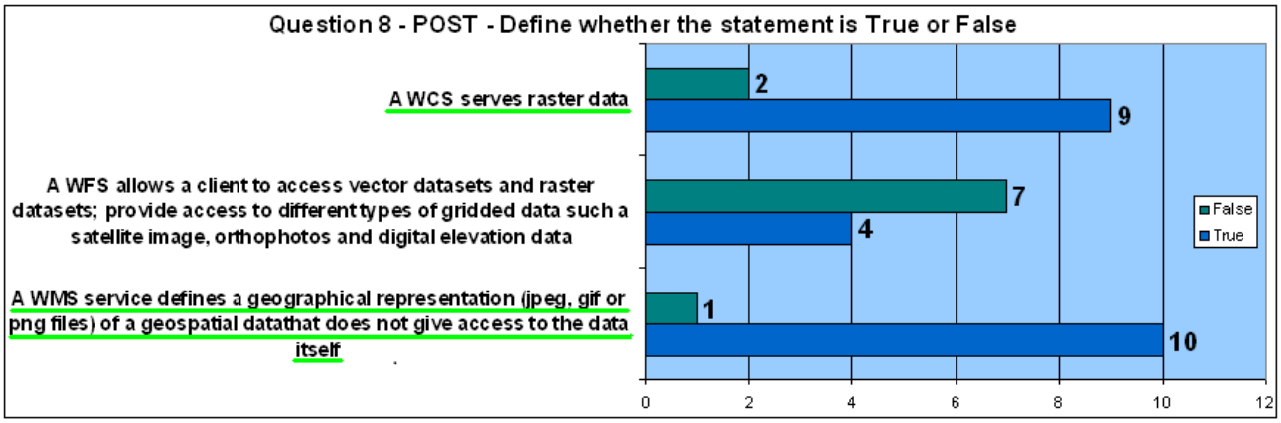



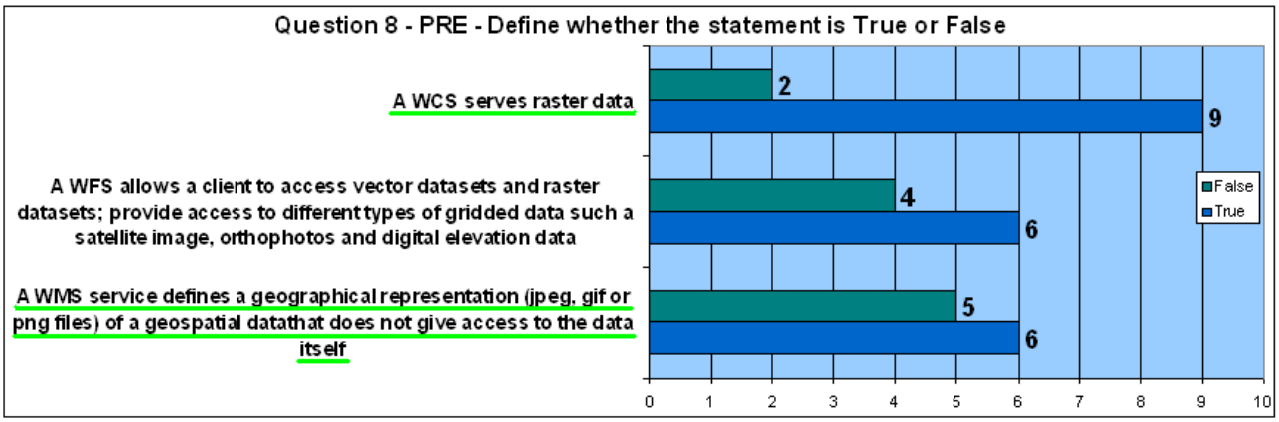

**SDI Technical characteristics**

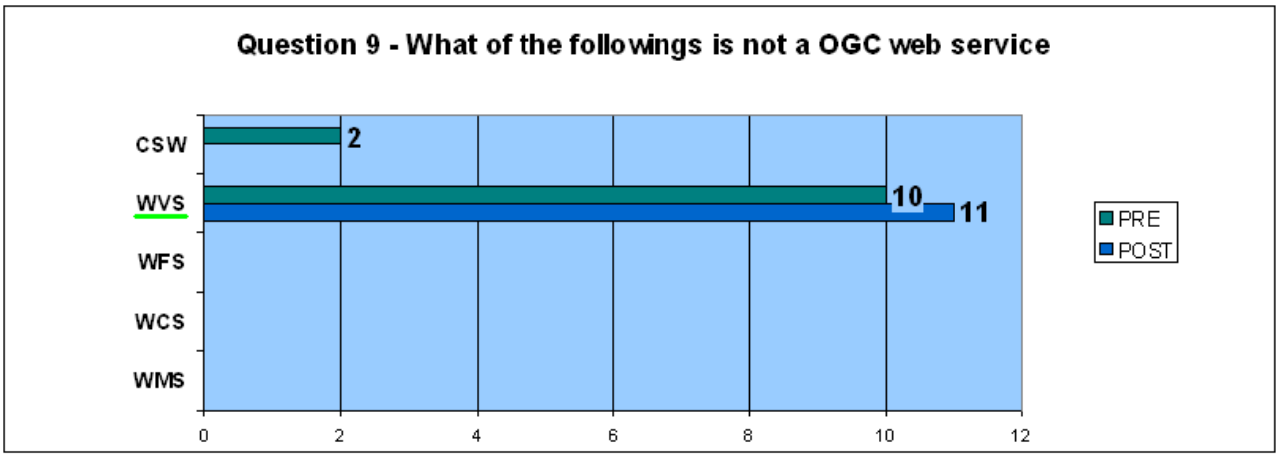
The datums to be used in Pegaso (Question 6) and the meaning of interoperability (Question 7), put in trouble many participants before the training. Almost half of the participants missed the question about datums, but the course clarified the points. WCS, WFS, WMS, Geonetwork and Geoserver issues, have been the trickiest of the course. The training only partially succeed in improving their knowledge. If WCS was almost known by everyone (except for two participants which did not changed their answer), WFS and WMS concepts were quite unclear but the training helped the majority of participant to clarify these issues.

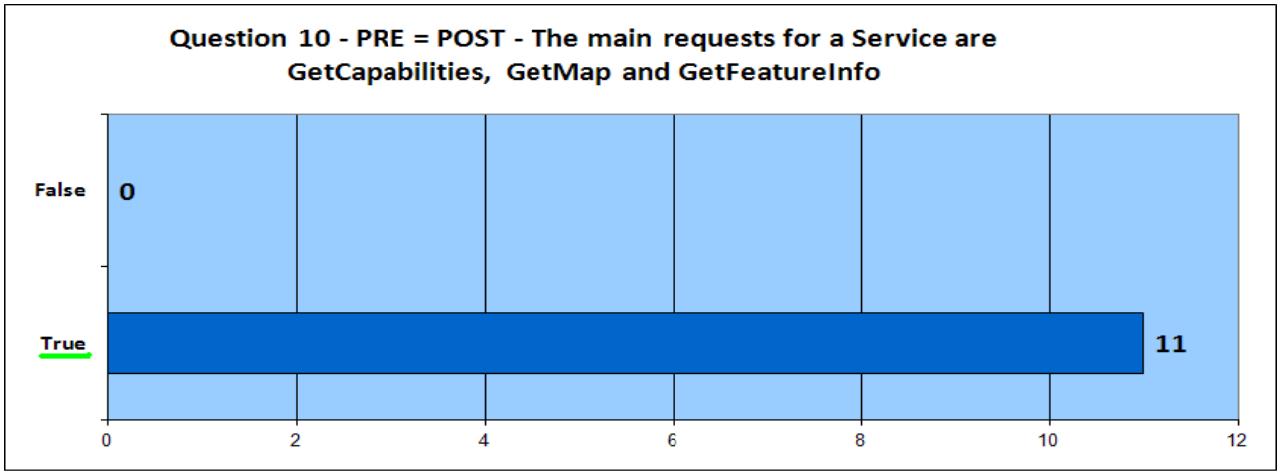

Question 6 - The datums to be used in PEGASO are ETRS89, WGS and web mercator
True
False
6
10
5
1
0
2
4
6
8
10
12
PRE
POST

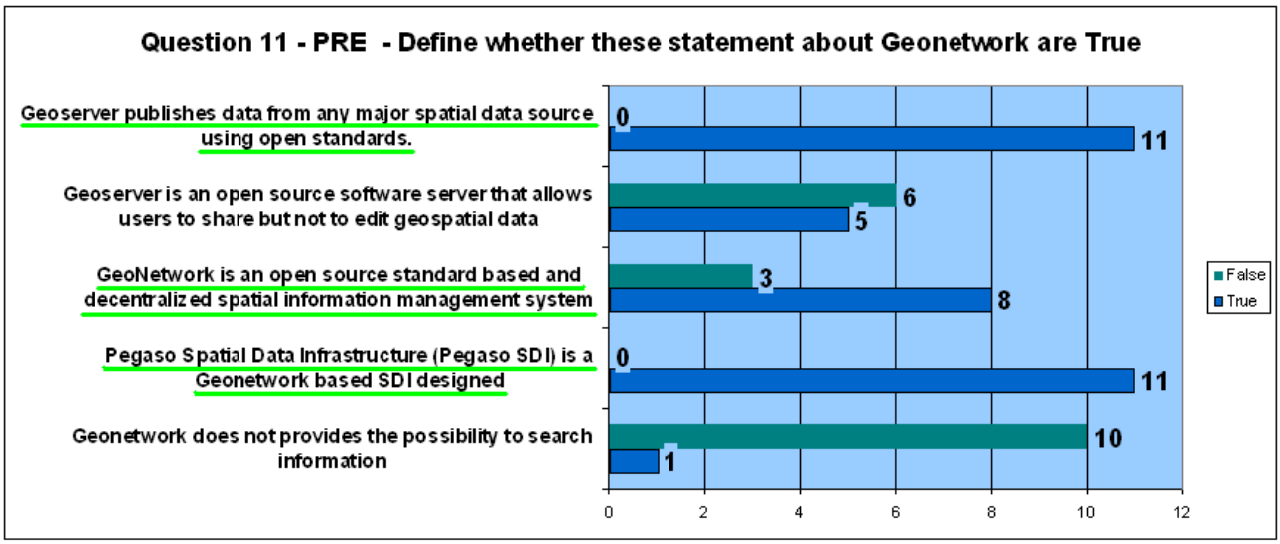

Question 7 - Interoperability
It is used to provide access to alphanumeric information
It is not used beause it is extremely complex
Means that data has to go beyond any particular community
2
0
0
9
11
PRE
POST

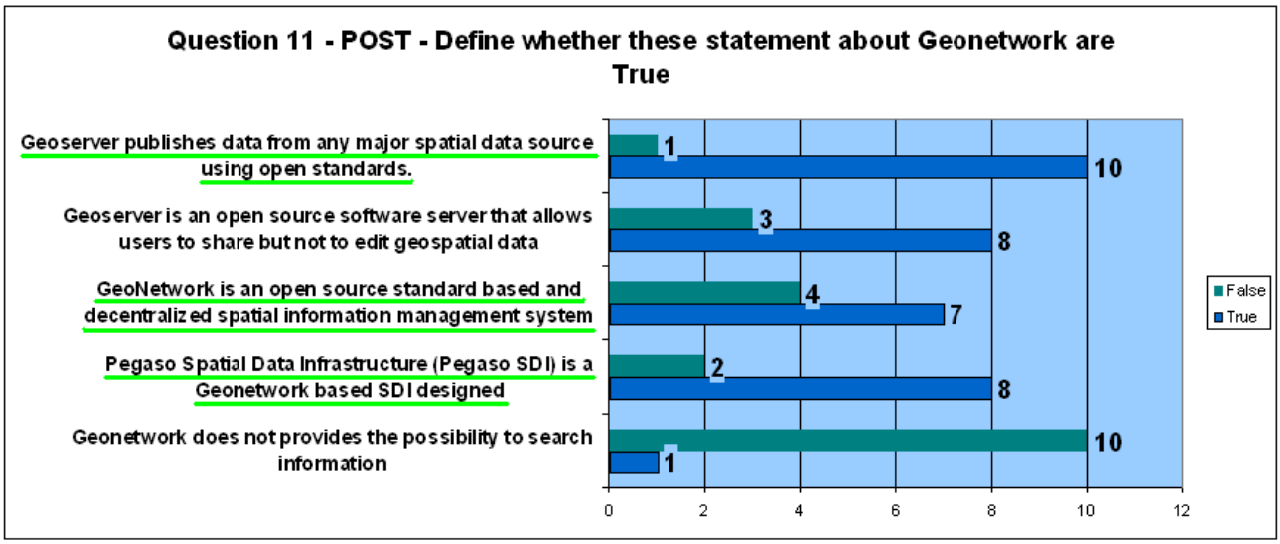

Question 8 - POST - Define whether the statement is True or False
A WCS serves raster data
A WFS allows a client to access vector datasets and raster datasets; provide access to different types of gridded data such a satellite image, orthophotos and digital elevation data
A WMS service defines a geographical representation (jpeg, gif or png files) of a geospatial datathat does not give access to the data itself
2
9
7
4
1
10
False
True
0
2
4
6
8
10
12


Question 8 - PRE - Define whether the statement is True or False
A WCS serves raster data
A WFS allows a client to access vector datasets and raster datasets; provide access to different types of gridded data such a satellite image, orthophotos and digital elevation data
A WMS service defines a geographical representation (jpeg, gif or png files) of a geospatial datathat does not give access to the data itself
2
9
4
6
5
6
False
True
0
1
2
3
4
5
6
7
8
9
10


Question 9 - What of the followings is not a OGC web service
CSW
WVS
WFS
WCS
WMS
2
10
11
PRE
POST
0
2
4
6
8
10
12

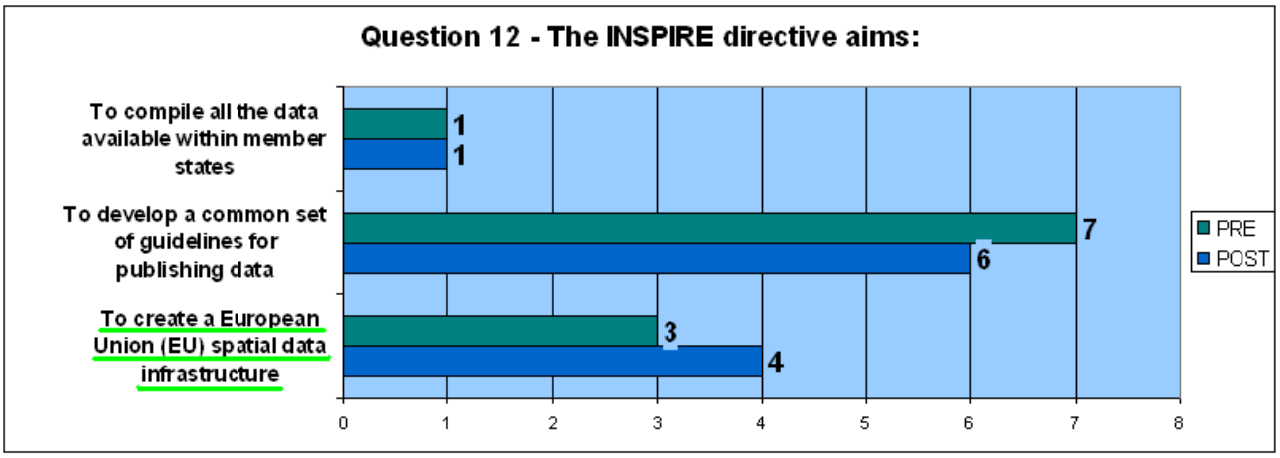


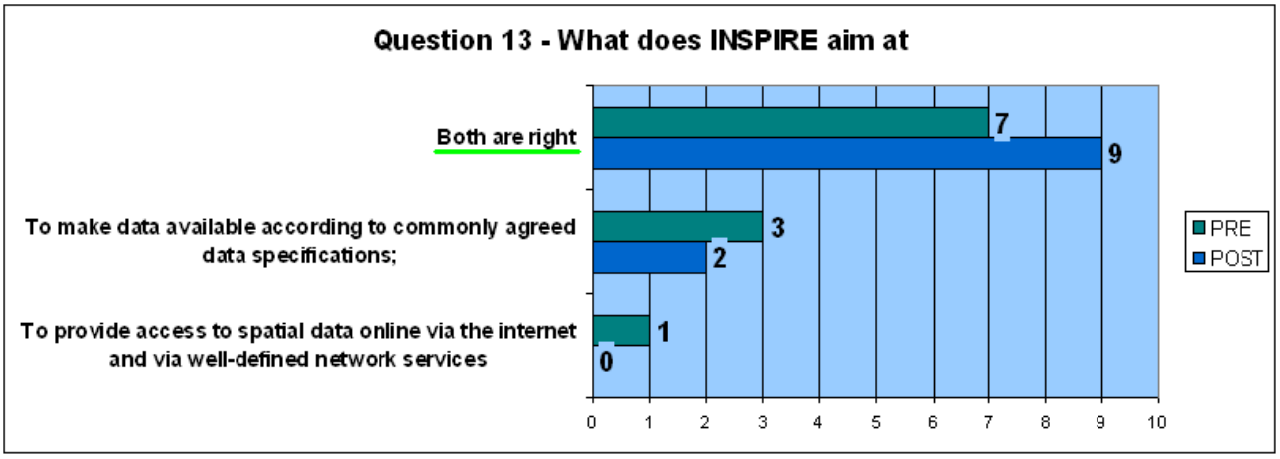



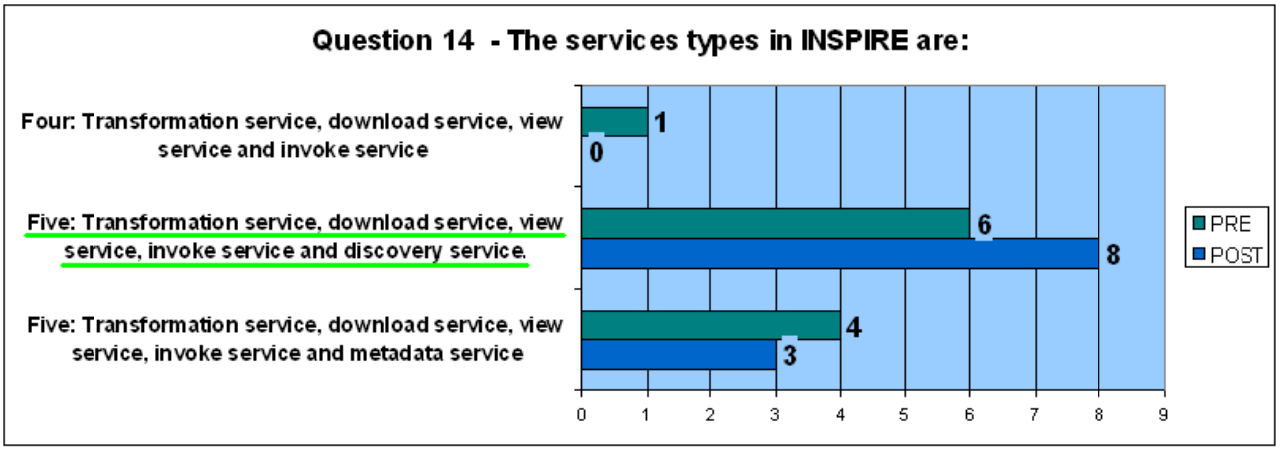



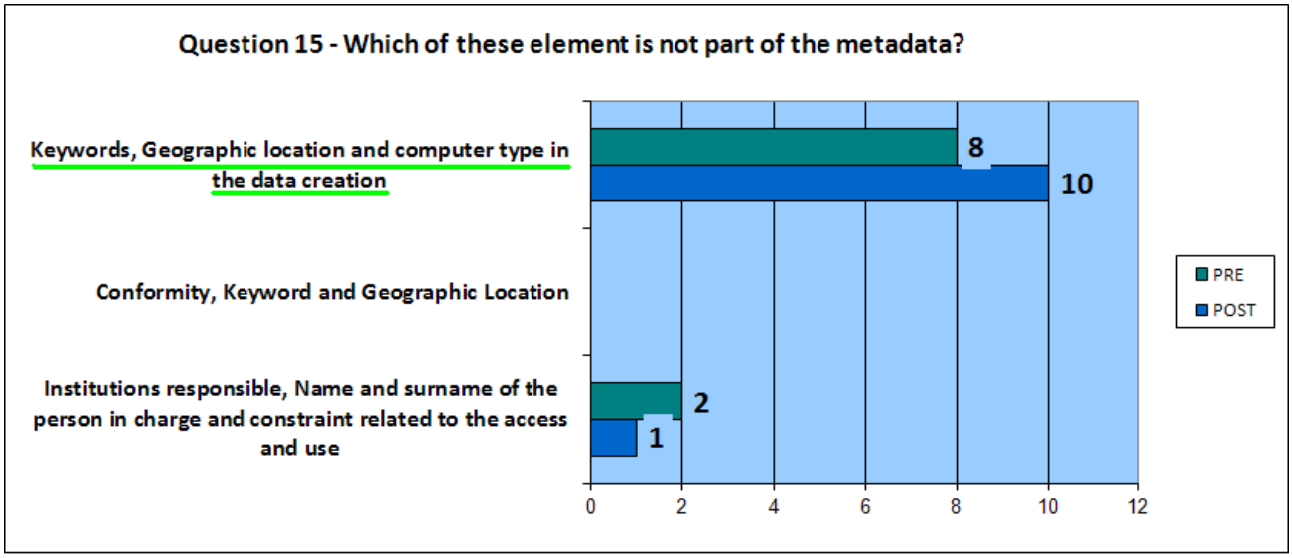

**The INSPIRE directive**

This section analyses the questions regarding the knowledge about the INSPIRE directive. The results of the evaluation shows that some of the aims of the INSPIRE directive persists to be unclear for most of the participants (Question 12). Question 13 on the other hand, shows that some aims of the Directive were clearer to the participants. The third and last question regarding types and services of the INSPIRE directive was answered correctly by the majority of the participants (with an improvements of two right answers after the course).



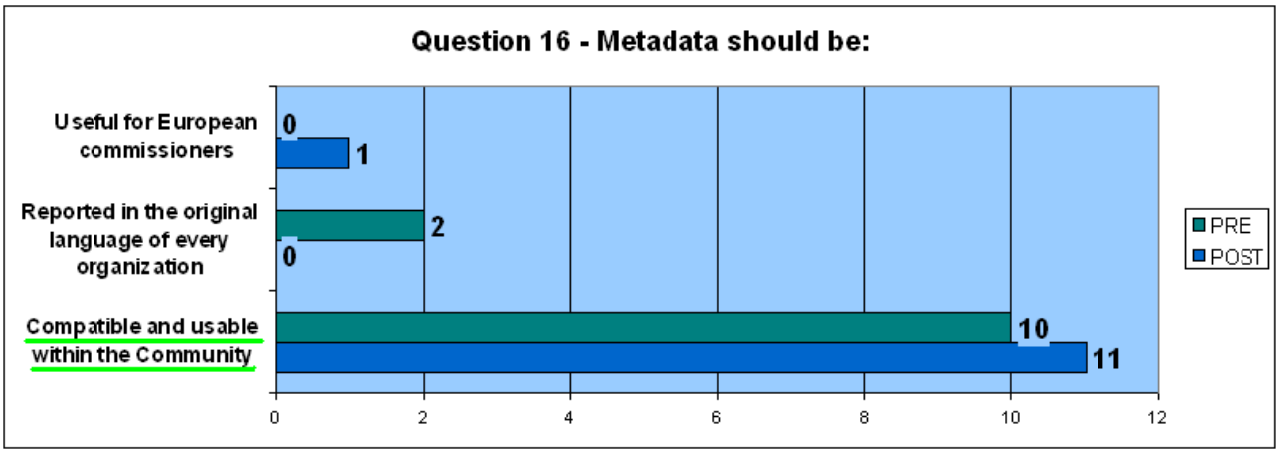



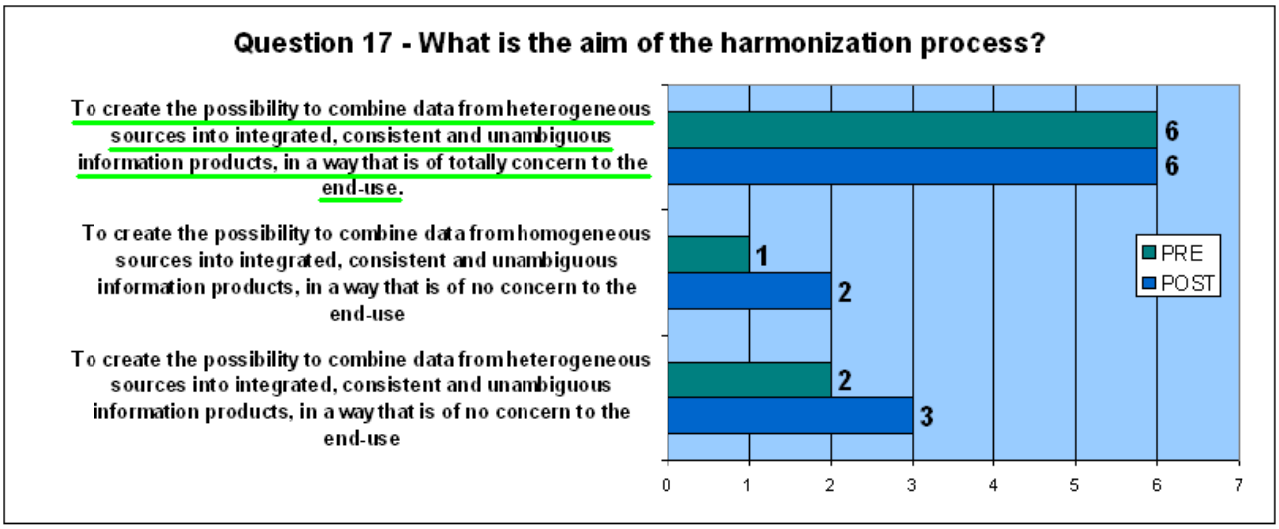



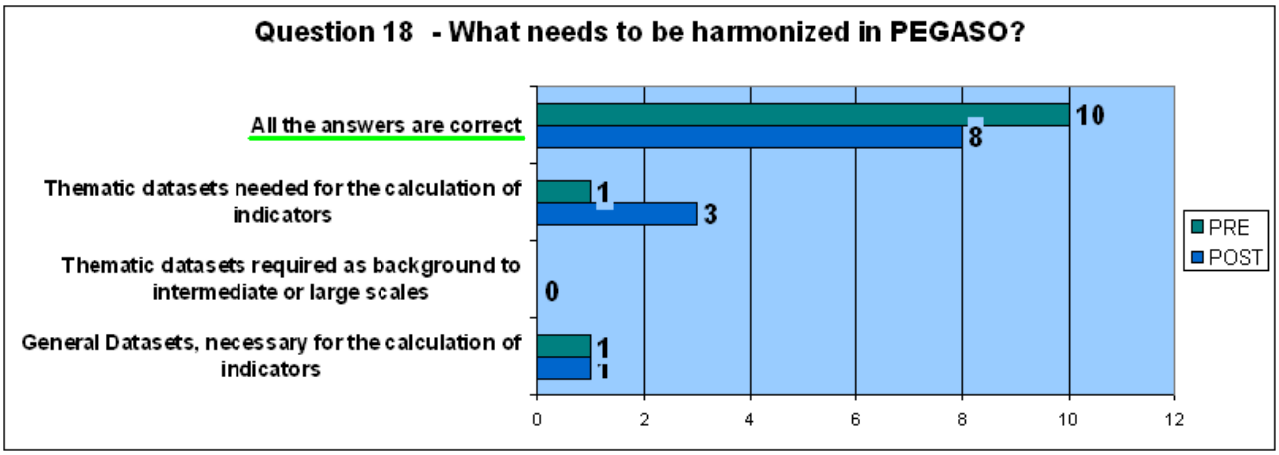


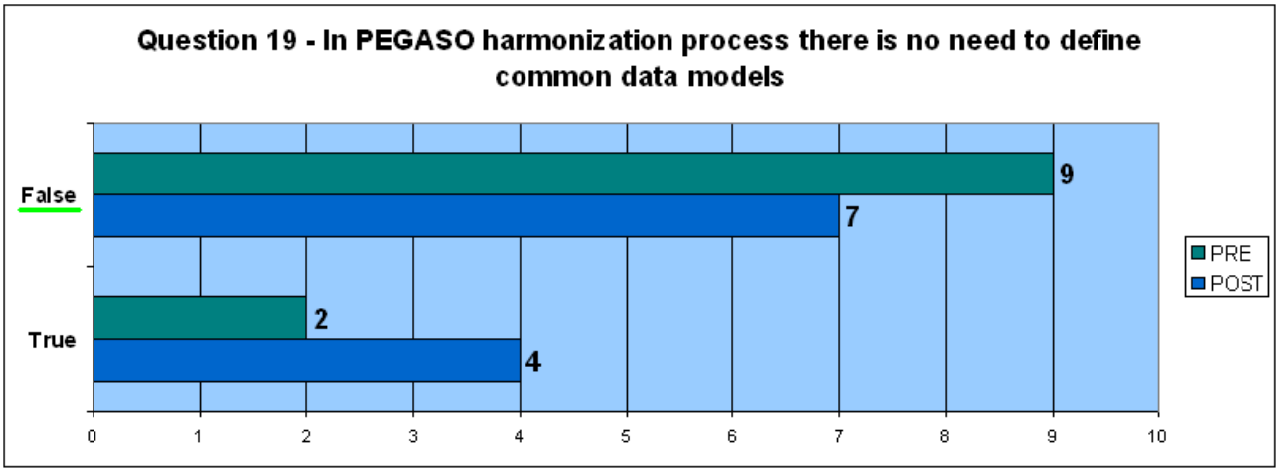

**Harmonization Process**

Also before the course, the majority of participants knew what an harmonization process is, recognized the need of it in the context of Pegaso, and recognized the elements which need to be harmonized within the project. However, the course was not able to improve the awareness of these concepts among all the participants (e.g. if before the course only two participants considered common data model unnecessary, after the course they were four).


Question 16 - Metadata should be:
Useful for European commissioners
Reported in the original language of every organization
Compatible and usable within the Community
0
1
2
0
10
11
0
2
4
6
8
10
12
PRE
POST


Question 17 - What is the aim of the harmonization process?
To create the possibility to combine data from heterogeneous sources into integrated, consistent and unambiguous information products, in a way that is of totally concern to the end-use.
To create the possibility to combine data from homogeneous sources into integrated, consistent and unambiguous information products, in a way that is of no concern to the end-use
To create the possibility to combine data from heterogeneous sources into integrated, consistent and unambiguous information products, in a way that is of no concern to the end-use
6
6
1
2
2
3
0
1
2
3
4
5
6
7
PRE
POST




Below the results of the open questions included in the PRE and Post Evaluations are presented.

Question 20: "How, in your opinion, harmonization of data can be performed efficiently?" Participants answered almost univocally (before and after the course), stressing the need to spread shared standards for data through clear guidelines.

Question 21: Do you think an SDI is a powerful tool for ICZM purposes? (choose between "yes" or "no" and explain why) Every participant except one (who changed opinion after the training) considers a SDI a powerful tool for ICZM. Motivations vary from the practical visualization of data with change detection, to the possibility of integration of many types of data, which are essential and constant issues in ICZM. The training strengthened the pre-course opinions, which became more detailed and justified. Whilst one participant, recognizing the SDI utility, highlighted the concern of the knowledge that stakeholders need to have in order to manage the SDI, another participant after the course redimensioned the SDI, judging it as only one part of a lot of tools needed for ICZM process.

Question 22: In your opinion, how the Pegaso SDI will help in the dissemination process? Participants expressed favorable comments about the relevance of the SDI in the dissemination process in Pegaso. Most of the opinions can be summarized with the statement that SDI published on web are friendly

interfaces and could be able to show the results achieved and the issues that have to be addressed to policy makers and end users in general.

## 4.3 Training post evaluation

**General assessment of the course**

The questions regarding the general assessment of the Hand's on Training show a general satisfaction of the participants (see table below).

| | YES | NO |
|---|---|---|
| Was the content appropriate? | 9 | 1 |
| Was the introduction informative? | 10 | 0 |
| Did you understand the content? | 9 | 1 |
| Appropriate level of difficulty | 8 | 1 |
| Do you think is feasible to reproduce this at your institute? | 6 | 2 |
| Was the time and length of the training appropriate? | 8 | 1 |
| Were the training facilities appropriate? | 9 | 1 |
| Do you recommend this venue for other trainings | 9 | 0 |

**How you will apply what you learned?**

The majority of the participants reported their willingness to implement a SDI or to use the information received to improve the existing ones.

**Overall rating and final comments**

Participants were finally asked to express their opinion on the course by using a scale from 1 (poor) to 5 (excellent), the below table reports the mean for each category. Two participants moreover reported the following advices in order to improve the training. In detail:

*"Better define the target public/participants and the minimum knowledge required to follow the course in order to better understand and follow the training".*
*"Less attention on the installation process because trainers are not likely to be the ones to install the software, but to create data and fill the servers".*

| | Mean |
|---|---|
| Trainers rating | 4,2 |
| Trainers methods | 4,4 |
| Overall rating | 4,6 |

# 5. MedOpen

## 5.1 Training objectives

The training aimed at improving capacities for coastal management, which will subsequently facilitate sustainable coastal development in the Mediterranean; and to get acquainted with the ICZM in general but in more detail with the ICZM Process being crucial for the implementation of pilot projects in the Pegaso CASES. The training was entirely carried out online, participants at the end of the course were asked to express their evaluation.

**Target Group:**

9 Pegaso CASES partners

**Learning Methods:** Forum discussions; Simulation Game participation; and Final Essays preparation.

**Preparatory Work:** Financing of the Course (budget); Announcement of the Course; ToRs for lecturers; ToR for the website providing agency; Update of the previous MedOpen version; Communication with / Instructions to the website providing agency; Selection of candidates; Info / Instructions to candidates and lecturers prior to the Course.

**Training Duration:** 14 May – 3 September 2012

**Lead trainer:** Mr. Yves Henocque

**Training program:**

- Sustainable development issues in the Mediterranean
- How to respond?
- Basic principles of ICZM
- The benefits of ICZM
- Who is responsible for ICZM?
- Legislative and financial framework
- Examples of introducing ICZM at the national level
- ICZM Process: How to prepare and implement ICZM projects?
- Tool box
- Good practices demonstrations
- The Protocol on ICZM in the Mediterranean
- Conclusions and ideas for future
-

## 5.2 Training post evaluation

| | YES | NO |
|---|---|---|
| Was the content appropriate? | 9 | 0 |
| Did you understand the content? | 9 | 0 |
| Was the training material relevant to your needs? | 7 | 2 |

- Question 1: “Was the content appropriate?”

All participants agreed on the pertinence of the course. The participants which motivated the answer stated that the training was well focused and sufficiently advanced.

- Question 2: “Did you understand the content?”

All participants considered the contents comprehensive. However, practical examples also for the Black Sea would be appreciated.

- Question 3: “Was the training material relevant to your needs?”

The two participants who gave a negative assessment of the training material commented that, except for the simulation game, the material was too general for practical work in the CASEs. The same remarks were present also in some comments of the participant who gave a positive assessment. Other participants who gave positive assessment commented instead that sometimes the material was too large to be read in a couple of days, and reported a lack of practical examples of implementation of ICZM programs. Three participants have been completely satisfied and reported a very focused and comprehensive material.

- Question 4: “How will you apply what you learned?”

Most of the participants reported that the course help them to frame their experiences within a comprehensive theoretical methodology.

## Trainers

| | Mean |
|---|---|
| Were the trainers effective? | 4.7 |
| Did the trainers respond to doubt? | 4.6 |

## Training methods

| | Mean |
|---|---|
| Were the material used useful? | 3.3 |
| Was the teaching methods appropriate? | 4.0 |
| Were you motivated to learn the contents? | 4.0 |
| Did you find the material useful? | 4.3 |
| Was the level of difficulty appropriate? | 7 Yes – 2 No |
| Would you recommend the course to your colleagues? | 9 Yes |

### Training administration

| | |
|---|---|
| Was the time and length of the training appropriate? | 7 Yes – 2 No |

### Overall Rating

| | Mean |
|---|---|
| What is your overall rating of the training? | 4.4 |

# 6. Conclusions

Overall all the courses organized within the framework of the Pegaso Capacity Building, as shown by the post evaluation, were appreciated by the participants and have improved their knowledge of ICZM and the tools that can support its implementation.

Moreover, valuable suggestions have been reported in order to improve future trainings. Summarized below are the main suggestions for each course.

**Participation Training of trainers' course**

Regarding the Training of trainers' course, the participants demonstrated appreciation both for the trainers and the methodology adopted. In order to improve it they suggested having more practical examples (CASEs related). Furthermore, both the trainers and the participants suggested having an advance training in the future which for lack of time and financing was not organised.

**Spatial Data Infrastructure training**

The SDI training was appreciated by the participants which demonstrated their willingness in using the information obtained and the competencies acquired in order to set up or improve SDI in their institution. This is confirmed by the Geonodes established in the Pegaso SDI Geoportal (http://pegasosdi.uab.es/geoportal/). However, participants suggest to better define the training target in order to guarantee that participants own sufficient skills and basic knowledge to smooth the execution of the practical exercises.

**MedOpen ICZM course**

The MedOpen course was appreciated by the participants, and it was suggested to have more examples and literature referring to the CASEs context. In particular, since the course is mainly based on Mediterranean experience, Black Sea CASEs asked to provide more ICZM examples including also their basin.

# Annex 1: Development of a Bayesian Belief Network (BBN) model for the issue of Artificialization of the coast of North Lebanon. Expert's Group Meeting[4]

## A. SUMMARY

This document summarizes the Bayesian Belief Network Model (BBN) workshop that was held in the contexts of the Pegaso project. It shows the results of the first experts' meeting that was held at the Institute of the Environment, University of Balamand (IOE-UOB), Lebanon on 17.09.2013. The discussions of this meeting focused on the objective of "controlling artificialization" on the coast of North Lebanon. The BBN tool was used to identify drivers and influences and their importance in "controlling artificialization". The meeting started with a short presentation introducing the Pegaso Project, and was followed by explaining the BBN Model concept and its purposes. Twenty two participants representing 16 institutions were divided into five groups composed of 4-5 individuals each and moderated by a member of the IOE-UOB. At the end, each group presented its model and a lively discussion ensued.

## B. INTRODUCTION

As part of the "Pegaso" project tasks implemented by the Marine Resources and Coastal Zone Management Program (MRCZM), Institute of the Environment (IOE), University of Balamand (UOB), a Bayesian Belief Network (BBN) was adopted as a scenario building instrument using statistical tools to infer relationships between variables.

In a coastal zone context, the BBN is used to improve the quality of decision-making in regards to the interaction between the manmade and the natural environment to study and analyze relationships between people and their environment.

In this context, a first expert meeting was held. The objective was the identification of variables and drivers in order to build a first draft of the **Bayesian Belief Network** (BBN). Roundtable discussions took place with experts on national level to debate the issue of artificialization using the BBN tool.

This report presents the BBN models developed by each group with explanation of used terminologies.

[4]The views expressed in this report were gathered from the participants and reported as such, and could not be attributed in any way, shape or form to the University of Balamand and the Pegaso Project funded by the European Commission.

## C. INVITEES

Twenty two participants representing 16 institutions were divided into five groups composed of 4-5 individuals each and moderated by a member of the IOE-UOB (Appendix I). Each group was given a copy of the topics to be discussed. Discussions within each group were moderated by an IOE team member who underwent two sessions, a training session and a role paying session. The participants enjoyed working in groups and sharing their thoughts and concerns. The results of the group discussions during the working sessions were presented in plenary and briefly debated.

## D. OPENING CEREMONY

The meeting took place on September 17, 2013 in Zakhem Glass room of the Zakhem Building, University of Balamand. (Appendix II: Agenda).

Dr. Manal. Nader[5], Senior Project Manager of the Pegaso Project, welcomed the participants to the "**Development of a Bayesian Belief Network (BBN) model for the issue of Artificialization of the coast of North Lebanon, Expert's Group Meeting"**.

In the welcome note, Dr. Nader introduced the Pegaso project. He emphasized the importance of coasts and their natural resources and described the stresses that they face like pollution, population expansion, lack of awareness on the importance of the coast for sustainable development, and the absence or weakness of planning for coastal zone management. Accordingly, he underlined the significance that cooperation between all sectors could bring to developing a strategic and sustainable plan that will ensure the rights of each sector and at the same time preserve the coast for the benefit of the Lebanese community and beyond.

Afterwards, Mrs. Manale Abou Dagher presented an overview of the UOB contribution to the Pegaso Project. The BBN method that will be used during the workshop was then briefly presented, explaining its purpose, steps towards building such models and what will be done throughout this meeting (Appendix III: Presentation).

**Session 1: Development of the BBN model-Influences**

In this first session participants had to answer the following question: *"How does this **influence** affect controlling artificialization, and how would you measure it"*

The identification of these influences had to be followed by an explanation of each mentioned term in order to better understand the group's point of view and not to bias results later on in the process. Each group had to identify up to six or seven main influences. Discussions had to consider the relationship between these influences and "controlling artificialization" indicating how strong these relationships are

[5]Director of the Institute of the Environment (IOE), who is also Director of the Marine Resources and Coastal Zone Management Program (MRCZM)

in term of low, medium or high influence. Also, participants had to propose means to measure the identified influence.

**Session 2: Development of the BBN model-drivers**

In this first session participants had to answer the following question: *"How does this **driver** affect the influence for controlling artificialization and how would you measure it"*

The identification of these drivers had to be followed by an explanation of each mentioned term in order to better understand the group's point of view and not to bias results later on in the process. Each group had to identify up to six or seven main drivers and draw the 20 most important connection arrows. Discussions had to consider the relationship between these drivers and influences indicating how strong these relationships are in term of low, medium or high impact. Also, participants had to propose means to measure the identified driver.

## E. BBN EXPERT MEETING OBJECTIVES

The objectives of building the BBN model were to:

- Study each component of the "artificialization" issue from bio-physical, economic and social perspectives and address it in a fashion understandable to decision-makers.
- Use a tool that helps in the representation of relationships between variables even if they comprise uncertainty. The BBN meets such an objective since it is a scenario building instrument using statistical tools to infer relationships between variables.
- Identify the drivers and the afferent variables of the chosen objective: "Controlling artificialization".

The development of the BBN model is usually carried-out in four steps:

**Step 1:** Expert meeting for the identification of variables and drivers in order to build a first draft of the BBN.

**Step 2:** Translation of the BBN into a questionnaire in order to determine states and probabilities for each variable/driver. The questionnaire is then sent online to the attendees of the first expert meeting for pilot testing. Experts will be solicited to provide comments on the questionnaire if any.

**Step 3:** Production of the final form of the questionnaire after addressing all the comments of the experts and analyzing the answers in order to evaluate the appropriateness of the questions. The final form of the questionnaire will be sent to all concerned stakeholders on national level for completion.

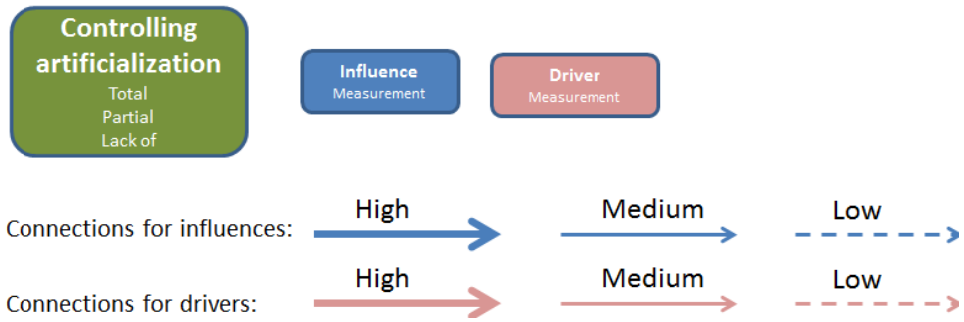
**Step 4**: Results of the questionnaire at national level will be represented in a complete BBN with measurements, and introduced to stakeholders in a large workshop.

Consequently, this meeting is the first step in building the BBN model.

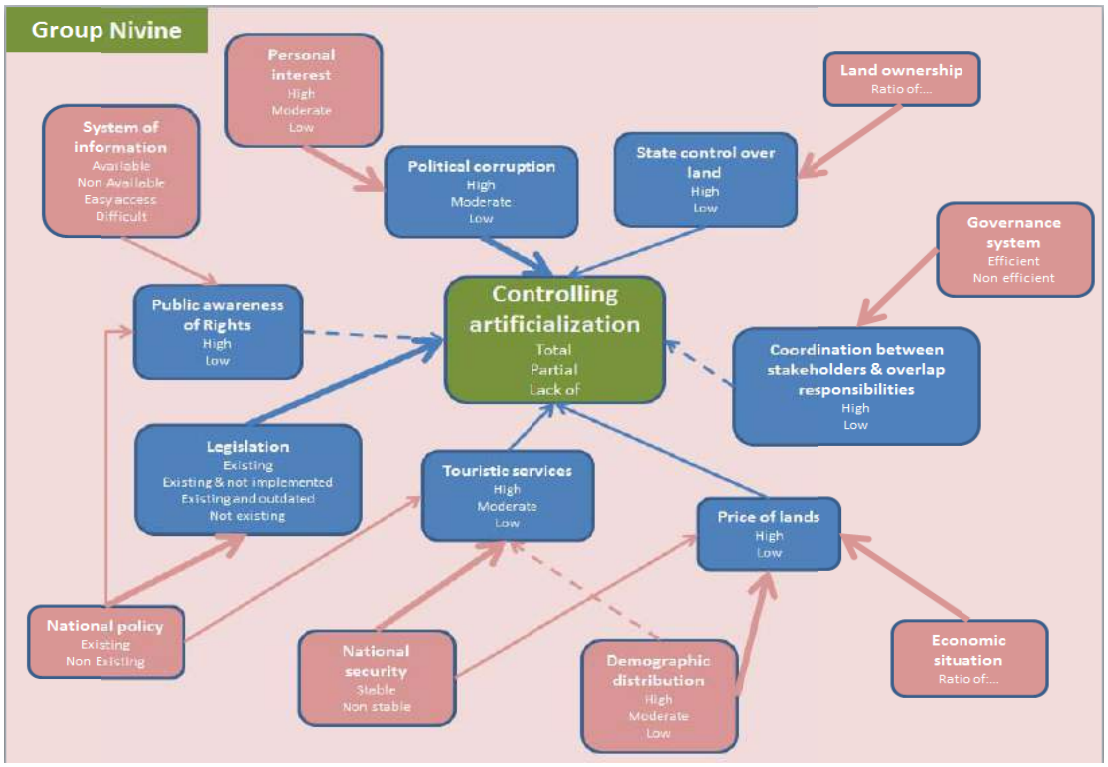
## F.RESULTS OF THE WORKING SESSIONS

Groups were named according to the IOE Moderators that were coordinating discussions in each group (Appendix IV: Photographs).

The following figure represents the legend used in the BBN Models below:




**Group Nivine:**



Definition of the Influences by participants:

**State control over land:** having more public lands gives us more opportunity to control artificialization.

**Touristic services:** tourism oriented towards resorts (building marinas and sea filling); the more we have touristic services the harder to control it.

**Legislation:** good governance will lead to more/better control.

**Political corruption**: caused by personal interest.

**Price of Lands**: it will make it more difficult to control artificialization.

**Public awareness of rights:** it puts pressure on decision making.

**Coordination between stakeholders & overlap of responsibilities:** stakeholders could be public or private; it influences the efficiency of decision making & implementation.

Definition of the Drivers by participants:

**National policy:** strategic planning; it is a source of legislation; entails decentralization.

**Demographic distribution:** density of population.

**Economic situation:** demand and supply; real estate market.

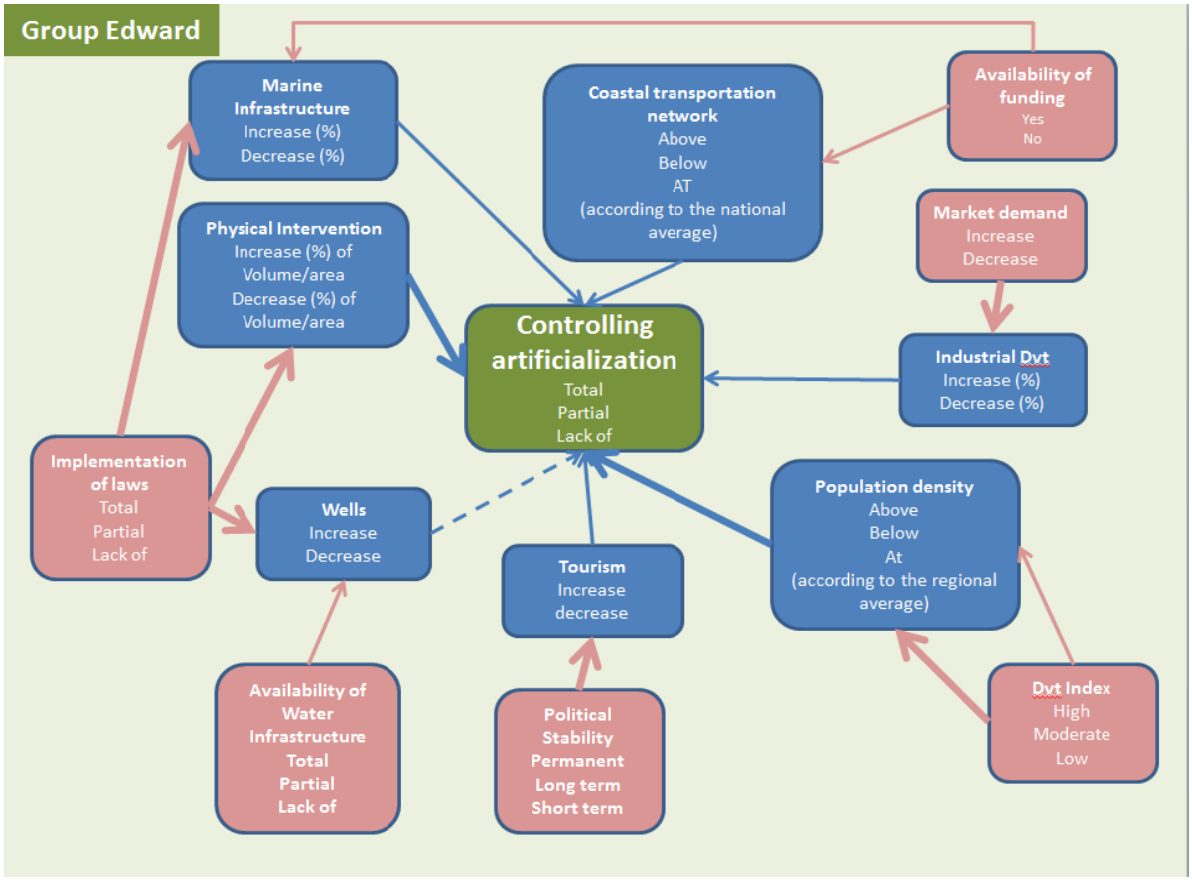
**National security:** armed conflicts and wars.

**Governance system:** type of governance/ organizational structure.

**Personal interest:** financial or political gain.

**System of information:** availability and access to information affect public awareness of rights.

**Group Edward:**




Definition of the Influences by participants:

**Industrial development:** number of new establishment.

**Physical intervention:** intervention on the natural landscape (Quarries, Sand dredging).

**Coastal Transportation network:** length of roads (km).

**Population Density:** number of people/km$^2$**.**

**Tourism:** number of new resorts.

**Wells:** number and depth of wells newly dug/year.

**Marine infrastructure:** number of ports (commercial, industrial, fishermen, military).

Definition of the Drivers by participants:

**Political Stability:** absence of armed conflict.

**Development Index:** human development index.

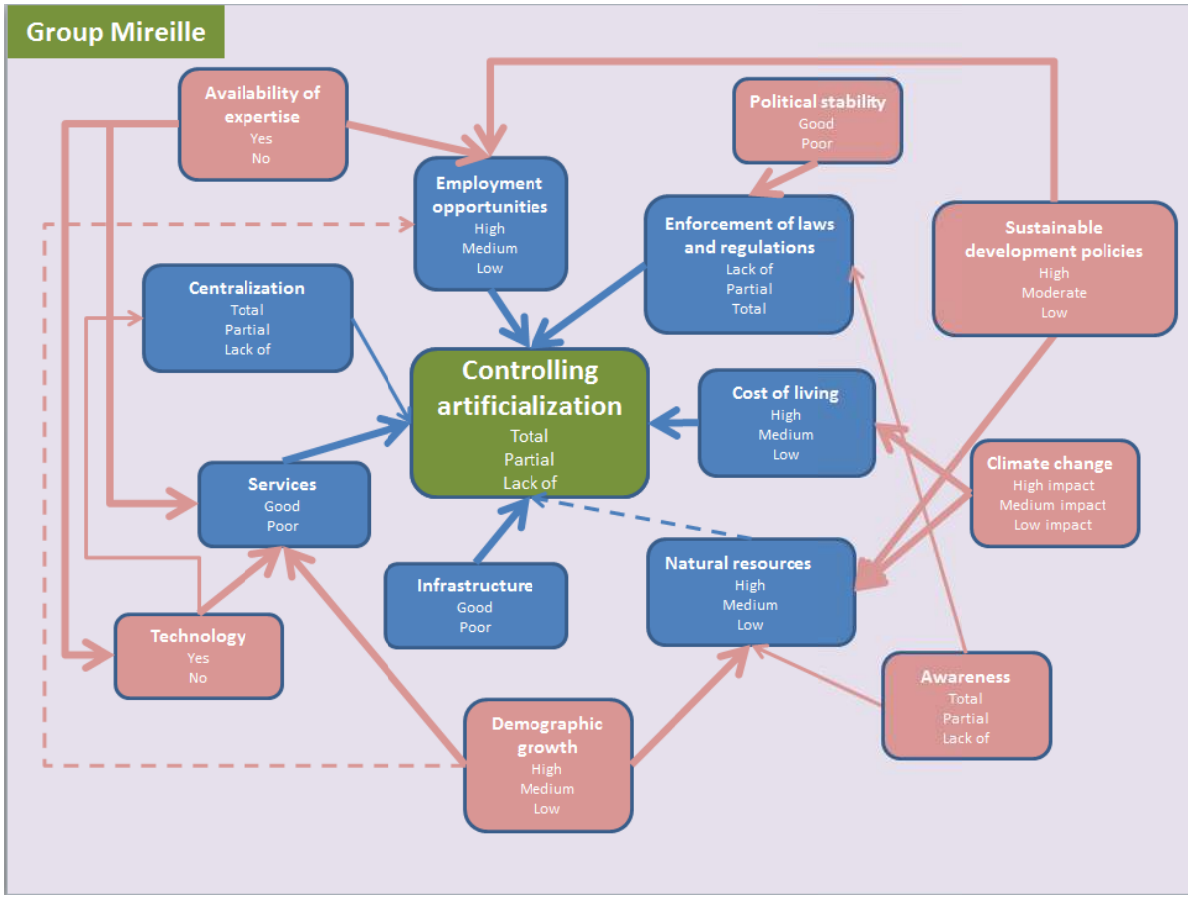
**Market demand:** demand of industrial products.

**Availability of funding:** insure funds (money).

**Availability of water infrastructure:** supply pipes, water waste infrastructure.

**Implementation of laws:**application of laws.

**Group Mireille:**




Definition of the influences by participants:

**Enforcement of laws and regulations:** regulation of urban planning, industrial zoning, touristic activities, investments…

**Employment opportunities:** presence/lack of opportunities for economic development projects.

**Infrastructure:** road system, water network, sewage system, electricity, heating.

**Cost of living:** cost of fuel, real estate, food…

**Services:** hospitals, schools, public institutions, universities, recreational activities, syndicates… (impacting quality of life).

**Natural resources:** availability/or lack of natural resources or reduction/depletion along the coastline.

**Centralization:** distribution of, presence/or lack of public and private organizing bodies/services.

Definition of Drivers by participants:

**Demographic growth:** increase in population size.

**Technology:** technological development that affects the quality of services, decentralization and infrastructure.

**Sustainable development policies:** effectiveness of strategies and programs (social, economic and environmental).

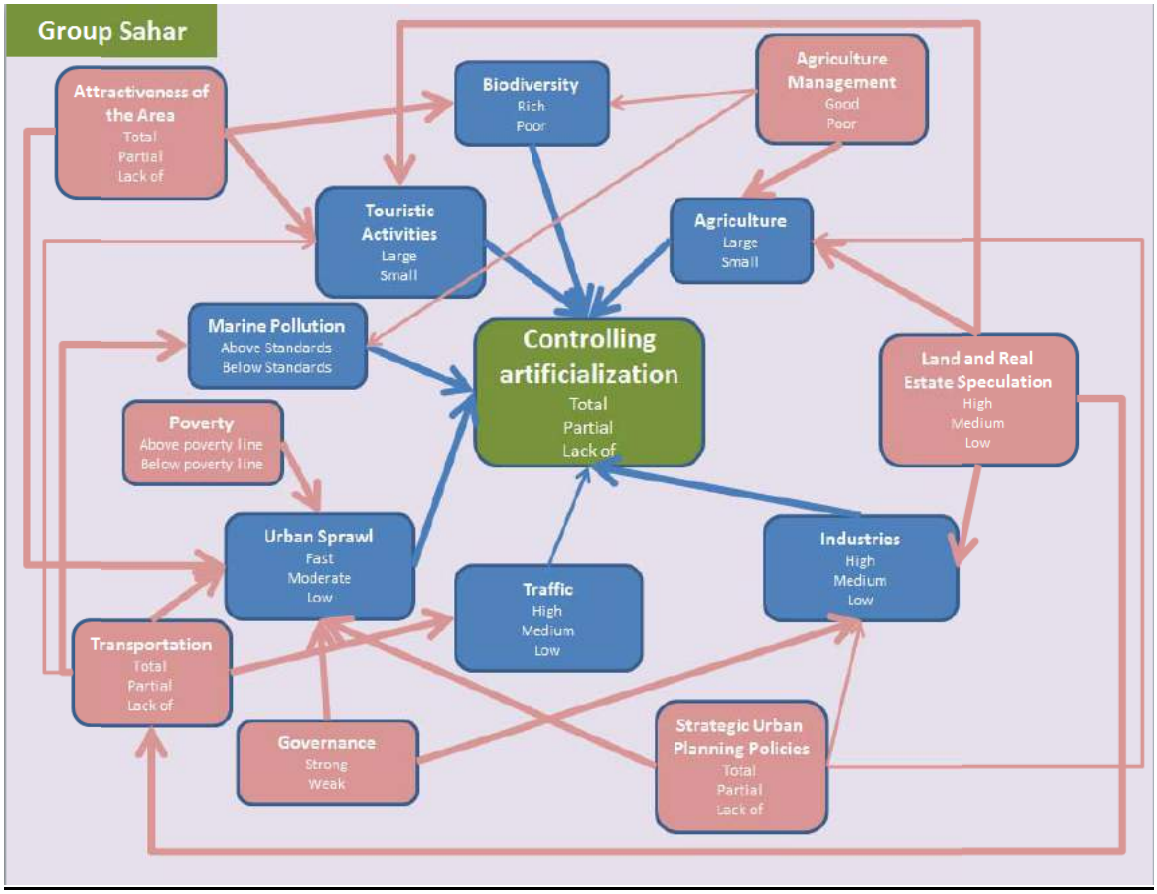
**Political stability:** security, factors affecting priorities of the government and its strategies.

**Awareness:** (about sustainability) environmental, social and economic.

**Climate change:** natural disasters emerging from climate change.

**Availability of expertise:** retention/lack of qualified services providers.

**Group Sahar:**




Definition of Influences by participants:

**Population Growth:** number of residents (comparison between previous period and current situation).

**Marine Pollution:** contamination of sea water.

**Urban Sprawl:** expansion of built-up areas at the expense of natural areas.

**Biodiversity:** indicator species (vulnerable species) present in the coastal zone area.

**Tourist Activities:** developed recreational areas but not accessible to general public.

**Traffic:** flow of vehicles in the coastal area per period of time.

**Industries:** existing and new industries in the coastal area.

**Agriculture:** arable areas that are, and could be, exploited for agriculture.

Definition of Drivers by participants:

**Governance:** methods and tools to govern territories including decentralization, institutional and regulatory framework, coordination among decision-makers at all levels (local, regional, national).

**Transportation:** transportation activities that include port activities, public transportation, and road infrastructure.

**Land and Real Estate Speculation:** demand for land and real estate along the coastal zone.

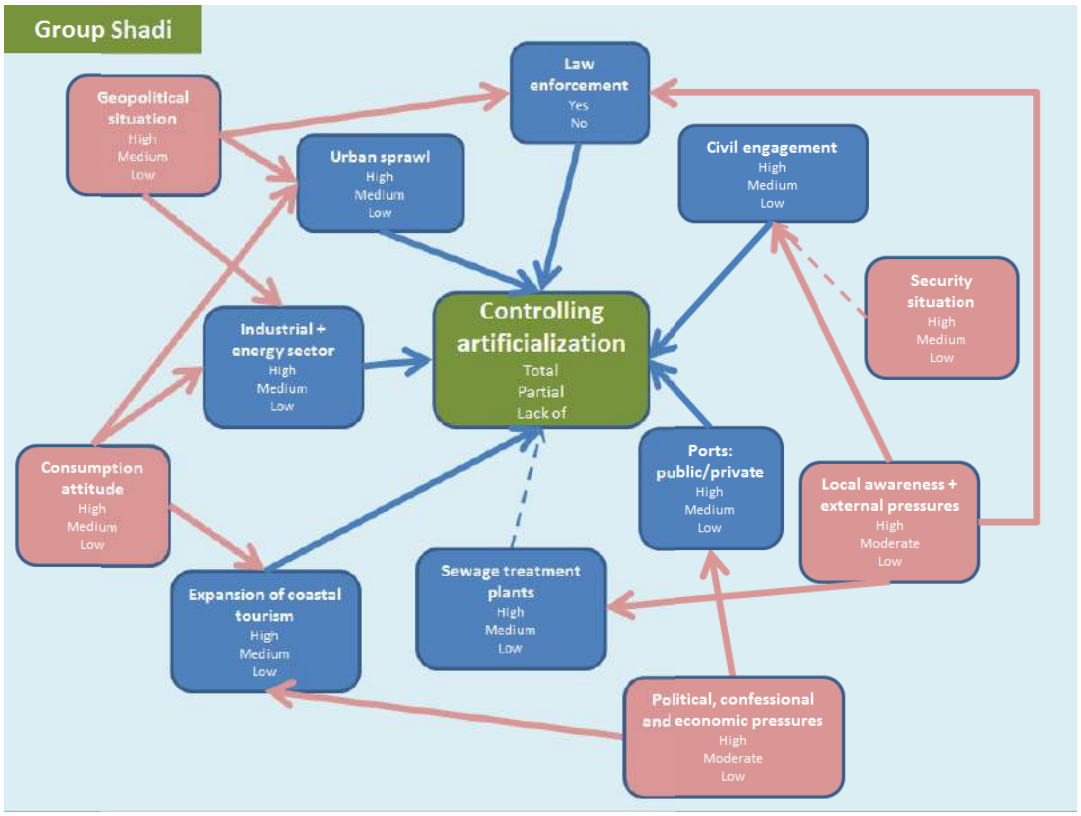
**Poverty:** living conditions below standard (cannot cover basic needs).

**Attractiveness of the Area:** natural landscapes available or accessible for exploitation to gain economic or financial revenues.

**Strategic Urban Planning Policies:** participative policy planning and developing coastal areas through the involvement of stakeholders at all levels.

**Agriculture Management:** current practices and trends in the agriculture sector (willingness and investments).

**Group Shadi:**



Definition of Influencesby participants:

**Civil engagement:** involvement and engagement of civil society in decision making processes and implementation.

**Urban sprawl:** control and planning.

**Industrial + energy sector:** organization of industrial sprawl including existing power plants, fuel depots and future expansions (gas pipelines, gas liquefaction plants).

**Expansion of coastal tourism:** uncontrolled and unplanned building of resorts along the sea side and related infrastructure.

**Law enforcement:** enforcement, updating of existing laws and effectiveness of municipalities.

**Sewage treatment plants:** building plants will affect artificialization.

**Ports (public/private):** number of ports along the coast of Lebanon, planning and construction.

Definition of Drivers by participants:

**Geopolitical situation:** refugees from surrounding countries + political pressure from abroad.

**Security situation:** uncertain security is leading to unplanned alternatives.

**Consumption attitude:** Lebanese have evolved into a highly consumptive society.

**Local awareness + external pressures:** raising community awareness (through education and media), experience gained abroad + influence from regional entities.

**Political, confessional and economic pressures:** pressure groups affect establishing new ports.

## G.CONCLUSION:

The discussions held, and the ensuing results presented, by the groups at the workshop clearly showed that all participants understood the BBN Model concept and were able to define the influences and drivers of the issue in question. In addition, they all appreciated being introduced to a new participatory technique that can be easily implemented for any issue of concern. All stated that they will be looking forward to the final results of the exercise to evaluate how such results can be used to influence decision-making processes for the issue of “Controlling artificialization” on the coast of North Lebanon.

The next steps of this activity will be to develop, then to send, the questionnaire to the participants for pilot testing to produce the final questionnaire that will be sent to stakeholders at national level.

## Appendix I: List of attendees

| Name | Title | Company / Institution | Phone Number |
|---|---|---|---|
| Charbel Salloum | Architect | Ministry of Industry | 03-709142 |
| Dr. Chadi Al-Hajal | Judge | Ministry of Justice | 03-484353 |
| Samir Majdalani | Mr. | Ministry of Agriculture | 03-384421 |
| Stefano Lelli | Mr. | National Council for Scientific Research, Lebanon | 70-953537 |
| Dima Homsi | Engineer | Urban Community (Al-Fayhaa) | 03-424330 |
| Doha El Benni | Engineer | Urban Community (Al-Fayhaa) | 03-550698 |
| Jaudat Abou Jaoude | Seinor Architect | Council for Development and Reconstruction, Lebanon | 03-346890 |
| Roula Al Daia | Assistant Professor | UOB | 03-152726 |
| Riad Al-Chami | Hardware and Network Manager | Ministry of Public Health | 03-533986 |
| Karim Shaar | Student / Communications Officer | SPNL | 03-773463 |
| Nour Masri | Project Manager | UNDP – MOE | 01-976555/445 |
| Nathalie Karam | Environmental Specialist | UNV – MOE | 70-147755 |
| Ralph Salaweh | Geologist | MOE | 76-777696 |

| | | | |
|---|---|---|---|
| **Rita Chedid** | **Economic Urban Planner** | **MAJAL/ALBA** | **03-631643** |
| **Rana El-jamal** | **Avocat / Lawyer** | **Bar Assosiation (North)** | **03-040184** |
| **Absel Rahman Hajar** | **Engineer** | **Port of Tripoli** | **03-861657** |
| **Dima Merhaby** | **Environmental Expert** | **Port of Tripoli** | **70-156735** |
| **Rouba Mecsaci** | **Environmental Expert** | **Port of Tripoli** | **70-338281** |
| **Rana El - Hajj** | **Program Coordinator** | **IFT / AUB** | **03-404625** |
| **George Mitri** | **Program Director** | **IOE / UOB** | **03-330695** |
| **Mohammad Awad** | **Researcher** | **CNRS** | **03-689867** |
| **Aurare Assaker** | **Ph D Student** | **CNRS** | **03-734801** |

## Appendix II: Workshop Agenda / Program

"People for Ecosystem-based Governance in Assessing Sustainable development of Ocean and coast, PEGASO" Project

**Development of a Bayesian Belief Network (BBN) model for the issue of Artificialization of the coast of North Lebanon**
**Expert's Group Meeting**
**UOB Main Campus-El Koura-Lebanon Zakhem Building, Exhibition Hall**

| Tuesday September 17, 2013 | Agenda |
|---|---|
| | **Opening** |
| 09:00 – 09:30: | Registration & Coffee |
| 09:30 – 09:45: | Welcome and overview of the PEGASO project |
| | **Session I** |
| 09:45 – 10:15: | Description of the BBN model |
| 10:15 – 11:15: | Development of the BBN model: variables |
| 11:15 – 11:30: | Coffee Break |
| | **Session II** |
| 11:30 – 12:45: | Development of the BBN model: drivers and geographical context |
| 12:45 – 13:15: | Presentation of the results |
| 13:15 – 13:45: | Closing Remarks + Q&As |

***Lunch***

## Appendix III: Presentation

# North Lebanon Coastal Zone CASE-PEGASO project

Experts meeting-September 17, 2013

## Pegaso project

- Project full title: People for Ecosystem-based Governance in Assessing Sustainable development of Ocean and coast
- Call: FP7- ENV.2009.2.2.1.4 Integrated Coastal Zone Management
- Specific Program: FP7 Collaborative Projects - Large scale integrating project
- Grant agreement no: 244170
- Start Date: 01/02/2010
- End Date: 31/01/2014
- Project coordinators: Universitat Autonoma De Barcelona
- Partners: 25 institutions (Mediterranean and Black Sea)

www.pegasoproject.eu

## The Project

MEDITERRANEAN SEA
ICZM Protocol
Entered into force the 24 March 2011

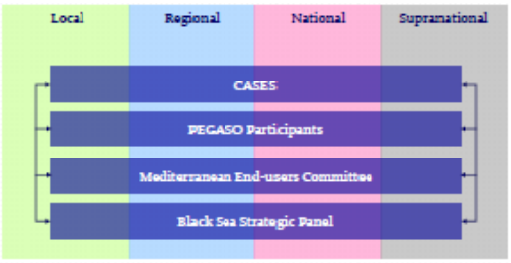
The Black Sea
is also interested in developing a similar juridical instrument

The main objective of PEGASO is to give support to these 2 ICZM processes within an ecosystem based framework

MAIN ACHIEVEMENTS

- Ecosystem based-ICZM Human platform
- Technical support for exchange and communication within the platform
- Toolbox for assessment (indicator, Ecosystem accounts on land and sea, participative scenario...)
- Construction of a Mediterranean SDI (Spatial Data Infrastructure) to share data among the network building the basis for a Mediterranean Atlas

## PEGASO: the ICZM Governance platform




*Since October 2011 (Dubrovnik Mtg): All NFPs of the ICZM Protocol are users of PEGASO*

## Pegaso CASES

Objective: To test and validate the assessment tools at regional and local scales to understand both global and cumulative local trends and how they interact in specific coastal and marine regions.

The total 10 PEGASO CASES:

- Aegean Sea Islands, Greece
- Al Hoceima coast, Morocco
- Bouches de Rhône, France
- Dalyan-Köyceğiz Specially Protected Area, Turkey
- Danube Delta, Romania
- Guria Coastal Region, Georgia
- Nile delta, Egypt
- North Adriatic Sea, Italy-Slovenia-Croatia
- North Lebanon Coastal Zone, Lebanon
- Sevastopol Bay, Ukraine

## North Lebanon Coastal Zone (NLCZ) CASE

- The study area presents a diversity of issues and conflicting uses from an economic, social, political, regulatory and ecological perspectives
- Activities are expected to build on the achievements of the IMAC project (www.balamand.edu.lb/imac) that resulted in developing a strategy to manage the NLCZ
- Lebanon CASE will benefit from the PEGASO project toolbox (including LEAC tools, socio-economic tools, scenario building tools and indicators)
- NLCZ adopted several coastal issues:
  - Urban sprawl/artificialization
  - Erosion
  - Impacts on fisheries

## WP5 - CASE: NLCZ

Deliverables:
- Coastal vegetation map
- Updated Land use map
- Coastal evolution map
- Currents and wave description
- Bathymetry
- Granulometric analysis
- Analysis of fisheries data

Ongoing Activities:
- A document addressing artificialization of the North Lebanon Coastal Zone
- Calculate indicators for the adopted issues from the toolbox
- Contribute to the SDI/Geonodes
- Establish the Coastal Forum
- **Use the BBN as tool to build different scenarios**

## Artificialization

- This process happens every time Man transforms the space according to its needs and resource availability.
- Most of Lebanon's population and its activities are concentrated on the Coastal Zone.
- The artificialization of the coastal zone in Lebanon reached more than 2,27 ha of the total surface of coastal cadastral units between 1998 and 2010*.
- Consultation of stakeholders, in many occasions, showed that artificialization is one of the most important priority issues to be addressed in the NLCZ (IMAC, 2009).

*UNEP-Ministry of Environment, 2013 (to be published): analysis of the current land use and socio-economic activities in the coastal zone report of the Environmental Resources Monitoring in Lebanon project

## Bayesian Belief Network (BBN) Model

Experts meeting-september17 2013

## What is Bayesian Belief Network (BBN) ?

- Probabilistic graphical models, widely used for knowledge representation and reasoning under uncertainty in natural resource management.
- Scenario building instrument
- Using statistical tools to infer relationships between variables.
- Helps improving the quality of decision-making in regards to the interaction between the manmade and the natural environment.
- Requires the identification of one "objective" its afferent "influences" and their "drivers".

## How to develop a BBN?

1. Conceptual model including the objective, influences and drivers
2. Measuring influences and drivers through probability calculations
3. Parameterization of the model
4. Building scenarios

## BBN model for the NLCZ (1/2)

Identified objective: **controlling artificialization** of the coast.

- **Step1: Expert meeting for the building of the BBN conceptual model**
- Step 2: Transforming the BBN model into a questionnaire. Sending the questionnaire to YOU for comments and pilot testing
- Step 3: Producing the final form of the questionnaire and sending it to all stakeholders on national level

Some definitions

# Annex 2: Bayesian Belief Network Study for Köycegiz – Dalyan SPA

This document reports the BBN study carried out in Köycegiz – Dalyan SPA with the theme of Preserving and Enhancing Natural Capital. Three workshops were organized with the stakeholders for the BBN study. The first BBN meeting took place on 6 November 2013 in Dalyan and it was attended by 38 local stakeholders. The second meeting was organised on 17 December 2013 with 19 stakeholders and local media members and the last on 7 January 2014. The affiliations of the participants of the three BBN workshops are listed in the Table 1.

**Table 1: Participants of BBN workshops**

| **Institute / Organization** | **Participants (06.11.2013)** | **Participants (17.12.2013)** | **Participants (07.01.2014)** |
|---|---|---|---|
| Governorate of Mugla Province | - | - | - |
| Sub governorate of Köycegiz | - | - | - |
| Sub governorate of Dalyan | - | - | - |
| Köycegiz Municipality | - | - | - |
| Dalyan Municipality | 3 members of the city council, 1 environmental engineer, 1 officer | - | 1 municipal security officer |
| Provincial Directorate of the Ministry Environment and Urbanism | - | - | - |
| UNDP | - | Field supervisor | - |
| Göcek Port Authority | - | 1 officer | 1 officer |
| Mugla University | - | - | - |
| Turkish Marine Environment Protection Association | Ortaca representative | - | - |
| Sea Turtle Research, Rescue and Rehabilitation Centre | - | - | - |
| Kaptan June Sea Turtle Conversation Foundation | 3 members | The president and 3 member | 1 member |
| DALKO - Dalyan Fisheries Cooperative | - | - | - |
| Dalyan Motor Boat Transport Cooperative | - | - | - |

| | | | |
|---|---|---|---|
| Dalyan Association | The president and 2 member | - | 1 member |
| Nature and Animal Protection Association | 3 members | 1 member | 2 member |
| Mediterranean Development Association | The president | The president | - |
| Dalaman Environment and Tourism Association | The president | The president | The president |
| The Turkish Foundation for Combating Soil Erosion for Reforestation and the Protection of Natural Habitats | - | - | 1 Mugla province representative |
| Private sector | 1 hotel owner, 3 hotel managers | - | 1 hotel owner |
| Local Media | 1 member | 3 members | - |
| Local people | 15 local people | 7 local people | 4 local people |

The first BBN session was held right after the general stakeholder meeting, in which the progress of the Köycegiz – Dalyan SPA CASE study was presented and the current situation of the Dalyan and environs was discussed. After this review session, the elements contributing the natural capital of Köycegiz – Dalyan SPA were identified by the participants through a collaborative approach (Fig 1) and 19 contributing elements were defined.

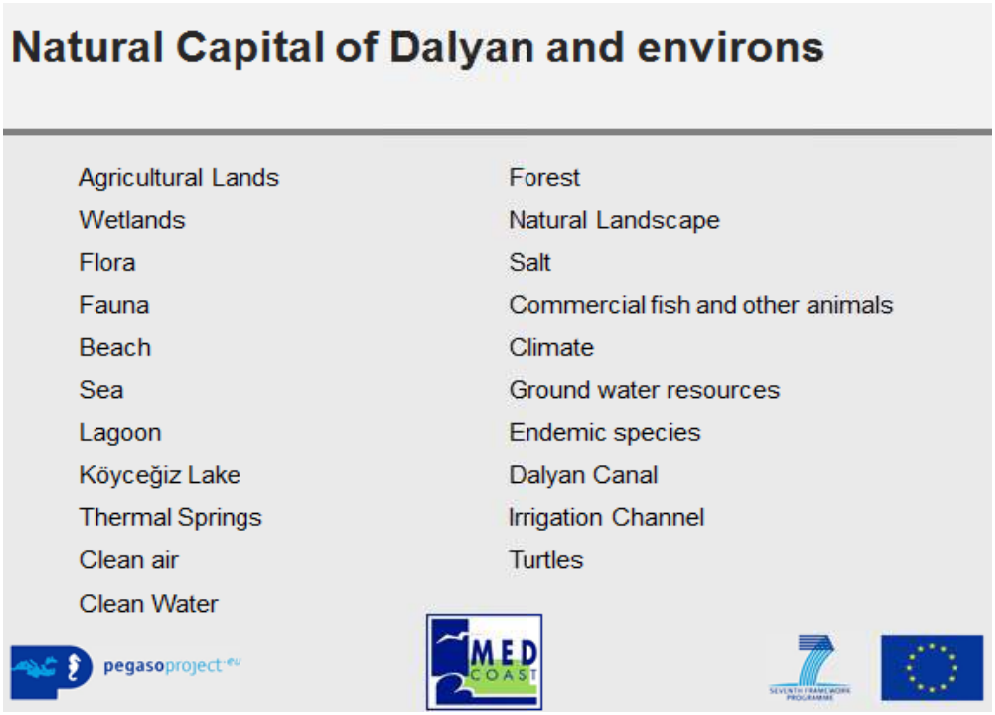



**Fig 1:** Identified elements contributing Natural Capital of Dalyan and environs.

This was followed by identifying the negative impacts on the elements and the variables that cause them. As the first step, participants were asked to suggest how the impacts and variables were related (Fig 2). At this part of the meeting, causal relationships were discussed and identified between the variables and the impacts (Table 2, Fig 3).

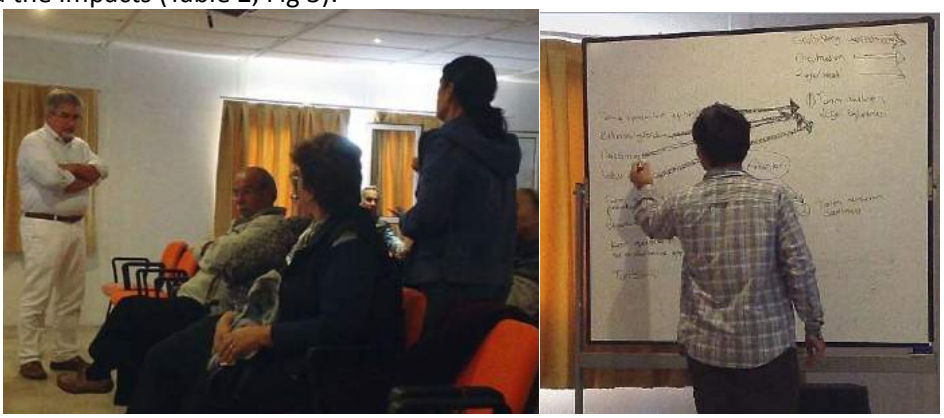


**Fig. 2**: The causal relationships between the variables identified by the participants.

**Table 2:** Elements contributing to Natural Capital, impacts, and variables

| **Elements contributing to Natural Capital** | **Impacts** | **Variables** |
|---|---|---|
| Agricultural Lands | • Deterioration of the quality of agricultural lands<br>• Decrease in the agricultural land quantity | • Improper use of fertilizers<br>• Excessive use of chemicals<br>• Wild irrigation<br>• Conservation policies of the State and legal regulations<br>• Urban sprawl on agricultural land<br>• Increase of tourism activities<br>• Educational level of agricultural workers |
| Sea<br>Lagoon<br>Wetland<br>Dalyan Canal<br>Köycegiz Lake | • Water quality deterioration<br>• Damage on ecosystems<br>• Degradation of landscapes<br>• Areal losses | • Existence of fish farm<br>• Boat traffic along the Canal<br>• Agricultural activities<br>• Urban growth<br>• Recreational use |
| Fishery<br>Fauna<br>Vegetation<br>Endemic species | • Decrease in abundance<br>• Species loss | • Water quality deterioration<br>• Overfishing<br>• Boat traffic along the Canal<br>• Presence of invasive species |
| The beach<br>Turtles | • Decrease in number of sea turtle nests<br>• Damage on the beach ecosys-tem | • Excessive recreational use<br>• Efficiency of spatial management<br>• Conservation policies of the State and legal regulations |

| | | |
|---|---|---|
| Clean air<br>Clean water | • Water quality deterioration<br>• Increase of air pollution | • Agricultural activities<br>• Urban growth<br>• Boat traffic and other recrea-tional uses<br>• Heating of buildings in winter<br>• Industrial facilities<br>• Climate change |
| Forests<br>Landscape | • Shrinking of forest areas<br>• Degradation of landscape | • Urban growth<br>• Forest fires<br>• Other natural disasters<br>• Climate change<br>• Conservation policies of the State and legal regulations |
| Ground water sources | • Water pollution<br>• Decrease in water yield | • Hydro electric power plants<br>• Agricultural activities<br>• Urban growth<br>• Climate change<br>• Industrial facilities<br>• Conservation policies of the State and legal regulations |

After presenting the results obtained in the first session, the BBN questionnaire was introduced to the participants in the second session of the BBN Workshop and they were asked to provide their individual inputs. The questionnaire was designed by using the elements of natural capital, negative impacts and the variables that were already identified during the first BBN meeting. A copy of the questionnaire is included in Appendix. A total of 15 participants responded to the questionnaire.

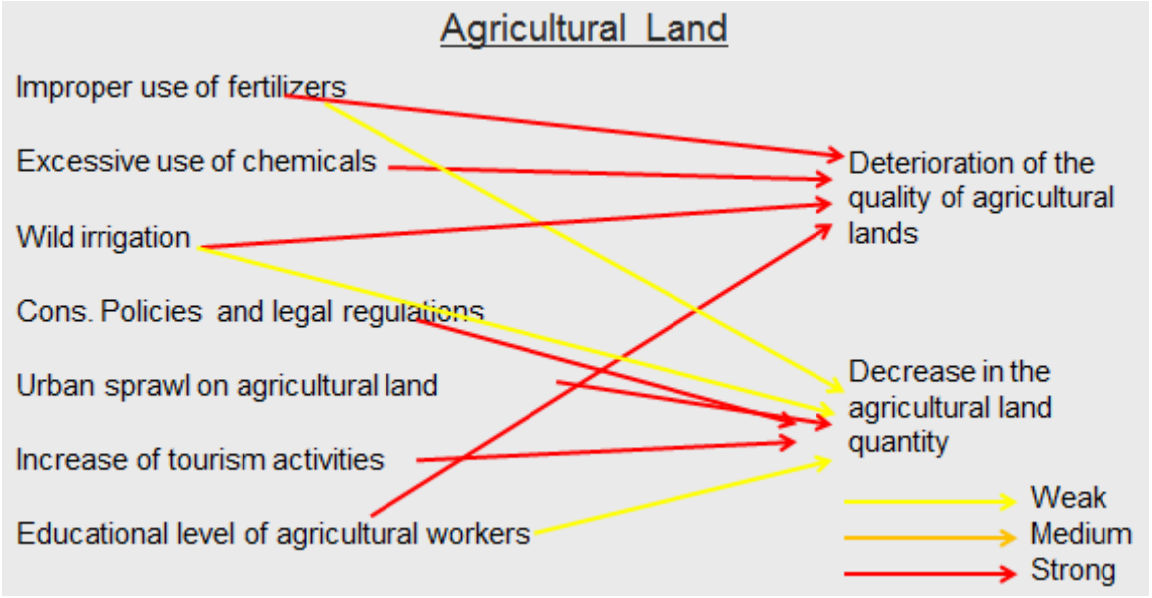



**Fig 3:** The causal relationships identified for the agricultural land.

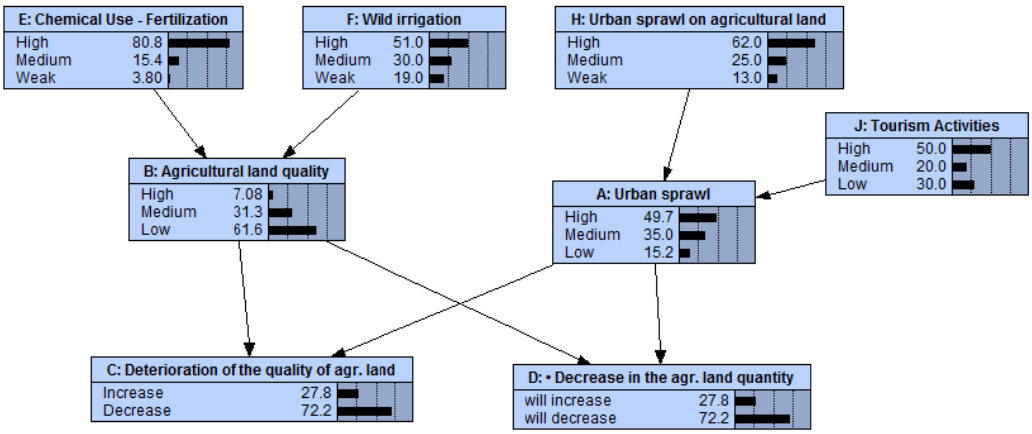



**Fig 4:** BBN for agricultural land in Köycegiz – Dalyan CASE

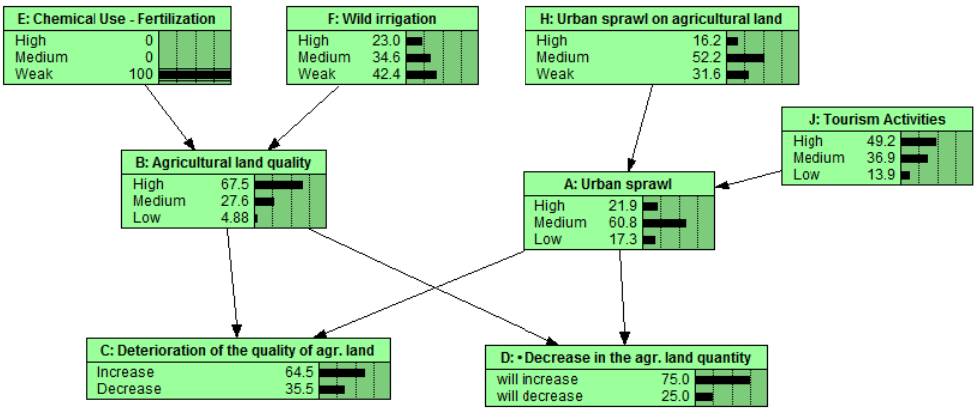



**Fig 5:** BBN after changing the values of the influences.

The final meeting was the culmination of the BBN workshops that allowed participants to view the predictions under different scenarios. The BBN was built using the free version of the NETICA Software. A complex BBN could not be prepared due to limitations of the free version which allows only 15 nodes. For that reason, BBN structure was created separately for each natural capital element.

The participants were able to view the use of BBN to create different scenarios through the presentation of the two BBN examples based on the causal networks prepared in the previous BBN session (Fig 4 and Fig 5). The software also provided a better understanding for the participants to see the results instantly. The participants were very interested with the results as they instantly came out by changing the level of the negative impacts.

At the end of the session, a new questionnaire was given to the participants for the improvement of the BBN of Köycegiz – Dalyan Case area. (Appendix 2). The questionnaire was also sent to all stakeholders who were not able to participate at the session. A total of 17 responses were received.

According to the results of the questionnaire responses, participants believe that most of the elements contributing to the natural capital of Dalyan and environs carry very high significance (Fig. 6). The sea, wetlands, lagoons, Dalyan Channel, Köycegiz Lake, Dalyanagzı and Iztuzu beach, groundwater resources, clean water, clean air are seen to have been picked up by all respondents as being very significant. Fisheries potential, natural scenery, eco-agro tourism potential and climatic features are given less

importance compared to the other elements.

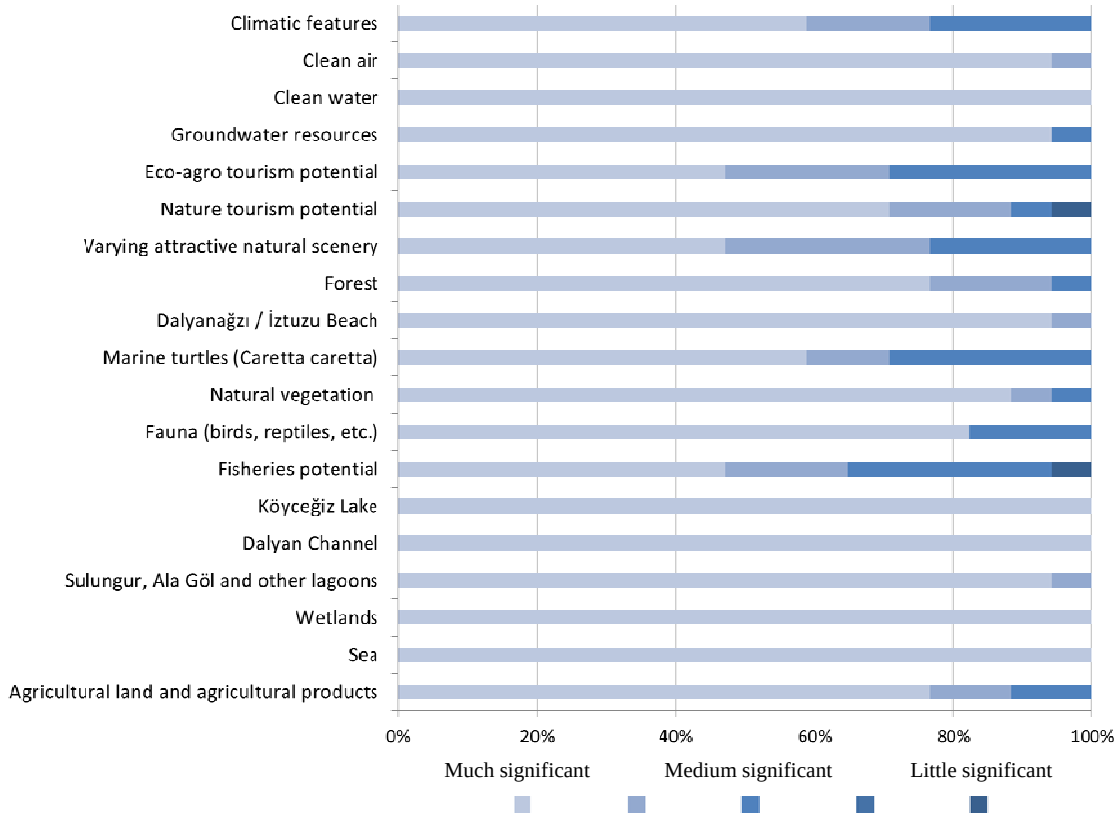



**Fig.6:** The level of significance of elements that constitute the Natural Capital of Dalyan and environs.

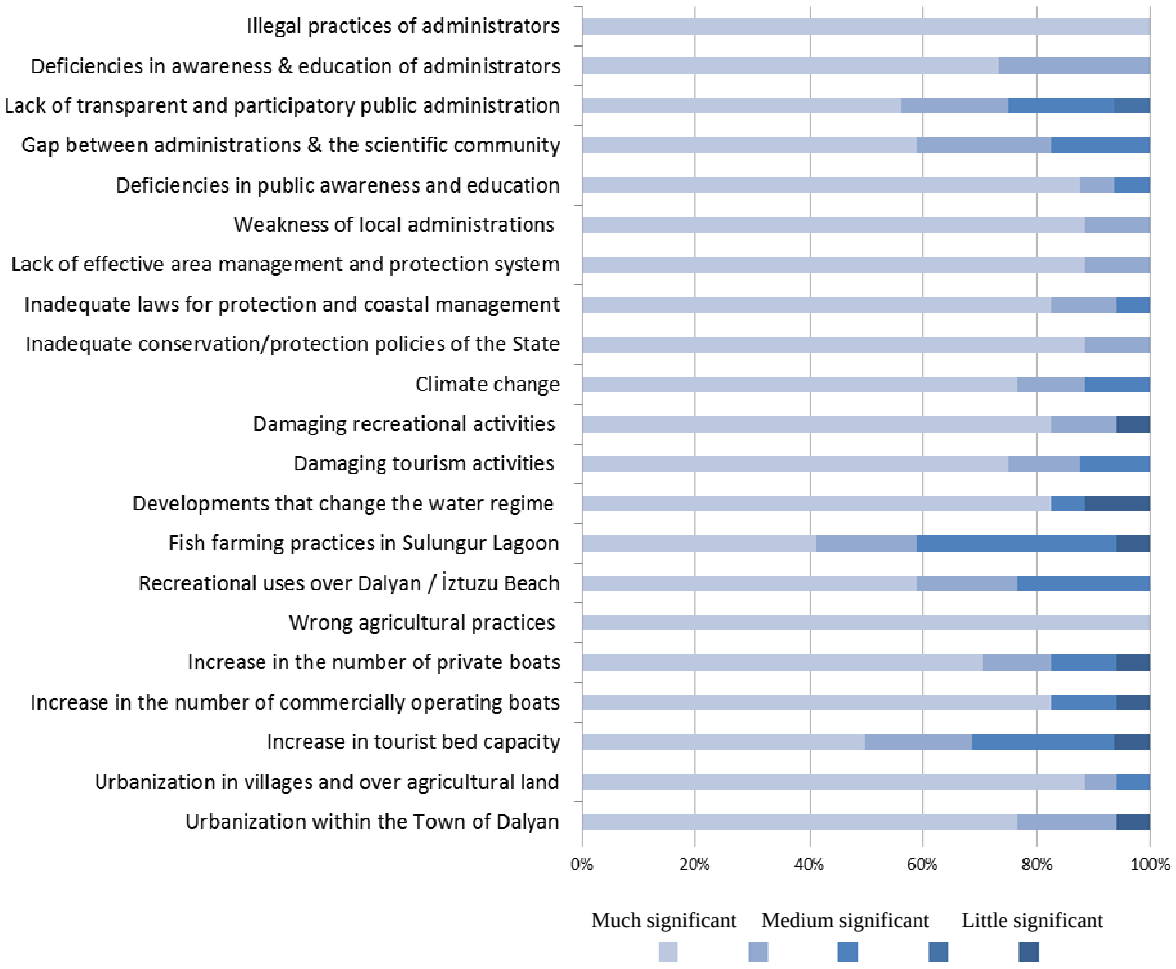



**Fig. 7:** Indication of the significance levels of the human activities, natural processes and administrative weknesses that negatively impact the natural capital of Dalyan and environs.

For the question related to the negative impacts, high significance indicates the greatest negative impacts. The most important impacts identified were: “wrong agricultural practices” and “illegal practices of the administrators” since all of the participants chose them as much significant for their negative impact on the natural capital of Dalyan and environs. Fish farming practices in Sulungur Lagoon has the lowest significance. The contribution of fisheries potential on Natural Capital was also identified as less significant among others. The gap between administrators and the scientific community was identified as of medium significance.

Other negative impacts which have higher significance are;

- Urban sprawl in villages and on agricultural land
- Inadequate conservation / protection policies of the State
- Lack of effective area management and protection system
- Weakness of local administrators
- Deficiencies in public awareness and education

**Fig. 8**: Discussions and questionnaire exercise in the BBN workshops.

Although the time available was limited for practising and organizing the BBN workshops, it proved to be an important experience as a participatory method for increasing the awareness of the stakeholders and for leading people to focus on particular issues in an interactice way. Influence diagrams and questionnaires (or an alternative way for data gathering) prepared with further studies will be helpful to provide more reliable scenarios from BBN which could be an useful vehicle for decision making and gathering stakeholders to discuss about the future.

**Appendix i**

**MEDCOAST FOUNDATION**
**European Union Pegaso Project**
**Scenario Building for Dalyan and Environs**

| | |
|---|---|
| Name-Surname: | |
| Profession : | |
| Educational Status : | |
| Organisation : | |
| E-mail : | |

1. Please give your opinion for the importance of various elements below in contributing to the natural capital of Dalyan and environs.

| | Contribution level | | |
|---|---|---|---|
| Elements of Natural Capital | Strong | Medium | Weak |
| Agricultural lands | | | |
| Water areas (Sea - Lagoon- Wetland - Dalyan Canal - Köycegiz Lake) | | | |
| Fishery - Fauna – Vegetation - Endemic species | | | |
| The beach and turtles | | | |
| Clean air and clean water | | | |
| Forests and landscape | | | |
| Ground water sources | | | |

2. Please define the importance of variables on the influences which affect the elements of natural capital. (High -Medium - Low)

**Agricultural Lands**

| Impacts / Variables | Deterioration of the quality of agricultural lands | Decrease in the agricultural land quantity |
|---|---|---|
| Improper use of fertilizers | | |
| Excessive use of chemicals | | |
| Wild irrigation | | |
| Conservation policies of the government and legal regulations | | |
| Urban sprawl on agricultural land | | |
| Increase of tourism activities | | |
| Educational level of agricultural workers | | |

**Water Areas (Sea - Lagoon- Wetland - Dalyan Channel - Köycegiz Lake)**

| Impact / Variables | water quality deterioration | Damage on ecosystem | Degradation of landscapes | Areal losses |
|---|---|---|---|---|
| Existence of fish farm | | | | |
| Boat traffic along the Channel | | | | |
| Agricultural activities | | | | |
| Urban growth | | | | |
| Recreational use | | | | |

**Fishery - Fauna – Vegetation - Endemic species**

| Impact / Variables | Decrease in abundance | Species loss |
|---|---|---|
| Water quality deterioration | | |
| Overfishing | | |
| Boat traffic along the Channel | | |
| Presence invasive species | | |

**The beach and turtles**

| Impact / Variables | Decrease in number of sea turtle nests | Damage on the beach ecosystem |
|---|---|---|
| Excessive recreational use | | |
| Efficiency of spatial management | | |
| Conservation policies of the state and legal regulations | | |

**Clean air and clean water**

| Impact / Variables | Water quality deterioration | Increase of air pollution |
|---|---|---|
| Agricultural activities | | |
| Urban growth | | |
| Boat traffic and recreational uses | | |
| Heating of buildings in the winter | | |
| Industrial facilities | | |
| Climate change | | |

**Forests and landscape**

| Impact / Variables | Shrinking of forest areas | Degradation of landscape |
|---|---|---|

| | | |
|---|---|---|
| Urban growth | | |
| Forest fires | | |
| Other natural disasters | | |
| Climate change | | |
| Conservation policies of the State and legal regulations | | |

**Ground water sources**

| Impact<br><br>Variables | Water pollution | Decrease in water yield |
|---|---|---|
| Hydro electric power plants | | |
| Agricultural activities | | |
| Urban growth | | |
| Climate change | | |
| Industrial facilities | | |
| Conservation policies of the State and legal regulations | | |

3. Please suggest that the variables below are controllable or not?

| | Controllable | Partly controllable | Not controllable |
|---|---|---|---|
| Improper use of fertilizers | | | |
| Excessive use of chemicals | | | |
| Wild irrigation | | | |
| Conservation policies of the State and legal regulations | | | |
| Urban sprawl on agricultural land | | | |
| Increase of tourism activities | | | |
| Educational level of agricultural workers | | | |
| Existence of fish farm | | | |
| Boat traffic on the Channel | | | |
| Agricultural activities | | | |
| Urban growth | | | |
| Recreational use | | | |
| Water quality deterioration | | | |
| Overfishing | | | |
| Presence of invasive species | | | |
| Efficiency of spatial management | | | |
| Heating of buildings in the winter | | | |
| Industrial facilities | | | |
| Forest fires | | | |
| Other natural disasters | | | |
| Hydro electric power plants | | | |

# Appendix ii

**MEDITERRANEAN COASTAL FOUNDATION**

**European Union Pegaso Project**

Questionnaire on the Natural Capital of Dalyan and Environs

Name and surname:
Profession :
Education :
E-mail address :

**A. The level of significance of the elements that constitute the Natural Capital of Dalyan and Environs:**

| | Much Significant | Medium Significant | Little Significant |
|---|---|---|---|
| 1. Agricultural land and agricultural products | | | |
| 2. Sea | | | |
| 3. Wetlands | | | |
| 4. Sulungur, Ala Göl and other lagoons | | | |
| 5. Dalyan Channel | | | |
| 6. Köycegiz Lake | | | |
| 7. Fisheries potential | | | |
| 8. Fauna (birds, reptiles, etc.) | | | |
| 9. Natural vegetation | | | |
| 10. Marine turtles (Caretta caretta) | | | |
| 11. Dalyanagzı / İztuzu Beach | | | |
| 12. Forest | | | |
| 13. Varying attractive natural scenery | | | |
| 14. Nature tourism potential | | | |
| 15. Eco-agro tourism potential | | | |
| 16. Groundwater resources | | | |
| 17. Clean water | | | |
| 18. Clean air | | | |
| 19. Climatic features | | | |

**B. Indicate the significance levels of human activities, natural processes and administrative weaknesses that negatively impact the Natural Capital of Dalyan and Environs.**

| | Much Significant | Medium Significant | Little Significant |
|---|---|---|---|
| 1. Urban sprawl within the Town of Dalyan | | | |
| 2. Urban sprawl in villages and over agricultural land | | | |
| 3. Increase in tourist bed capacity | | | |
| 4. Increase in the number of commercially operating boats | | | |
| 5. Increase in the number of private boats | | | |

6. Wrong agricultural practices (chemicals, fertilizers, irrigation)
7. Recreational uses over Dalyan / İztuzu Beach
8. Fish farming practices in Sulungur Lagoon
9. Developments that change the water regime (like dams)
10. Damaging tourism activities (like jeep safari)
11. Damaging recreational activities (like illegal hunting, fishing))
12. Climate change
13. Inadequate conservation/protection policies of the State
14. Inadequate laws for protection and coastal management
15. Lack of effective area management and protection system
16. Weakness of local administrations (municipalities, counties)
17. Deficiencies in public awareness and education
18. Gap between administrations & the scientific community
19. Lack of transparent and participatory public administration
20. Deficiencies in awareness & education of administrators
20. Illegal (and excess power) practices of administrators

Thank you for your contribution to Dalyan and environs!

Mediterranean Coastal Foundation

# ANNEX 3: RAPPORT DE L'ATELIER SOUS RÉGIONAL (Algérie, Tunisie, Maroc) SUR LES INDICATEURS GIZC

**Association de Réflexion, d'Échanges et d'Actions pour l'Environnement et le Développement**

**Déclaration N° 10 du 18 janvier 1994, Ministère de l'Intérieur et des collectivités locales**

**PEOPLE FOR ECOSYSTEM BASED GOVERNANCE IN ASSESSING SUSTAINABLE DEVELOPMENT OFOCEAN AND COAST**

## Alger le 13, 14 et 15 novembre 2013

# COMPTE-RENDU

## Première journée : 13 Novembre 2013

- Allocution de bienvenue aux participants par Mme Meriem LOUANCHI, Présidente de l'AREA-ED
- Ouverture de l'Atelier par M. Yacine BOUKRINA Directeur Général du Commissariat National du Littoral
- Allocution de M. Mohamed KACHER, Directeur Général du Centre National de Recherche et Développement de la Pêche et de l'Aquaculture
- Allocution de Mme Françoise BRETON, de l'Université Autonome de Barcelone, Coordinatrice du projet Pegaso
- Allocution de M. Mounir BENCHARIF, Coordinateur des programmes de l'AREA-ED

La cérémonie d'ouverture de l'atelier a été suivie par les interventions de Monsieur Samir Grimes qui a présenté l'avancement de la mise en oeuvre du protocole GIZC en Algérie. Les interventions de Mme Françoise Breton, de Mme Francesca Santoro et de Monsieur Jean Pierre Giraud, ont porté sur les résultats du projet Pegaso notamment en termes d'indicateur de la GIZC. Monsieur Rachid Tahiri et Mme Kaouther Ben Houidi ont dressé chacun, respectivement, un état des lieux de la GIZC au Maroc et en Tunisie.

1) **GRIMES Samir (CES, Ministère de l'Aménagement du Territoire et de l'Environnement), « Indicateurs et GIZC en Algérie : Etat, évolution, enseignements et perspectives ».**

La diversité des activités et usages de la zone côtière impliquent une multitude d'acteurs. Cette zone est le lieu de forts enjeux économiques et ceci génère des conflits. D'où la nécessité d'une réglementation intégrant l'ensemble des institutions en charge de la côte, mettant en place des mécanismes d'arbitrages. L'évaluation de la gestion des zones côtières se fait par des indicateurs rendant compte des services écologiques, sociaux, économiques et culturels de ces régions.

En Algérie, sur la période 2000-2012, un certain nombre d'expériences ont été conduites dans différents cadres synthétisées dans le tableau ci dessous :

| Cadre (Projet) - Expérience | Echelle | Partenaires | Porteur national | Période | Type de d'indicateurs | Attendus |
|---|---|---|---|---|---|---|
| PAC Algérois | 04 wilayas côtières (Alger, Tipasa, Boumerdes et Blida) | PAM tous les centres d'activité régionale | MATE | 2002 – 2005 | • Indicateurs thématiques<br>• Indicateurs durabilité<br>• Indicateurs GIZC | Généralisés aux autres PAC des aires métropolitaines (Oran et Annaba) |
| Destination | Zone touristique de Tipasa | PAP RAC | ANDT | 2008-2009 | • Indicateurs tourisme durable | Utilisation pour le développent du tourisme côtiers dans les territoires & ZEST |
| Cadastre du domaine littoral | National | Wilayas côtières et institutions à compétences «environnement» | MATE | 2006-2008 | • Indicateurs écologiques<br>• Indicateurs socio économiques | Connaissance des occupations et des infractions par rapport à la loi littorale |
| Profil des zones touristique | Zone touristique de Tipasa | Plan Bleu | MATE | 2010 | • Indicateurs de durabilité | Analyse des profils de durabi-lités dans les zones côtières et ZEST |
| Tableau de bords de l'environnement en Algérie | National | Les institutions nationales à compétences - environnement | ONEDD/ MATE | 2011-2012 | • Indicateurs de pressions<br>• Indicateurs d'état | Disposer d'un tableau de bords national sur l'état de l'environnement |
| SN GIZC | Zone côtière Nationale | PAP RAC, MedPartnership CAR ASP Conservatoire du littoral | MATE | 2012-2013 | • Indicateurs des ten-dances nationales | Justifier les orientations stratégiques et les axes d'intervention prioritaires |
| PCR | Zone côtière humide de Réghaia (Est algérois) | PAP RAC, MedPartnership CAR ASP Conservatoire du littoral | MATE | 2012-2013 | • Indicateurs de durabilité | Argumentaire pour la mise en œuvre du Plan Côtier de Réghaia et pour e suivi de la zone |

Dans le cadre d'un Master réalisé en 2013 à l'ENSSMAL, la question de la littoralisation des zones côtières a été testée à travers l'indicateur surface couverte par la Bâti dans les communes côtières de la wilaya d'Alger. Cet indicateur a été testé sur deux situations (2006 et 2013) afin d'évaluer l'évolution de l'artificialisation des sols des communes côtières considérées durant cet intervalle de temps et évaluer le niveau d'application de la loi littorale qui a

pour vocation de maîtriser la littoralisation du développement.  D’unemanièreglobale, toutes les communes ont connu uneévolutiondeleur tissu urbain. Lawilayad'Algeresturbaniséeà42%en2013alorsquesonlinéairecôtierl’està70%, la zonedeservituden’estpaspargnéeavecuntauxd’urbanisationdépassantles60%pourles deuxannées.

L’application commune par commune a été présentée.

2) **Françoise BRETON, Université Autonome de Barcelone (UAB), coordinatrice, Pegaso, « LE PROJET Pegaso : RENFORCER LA GIZC EN MÉDITERRANÉE ET EN MER NOIRE »**

Les objectifs principaux de Pegaso (People for Ecosystem-based Governance in Assessing Sustainable develoment for Ocean and coast) sont d'aider au développement de politiques similaires de gestion des côtes en Méditerranée et Mer Noire ; et d'établir des ponts entre les scientifiques et les gestionnaires chargés de la prise de décision sur les zones côtières.

Pour ce faire, une plate-forme de gouvernance comprenant un certain nombre d'outils a été développée au sein du groupe Pegaso (34 institutions impliquées dans X pays). On notera les indicateurs de suivi de la GIZC en Méditerranée et Mer Noire, des outils de simulation pour aider à la gestion avec définitions de scénarios et de modèles (LEAC/SEAC).

Les outils développés ont utilisé toutes les données déjà existantes et ont été validés sur dix sites méditerranéens pris comme « étude de cas ». Plus particulièrement, les indicateurs ont été définis en suivant les axes du protocole de Barcelone de la GIZC en Méditerranée.

Au sein de Pegaso, il y a eu de nombreux ateliers d'échanges d'expériences, de renforcement de capacité qui ont permis la construction et la validation de cette plate-forme commune, support technique à la gouvernance. Les produits de Pegaso (indicateurs, Banques de données-SDI, LEAC – SEAC) sont disponibles au sein du réseau et doivent encore être validés sur d'autres territoires.

Les partenaires de Pegaso peuvent accéder à l'ensemble de ces données. Il est souhaitable que chaque partenaire puisse mettre en réseau ses propres expériences au travers du réseau de Géonodes pour le partage de l'expérience.

**Questions/débat**

- Problème des échelles d'intervention a été soulevé : vision régionale mais les plan d'action sont au niveau communal
- L'Algérie a adopté une loi littorale en 2002. Pourquoi un tel retard par rapport à la stratégie GIZC en préparation ?
- Problème de l'accès et l'échange de données
- Quelles sont les attentes des porteurs de Pegaso des états de Méditerranée et Mer Noire ?

**Réponses des intervenants :**

- Question sur les échelles : le domaine d'intervention est toujours communal (opérationnel). Néanmoins aborder une question à l'échelle régionale et sous-régionale permet aussi de comparer les différentes situations. Cependant, il est capital de zoomer sur les situations locales spécifiques.
- La loi littorale en Algérie a été adoptée en 2002. Elle a permis de définir le littoral, elle a permis la création du Commissariat National du Littoral (etc.) ; aujourd'hui, la stratégie GIZC en préparation va s'appuyer sur les lois et institutions existantes.
- Problème de la donnée n'est pas simple. Si nous parvenons à convaincre les décideurs que les indicateurs mis en place sont de vrais outils d'aide à la décision, cela peut simplifier l'accès aux données.
- Attentes des porteurs de Pegaso : Motiver les pays/régions pour aller vers une philosophie GIZC, pour aller vers la ratification du protocole GIZC. Les opinions des partenaires Maghrébins sur les indicateurs et autres outils de Pegaso, sont-ils utiles ? Comptez-vous les utiliser et comment ?
- Gouvernance est longue à bâtir : réfléchir à un post-Pegaso pour la validation des outils sur le Maghreb, créer les géonodes connectés au réseau SDI – Pegaso (échanges de données)

## 3) Jean-Pierre GIRAUD (Plan Bleu, Indicateurs et systèmes d'information), « PROSPECTIVE ET INDICATEURS EN MÉDITERRANÉE »

Présentation de l'utilisation des indicateurs en Méditerranée en général et dans la prospective des zones côtières en commençant par des exemples d'application comme les Rapports Environnement Développement, le suivi de la mise en œuvre de la Stratégie Méditerranéenne de Développement Durable (SMDD), les protocoles de la Convention de Barcelone don le protocole de la Gestion Intégrée de des Zones Côtières (GIZC), les projets européens (Pegaso, PERSEUS, …), l'Observatoire Méditerranéen des Zones Humides (Tour du Valat), l'Initiative Horizon 2020 (AEE, PAM) et l'approche écosystémique (ECAP).

Rappel sur la définition des indicateurs en se basant sur la pyramide de l'information : des mesures et données de base aux indicateurs et indices. L'utilisation des indicateurs est un processus participatif interconnectés aux initiatives au niveau mondial et européen.

Parmi ces processus, on précise que le Plan Bleu, agissant en tant qu'Observatoire méditerranéen de l'environnement et du développement durable en Méditerranée) est chargé de Suivre les progrès réalisés par les pays méditerranéens en matière de développement durable en produisant un bilan tous les 2 ans Ce processus, lié à la SMDD, a été amorcé en 2000 avec le jeu des « 130 Indicateurs pour le Développement Durable en Méditerranée » en liaison avec l'Agenda MED 21. Le Plan Bleu se concentre sur les 34 indicateurs prioritaires annexés à la Stratégie Méditerranéenne pour le Développement Durable (SMDD) qui a été adoptée en 2005 par les Parties Contractantes..

Ces indicateurs prioritaires, structurés selon les actions de la SMDD, doivent permettre de mesurer les résultats de ces actions par rapport aux objectifs et aux moyens mis en œuvre.

Les 34 Indicateurs prioritaires adoptés par les Parties Contractantes avec la SMDD en novembre 2005 ont été explicitement définis dans des fiches méthodologiques. Pour la GIZC, des indicateurs dits « côtiers » (4 prioritaires et 33 complémentaires) ont été sélectionnés et définis au niveau méditerranéen. La sélection des indicateurs est généralement réalisée selon des analyses systémiques basée sur le cadre DPSIR (Force motrice, pression, état, impact et réponse) largement utilisée par les institutions internationales dont l'Agence Européenne pour l'Environnement (AEE).

L'utilisation de l'approche « Imagine » dans le PAC Alger a été rappelée afin d'éclairer les participants sur l'expérience en matière d'indicateurs et prospective pour les zones côtières algériennes. « Imagine », approche participative développée par le Plan Bleu et Simon Bell (Open University, RU), est une approche adaptable en termes de problématiques et de processus par exemple sur les problématiques du changement climatique dans les zones côtières (Climagine) et sur les problématiques de la gestion forestière (Forest-Imagine).

Le rôle du Plan Bleu dans les activités indicateurs du projet Pegaso a consisté à l'élaboration d'une revue des indicateurs existants dans les initiatives suivantes : PACs, SMDD, DEDUCE, SAIL, WG-ID, BIP, etc. puis à la sélection des indicateurs et à leur définition (factsheets).

## 4) Francesca SANTORO (IOC – UNESCO), « Sélection et application des indicateurs GIZC de Pegaso »

Les indicateurs des processus GIZC doivent répondre à trois besoins :

- Surveiller les principales caractéristiques physiques
- Evaluer les options de gestion
- Suivre les progrès et l'efficacité de mise en œuvre des projets GIZC

Dans l'Article 27 du protocole GIZC, les Parties s'engagent, directement ou avec l'aide de l'organisation (ou des) organisation(s) internationale(s) compétente(s), à coopérer pour échanger des informations sur l'utilisation des meilleures pratiques environnementales. En particulier,

- définition des indicateurs de gestion côtière, compte tenu de ceux qui existent, et coopération en vue de l'utilisation de ces indicateurs;
- établissement et tenue à jour des évaluations de l'utilisation et de la gestion des zones côtières; .

Le projet Pegaso a été conçu sur la base du protocole de GIZC. Il a pour but de définir des indicateurs permettant de mesurer l'efficacité des politiques GIZC au sein des pays.

Trois types d'indicateurs sont définis : socio-économiques ; écologiques et de gouvernance.

Quelques fiches méthodologiques ont été présentées décrivant les indicateurs du projet Pegaso et leur mode de construction et d'application.

Les produits de Pegaso sont également présentés, notamment les résultats des études de cas et l'accès aux informations via le géoportail Pegaso. Une étude de cas est présenté (El Hoceïma – Maroc) avec l'ensemble des résultats.

## 5) DINARES Marta (Université Autonome de Barcelone (UAB), projet MEDINA), « Métabolisme Urbain » FP7 EU projet MEDINA, Nador-Maroc et Oran- Algérie

Le projet MEDINA -Dynamique et Indicateurs des Écosystèmes Marins pour l'Afrique du Nord (http://www.medinaproject.eu)- est un projet Européen soutenu par le FP7. Les objectifs principaux sont :1) renforcer les capacités des pays du Nord de l'Afrique pour la surveillance des écosystèmes côtiers, et de les assister dans la mise en place des politiques, conventions et protocoles environnementaux, 2) contribuer à l'estimation et à l'implémentation d'une observation permanente de l'état des écosystèmes côtiers en renforçant les moyens d'observation de ces régions.

Dans le cadre du projet MEDINA on étudie le Métabolisme Urbain (MU). Le contexte de cette étude est que les zones urbaines constituent l'habitat principal de la plus grande partie de la population mondiale.

A l'échelle globale, les sites urbanisés occupant 2% de la surface terrestre, utilisent les 3/4 des ressources mondiales et produisent des quantités similaires de déchets dans l'environnement. Les zones côtières de faible altitude ne représentant aussi qu'environ 2% de la surface terrestre mondiale, hébergent 10% de la population mondiale et 13% de la population urbaine. Dans la région méditerranéenne, selon le PNUE/PAM, plus du tiers de la population vit sur les entités administratives côtières, lesquelles ne représentent que 12% de la surface totale des pays méditerranéens.

Les villes ne sont pas seulement d'importants vecteurs de développement socio-économique mais aussi sources de pressions anthropiques sur les écosystèmes. C'est pourquoi, les zones urbaines et leur développement sont au centre de toutes les discussions sur le développement durable.

Le métabolisme urbain est un concept qui nous permet de connaitre le fonctionnement et les processus du système urbain, et de comprendre les impacts et les conséquences de ce mode de vie (en termes de modes de consommation et de décharge), à travers l'analyse et la quantification des flux de ressources naturelles qui circulent dans les villes, et qui sont affectés par diverses forces sociales, économiques et environnementales.

Les études de MU peuvent montrer les tendances fondamentales dans l'utilisation des ressources naturelles par les humains ou leurs caractéristiques de consommation. Cette analyse nous permet de déterminer les impacts potentiels et les conséquences du mode de vie urbain. Ce qui devrait conduire à une conception de politique de planification urbaine plus efficace pour le développement durable.

L'étape préalable et essentielle à l'étude du MU est la collecte de données pertinentes. La méthode appropriée pour recueillir ces données est l'entretien avec les différents acteurs en charge de la gestion de ces vecteurs au niveau de la ville.

L'exemple de la ville de Nador au Maroc est présenté. La ville d'Oran en Algérie a été choisie pour une prochaine application.

**Questions/débat**

- Il y a peu d'indicateurs définis spécifiquement pour le domaine marin
- Le problème de l'application des indicateurs à un niveau local à cause de l'absence de données
- Il existe en Algérie des SIG sectoriels qui marchent très bien. Le problème c'est la duplication de l'information. Il faudrait pousser à la création de plate-forme cartographique nationale accessible à tous.
- Y a –t-il des outils mis en place pour le suivi et l'évaluation des indicateurs ?
- Importance des AMP : comment sensibiliser les pêcheurs à les accepter ?
- Comment mettre en place des ponts entre acteurs locaux de développement, scientifiques et décideurs-gestionnaires ?
- Réponse sur la perte d'eau au Maroc qui est plus importante que celle qui a été présentée (surtout des pertes dans les réseaux d'irrigation faute de maintenance)
- Un plan d'aménagement des pêcheries est en cours d'élaboration en Algérie. Quels seraient les indicateurs pertinents de suivi de ces plans ? L'indicateur proposé semble trop général. Peut-on intégrer dans les indicateurs des données de suivi et surveillance de la qualité du milieu marin (type surface des herbiers, bloom d'algues toxiques …) ?
- Pour ce qui est des bases de données. Quels seraient les connexions avec BD non Pegaso qui pourraient être disponibles pour appuyer Pegaso et aider au développement d'indicateurs ?
- Pour la gestion des AMP, les indicateurs devraient être plus spécifiques.
- Les données des bassins versants (par exemple les forêts côtières sur les projets de protection de la biodiversité) ont-elles été intégrées ? Elles pourraient aider Pegaso
- Existe-t-il dans Pegaso un indicateur socio-économique sur le bien-être de l'humain ?
- Qu'est devenu le Schéma National de l'Aménagement du Territoire (SNAT) en Algérie ? Le littoral est saturé, on devrait développer l'arrière-pays mais tous les projets de développement sont encore faits sur le littoral.
- Y a –t-il des indicateurs pour l'aquaculture dans Pegaso ? pour les cages flottantes en pleine mer ou la délimitation des zones ?

**Réponses des différents intervenants**

- Partie Marine : les applications n'ont pu être faites qu'en Méditerranée occidentale (problème de disponibilité de la donnée). Il nous faut identifier pour la suite ensemble, ce qui doit être développé, en particulier à l'échelle locale.
- Intégration outils/échelle : on pourrait en parler pour le rapport final ; est-ce que la priorité régionale peut s'appliquer à une échelle locale ?
- Indicateurs de Pegaso sont évolutifs, ils ont été basés sur des questionnaires établissant les manques. Ils peuvent encore être améliorés.
- Les données existent. Le problème c'est leur disponibilité. Il y a un problème de gouvernance sur l'information géographique. Il y a lieu de trouver des solutions pour travailler avec les institutions qui collectent de telles données.

- C'est vrai qu'il y a peu d'indicateurs spécifiques à la pêche. Le processus demeure ouvert et on a besoin d'opinions diverses pour améliorer l'éventail des indicateurs et prendre en compte d'autres initiatives.
- Pour ce qui est de la plate-forme de gouvernance d'information géographique. C'est une excellente idée ; c'est ce qui a été tenté au travers du SDI dans Pegaso (travail à un niveau régional, puis zoomer en national / local)
- Toute information concernant l'aquaculture, la pêche et les AMP est intéressante. Pour l'instant, Pegaso a tenté de répondre aux questions de gouvernance GIZC dans la région Méditerranée. Aujourd'hui, il nous faut aller vers le local et le sectoriel.
- A propos du partage d'informations : il faudrait mettre en place un projet méditerranéen spécialement sur le partage de la donnée. C'est conditionné par deux aspects : la volonté de partager l'information, et les écarts entre information officielle/information réelle. Dans les projets de recherche, toutefois, on est souvent plus libres d'utiliser tout type de données.
- Il n'existe pas à ce jour d'indice ou indicateur de bien-être ni dans Pegaso, ni dans le plan bleu. Des définitions existent mais sont difficiles à mettre en œuvre.
- Les indicateurs Pegaso peuvent être complémentés par d'autres indicateurs basés sur d'autres projets locaux.
- Le SNAT pour la partie littorale en Algérie est remplacé par le Schéma Directeur d'Aménagement du Littoral (SDAL).

## 6) TAHIRI Rachid (Chef de service, Conseil National de l'Environnement, Maroc), « Actions de mise en œuvre du protocole GIZC au Maroc »

Grâce à sa position stratégique et ses richesses naturelles, la côte méditerranéenne du Maroc est considérée par le gouvernement marocain comme une cible de développement futur prioritaire.

Dés le début de ce siècle, une série d'initiatives côtières, de programmes et projets d'importance nationale ont été lancés entre autres :

- Projet MedWetCoast (2001-2006) relatif à la protection des écosystèmes côtiers et des zones humides sur le littoral méditerranéen oriental (LMO) ;
- Projet METAP qui s'est intéressé en 2006 à la quantification du cout de dégradation de l'environnement littoral ;
- Deux projets SMAP III (2007-2009) qui sont développés sur le LMO, et sont le Plan d'Action de Kala-Moulouya relatif au littoral Saïdia, contenant le site de l'embouchure de la Moulouya, et CAP NADOR relatif à la gestion intégrée du littoral de la province de Nador ;
- Projet ACCMA (2007-2010) qui a visé l'intégration des considérations du changement climatique dans ces Plans d'Action ;
- Programme d'Aménagement dans le Rif Central (PAC-Maroc) qui a visé de contribuer au développement de la population locale, tout en assurant une protection et une utilisation durable des ressources côtières.
- Projet GIZC dans la région de l'oriental qui a une s'inscrit dans le grand Programme Régional de Développement Durable en Méditerranée «SUSTAINABLE MED». Il a pour but de tester la mise en œuvre de la gestion intégrée des zones côtières (GIZC) sur la côte méditerranéenne du Maroc au niveau local par les utilisateurs des ressources côtières, et ce pour a réduction de la pollution, la protection de la biodiversité et la sauvegarde des zones sensibles.

Aussi, le Maroc a signé le Protocole de GIZC en 2008 et il a ratifié en 2012.

En outre, le Gouvernement du Maroc a élaboré un projet de loi n°81-12 relative au littoral qui détermine les règles fondamentales d'aménagement, de protection, de mise en valeur et de conservation du littoral. Ce projet de loi a pour objet de :

- Préserver les équilibres biologiques et écologiques et lutter contre l'érosion du littoral ;
- Prévenir, lutter et réduire la pollution et la dégradation du littoral et assurer la réhabilitation des zones et des sites pollués ou détériorés ;
- Assurer une gestion intégrée et durable du littoral ;
- Promouvoir une politique de recherche et d'innovation en vue de valoriser le littoral et ses ressources.

Par ailleurs, une Stratégie Nationale de la Gestion Intégrée du Littoral Marocain est en cours d'élaboration. Elle répondra aux objectifs suivants :

- **Établir l'état des lieux du littoral et diagnostiquer les problématiques qui les régissent, débouchant sur :**
  - La proposition d'une définition précise et une délimitation structurée du littoral profitant au mieux à la protection, la préservation et la valorisation des éléments les plus sensibles des espaces côtiers ;
  - La typologie de l'espace littoral par fonctionnalité, sensibilité et dégradation…;
  - L'identification des enjeux stratégiques sur les plans économique, social, culturel et environnemental et leur hiérarchisation ;

- L'évaluation de la perception des acteurs locaux quant à leurs visions de gestion ou d'exploitation des espaces côtiers ;
- L'analyse des modalités de gestion actuelle du littoral dans ses aspects institutionnels, juridiques et réglementaires pourvu de proposer les lignes directrices des réformes à suggérer

➢ **Concevoir une Stratégie de Gestion Intégrée du Littoral Marocain : les sorties analytiques diagnostiquées doivent être couronnées par la formulation d'une politique structurée de gestion intégrée de l'espace littoral proposant des solutions alternatives probantes en terme de régulation juridique, institutionnelle et de planification adéquate. Il s'agit de :**

- Concevoir un modèle de gestion intégré du littoral marocain en déclinant les mécanismes et les instruments nécessaires à mettre en place ;
- Elaborer des esquisses d'aménagement et de développement pour les espaces les plus exposés ;
- Proposer un système d'observation, de suivi et d'évaluation des projets et programmes structurants d'aménagement et de développement du littoral.

Dans le cadre du projet PAP CAR, le Programme d'Aménagement du Rif Central (PAC-Maroc) a fait appel à l'Analyse de Durabilité Systémique et Prospective, (ADSP). C'est une méthode participative et d'aide à la décision pour la mise en œuvre et le contrôle des plans de développement local durable dans les zones côtières méditerranéennes. Elle s'adresse à un groupe d'acteurs venant de différents horizons mais concernés par un même territoire.

29 indicateurs de durabilité ont été identifiés : six indicateurs économiques, quatorze indicateurs environnementaux, huit indicateurs socioculturels et un indicateur de Gouvernance.

Le processus d'élaboration des indicateurs à été heurté à plusieurs contraintes : la disponibilité des données, l'accès à l'information, l'historiques des données, l'échelle spatiale inappropriée des données, la forme des données ainsi que la multitude des intervenants.

Le projet Pegaso, cas de la baie d'Al Hoceima constitue une continuité et une suite du travail effectué dans le cadre de projets antérieurs réalisés dans la région. Il capitalise de nombreux acquis, notamment le niveau de sensibilisation des acteurs locaux sur les principes de la GIZC. Toutes ces initiatives visent le même objectif à savoir la contribution au développement socio-économique de cette zone, tout en assurant la protection de ses ressources côtières.Plus précisément la mission de ces projets est d'étudier les meilleurs moyens d'un développement équilibré et durable afin d'éclairer les autorités et aider les décideurs dans leurs choix.

L'objectif principal du projet Pegaso est de tester les outils élaborés afin de soutenir la GIZC et contribuer au développement de la population locale tout en assurant la protection et l'utilisation durable des ressources côtières et d'accroître la résilience des collectivités locales aux risques climatiques.

Les indicateurs du cas de la baie d'Al Hoceima visent à évaluer les objectifs escomptés par les politiques publique à savoir (i) préserver la richesse du capital naturel dans la zone côtière ; (2) ne pas dépasser la capacité de charge de la zone côtière ;(3) adopter une approche à long terme pour tenir pleinement compte des échelles temporelles ; (4) assurer une gouvernance appropriée permettant une participation adéquate et en temps opportun dans un processus décisionnel

transparent de tous les acteurs sociaux concernés ; (5) Assurer la coordination intersectorielle entre les autorités compétentes ; (6) Formuler des stratégies d'utilisation des terres, des plans et des programmes couvrant tous les usages côtiers et marins ; (7) donner la priorité aux services publics et activités nécessitant la proximité de la mer, et de prendre en compte les spécificités des zones côtières au moment de décider sur les utilisations côtières ; (8) avoir une utilisation équilibrée des zones côtières, et d'éviter l'expansion urbaine ; (9) procéder à l'évaluation de l'impact environnemental des activités humaines et les infrastructures ; (10) prévenir les dommages à l'environnement côtier et procéder à la restauration appropriée du dommage.

La majorité de ces indicateurs sont ceux élaborés dans le cadre du projet PAP CAR à savoir les 29 indicateurs de durabilité : six indicateurs économiques, quatorze indicateurs environnementaux, huit indicateurs socioculturels et un indicateur de Gouvernance. Certains indicateurs de durabilité ont été jumelés avec ceux proposés dans le cadre du projet Pegaso.

Néanmoins, la majorité de ces derniers ne sont pas testés en raison du manque de données et de l'échelle spatiale inappropriée à laquelle ces indicateurs ont été recommandés.

Il est indispensable d'appliquer en permanence les principes de GIZC notamment :

- La sensibilisation du public et la participation à effectuer au niveau des pratiques collectives, le dialogue, l'échange d'avis et de médiation. Ceci peut être réalisé grâce à des personnes ressources locales agissant en tant qu'intermédiaires spécialement formés à cet effet. En plus de la sensibilisation et le renforcement des capacités, il est opportun d'entreprendre des exercices pratiques à effectuer en conditions réelles comme des opérations pilotes.
- La gestion des données et de l'information géographique étant d'une importance vitale pour un développement réussi de la GIZC comme il assure un lien entre les connaissances et la prise des décisions appropriées. Un système centralisé devrait être créé comme un portail pour relier les bases de données existantes et leur exploitation appropriée. un tel système devrait être soutenu par une structure de support des initiatives de la GIZC .
- La construction d'indicateurs de durabilité pour compléter et consolider une gamme d'indicateurs de durabilité décrit dans le cadre du projet Pegaso. Il convient de rappeler que ces indicateurs doivent être le résultat d'une réflexion collective des parties prenantes. Enfin, la recherche de données pour leur approvisionnement doit être soutenue.

L'atelier d'Alger permettra de :

- Diffuser et s'approprier les résultats de Pegaso, notamment les indicateurs produits par ledit projet et l'utilité de leur usage par les décideurs, les scientifiques, les acteurs économiques ;
- S'informer sur les enseignements tirés du processus d'élaboration des stratégies Nationales de GIZC ;
- Echanger sur les questions relatives à la GIZC entre les acteurs maghrébins ;
- Sélectionner et consolider une série d'indicateurs utilisables dans les différents pays et qui répond aux objectifs du protocole GIZC.

## 7) BEN HOUIDI Kaouther, ingénieur principal, APAL, Tunisie, « Importance des indicateurs dans le processus de la GIZC en Tunisie »

La GIZC est une notion assez récente mais la pratique est quasi installée.

Le protocole relatif à la GIZC de la Méditerranée est en cours de ratification (fin 2010).

**Outils pour la GIZC**

La gestion des données, le suivi, les techniques d'évaluation ; analyse du risque (changement climatique); description des indicateurs (indicateurs de gouvernance, environnementaux ou socio-économiques), etc.

**Démarche et processus d'élaboration de la liste d'indicateurs du développement durable**

L'étude d'élaboration des indicateurs de suivi du littoral a été menée dans le cadre d'un processus de concertation et d'échange entre les principaux acteurs.

L'étude s'est décomposée en trois étapes:

- Étape 1: Élaboration d'une méthodologie et identification d'une batterie d'indicateurs
- Étape 2: Organisation d'un séminaire de concertation et de validation
- Étape 3: Élaboration de fiches caractéristiques pour les indicateurs retenus

Les indicateurs de suivi se décomposent en :

- Indicateurs socio-économiques
- Indicateurs environnementaux
- Indicateurs d'efficience

**La liste des indicateurs retenus :**

- Population côtière
- Artificialisation du littoral
- Eaux usées produites
- Gestion des déchets
- Plaisance
- Tourisme littoral
- Patrimoine archéologique
- Agriculture côtière
- Superficies irriguées
- Pêche
- Pollution industrielle
- Qualité des plages
- Dynamique sédimentaire
- Domaine Public Maritime
- Zones humides
- Forêts littorales
- Herbier de Posidonie
- Biodiversité terrestre
- Biodiversité marine
- Phénomènes Dystrophiques
- Changements climatiques

**Présentation de deux exemples de GIZC au niveau de :**

- L'aire protégée marine et côtière de la Galite
- L'Atlas du Golfe de Gabès

Trois groupes de travail ont été ensuite constitués:

- Groupe de travail sur les risques associés aux changements climatiques
- Groupe de travail sur l'échange des données entre les trois pays de la sous-région
- Groupe de travail sur l'évaluation de divers indicateurs de Pegaso et indicateurs de pêche et AMP

## Deuxième journée : 14 Novembre 2013

Les travaux de groupes entamés la veille se sont poursuivis toute la journée. Ils ont conduit aux propositions / recommandations suivantes :

## GROUPE 1 :

## RISQUES ASSOCIÉS AUX CHANGEMENTS CLIMATIQUES.

**Les indicateurs proposés pour le contexte « Changement Climatique » de Pegaso sont-ils suffisants ?**

- **Indicateur 1 : Evaluation des risques (risk assessment)**

Cet indicateur a été considéré par le groupe comme SMART (spécifique, pertinent, mesurable, acceptable et temporellement défini). Il prend en compte le nombre d'habitants, le nombre d'activités économiques et la biodiversité potentiellement affectés, ainsi que les installations susceptibles de générer de la pollution et de dégrader des espaces côtiers.

Il est suggéré quelques points pour son amélioration :

- Rassembler les informations et données d'une manière coordonnée et concertée entre les pays de l'UE et les autres pays de la rive Méditerranéenne afin de faire des comparaisons et de tirer des conclusions régionales.
- Identifier les cartes de risques existantes et définir une échelle commune de digitalisation

- **Indicateur 2 : Erosion côtière (coastal erosion and vulnerability)**

Cet indicateur a été identifié comme SMART. Il est recommandé de capitaliser les études locales de la région Maghreb afin d'avoir une visibilité régionale et des cartes complètes de vulnérabilité.

### Indicateur 3 : Elévation du niveau de la mer (Sea level rise)

C'est également un indicateur considéré comme SMART dans le contexte des changements climatiques. Néanmoins, il est recommandé:

- Déploiement d'un effort des pays du Maghreb pour se doter d'assez de marégraphes
- Connecter les marégraphes de la rive sud au réseau global et en temps réel

**Recommandations pour le futur :**

- Intégration de la dimension « changement climatique » dans l'ensemble des stratégies et plans GIZC
- Mise en place de systèmes d'alerte précoce pour l'ensemble de la Méditerranée
- Education, sensibilisation et information de l'ensemble des acteurs de la côte au risque « changement climatique »

## GROUPE 2 :

## ECHANGES DE DONNÉES ENTRE LES TROIS PAYS DE LA SOUS-RÉGION

### Synergies au niveau régional sur le protocole GIZC :

Pour mieux capitaliser les résultats Pegaso nous proposons de mener des actions pilotes dans les 3 Pays (Algérie, Maroc et Tunisie). Il est préférable de veiller à une meilleure méthode pour le partage des données et d'informations déjà existantes dans le projet Pegaso. L'un des problèmes rencontrés dans la première phase de Pegaso concerne principalement la circulation et l'accès à l'information, tant au niveau de chaque Pays qu'entre les Pays eux même. La dynamique générée par les actions pilotes nous permettra d'expérimenter la démarche GIZC dans chaque pays visant un échange

d'informations entre les institutions de chaque pays impliquées et la mise en commun de ces informations entre les Pays.

| Actions | Description | Institutions impliquées |
|---|---|---|
| Définir les sites pilotes pour tester les indicateurs Pegaso | Les critères pour choisir le site :<br>- Sites homogènes par Pays (pour une comparaison plus efficace)<br>- Sites sur lequel on dispose d'information déjà existante<br>- Sites à intérêt particulier et/ou écologique. | **Algérie :** Centre National de Développement des Ressources Biologiques, Commissariat National du Littoral, Parc National du Gouraya, Parc National de Taza, Parc National d'El Kala, Association AREA-ED, Réseau RASMER, ENSSMAL, association 'Homme et environnement' et 'Aquapêche' (bureau d'études)<br>**Maroc :** université Mohamed premier (faculté des sciences), direction régionale des eaux et forets<br>**Tunisie :** secteur du tourisme (consultant et expert) |
| Valider la base des indicateurs Pegaso et disposer de données ultérieures pour l'améliorer | - Intégrer les 3 indicateurs choisis par le groupe 1 ainsi que les indicateurs MEDINA<br>- Récolter l'information déjà existante<br>- Impliquer les Universités dans la validation des données en utilisant par exemples des travaux de thèses<br>- Tenir compte des expertises des uns et des autres et entre pays : capitaliser l'expérience | |
| Le choix de l'institution vis-à-vis pour l'interaction avec la base de donnée Pegaso | Les critères de sélection des institutions sont :<br>- la capacité en équipement technique,<br>- les compétences techniques en informatique<br>- la disponibilité de données pertinentes<br>Le Groupe propose pour :<br>- l'Algérie : RASMER<br>- le Maroc : Département de l'environnement<br>- Tunisie : APAL. | |

## GROUPE 3 :

## EVALUER DE DIVERS INDICATEURS Pegaso ET INDICATEURS DE PÊCHE ET D'AIRES MARINES PROTÉGÉES (AMP)

Le but est d'évaluer la faisabilité de trois indicateurs sélectionnés de Pegaso ; ainsi que les indicateurs pouvant décrire efficacement les activités de pêche – aquaculture et la gestion des aires marines protégées.

### Indicateur 1 : Urbanisme (built-up)

- Inclure les zones artificialisées, principalement pour les ports, les aéroports et les routes littorales
- Prendre en considération les 3 bandes : de 0-100m, de 0-1km et de 0-10 km
- Actualisation des cartes avec des données plus récentes.

- Off shore : le groupe a souligné l'importance d'étendre cet indicateur aux infrastructures off shore.

**Indicateur 2 : densité des populations**

- Comparaison des densités de population des communes littorales avec celles des wilayas littorales
- Unanimité pour prendre en compte cet indicateur qui est facilement disponible et qui est important car il peut permettre de déduire les pollutions (rejets d'eaux usées,)
- Importance de considérer la saisonnalité de la densité de la population du littoral (fréquentation touristique en période estivale).

**Indicateur 3 : efficacité de l'eau**

- Unanimité pour reconnaitre que cet indicateur est intéressant au niveau national et des bassins versants
- Question sur l'intérêt de l'utilisation de cet indicateur sur les GIZC.
- Affiner plus sur les conflits d'usage dont le tourisme.

**Autres indicateurs pêche et aquaculture**

1- stocks de poissons et production : anciennes données disponibles suite à des campagnes d'évaluation – statistiques à améliorer.

2- indicateurs spécifiques à chaque AMP : vérifier qu'elles soient efficacement gérées, l'indicateur « capital naturel » doit être mieux défini.

## CONCLUSION: PERSPECTIVES GÉNÉRALES DE L'ATELIER DANS UN CONTEXTE POST-Pegaso

- Participation de la sous-région au Rapport final (Francesca Santoro) : résumé à préparer pour les décideurs (une dizaine de pages ; en anglais et français), synthèse des activités, des priorités, et faire des propositions. La participation du Maghreb pourrait être autour du capital naturel puisqu'il a beaucoup été question des AMP pour les 3 pays.
- Géonodes pour les 3 pays (réfléchir à leur mise en place) en lien avec l'infrastructure d'information de Pegaso (SDI). L'Algérie propose que le RASMER (Mokhtar Guerfi) soit connecté au réseau Pegaso (SDI).
- Tester et améliorer les indicateurs MEDINA/UAB pour l'eau de mer (indicateurs d'eutrophisation - pollution). Tester les indicateurs Pegaso et LEAC-SEAC sur la baie de Bou Ismaïl (Algérie) au travers d'une codirection de thèse de doctorat (Collaboration UAB – ENSSMAL)
- Aider à la préparation du « Métabolisme Urbain » pour la ville d'Oran (projet MEDINA impliquant le CNL)
- Renforcement de capacité (échanges interuniversitaires et/ou ateliers regroupant tous les acteurs de la GIZC y compris la société civile)
- Fonds pour traduction de la page WEB et des outils Pegaso en Français
- Exprimer une proposition de deux pages sur projet commun aux 3 pays et de réfléchir aux bailleurs de fond qui pourraient le soutenir

L'atelier a été clôturé par Monsieur Sid Ahmed FERROUKHI, Ministre de la Pêche et des Ressources Halieutiques.

## ANNEXE I : POINTS FORTS DE L'ALLOCUTION DE CLÔTURE DE MONSIEUR SID AHMED FERROUKHI, MINISTRE DE LA PÊCHE ET DES RESSOURCES HALIEUTIQUES :

- Nécessité de prise de conscience dans les pays du Sud de la Méditerranée que la mer a un rôle important pour le développement économique (pourrait se faire sous forme de plaidoyer) ;
- Nécessité d'une compréhension sociale de la GIZC : en effet, les acteurs de la mer sont victimes de la désorganisation spatiale des zones côtières (conflits d'usage). Il nous faut trouver des compromis entre protéger les ressources halieutiques et les écosystèmes côtiers et protéger les pêcheurs ;
- Les zones côtières sont sous pression par les investissements économiques des acteurs et l'occupation de l'espace, cette réalité est rapide au contraire de la planification et de la gestion qui se met en place plus lentement. Les modes de gestion doivent évoluer en mettant l'humain au cœur de son dispositif. Ceci mène à une approche participative de la gestion mobilisant les acteurs, les gestionnaires, les scientifiques, la société civile. Ce mode de gestion est celui qui est choisi dans les projets de « Plan d'Aménagement des Pêcheries » et dans la mise en place du dispositif de « suivi de la salubrité des zones de pêche et d'aquaculture » par le MPRH. Les outils de Pégaso, notamment les SDI vont aider, mais pour atteindre les objectifs rien ne remplace le tour de table et l'intelligence collective.
- Recommande de valider certains outils Pegaso sur la continuité de la zone côtière du Maghreb - Méditerranée
- Compromis entre développement économique ; préservation des ressources ; création d'emploi ; partage harmonieux de l'espace, des usages dans une optique de développement durable.

## ANNEXE II : SORTIE SUR LE PORT DE BOU HAROUN

### 1. Introduction

Le port de Bou-Haroun est exclusivement un port de pêche, qui était une simple plage d'échouage en 1924 et qui progressivement s'est transformé en port aménagé .En 1980 ce port était un exemple de modernité et de gestion intégrée .Cette structure est proche d'Alger : elle se situe à 40km à l'ouest de la capitale .Ses coordonnées géographiques sont : 20°39'50''E et 36°37'00'' N. Ce port dispose de deux grands bassins : l'un destiné à l'accostage des chalutiers et le second qui est partagé entre les sardiniers-senneurs et les petits métiers. La longueur totale de quai disponible est de 661 ml.

### 2. L'état physique des lieux

- L'accès au port est très rapide depuis la mise en service de l'autoroute reliant Alger à Tipaza. Cependant à l'intérieur du port, l'état de la route est dégradé, principalement dans la partie bassin sardiniers.
- La stabilité des plans d'eau est moyenne, l'encombrement des quais d'accostages constitue un réel problème de sécurité par temps de fort vent de direction Nord ou Nord-Ouest.
- Plan de cale sèche disponible à L'ECOREP avec une grue élévatrice (automoteur de 150T type HC 400), accentuant temporairement l'encombrement des quais d'accostages.
- Fabrique de glace existe en dehors de l'enceinte du port, de faible production 10 T/jours.
- Avitaillement en combustible existe de capacité 25000 l.
- Cases de pêcheurs existent mais totalement dégradées et inondées par temps de pluie. Leur nombre est de 54.

- L'ECOREP dispose d'un chantier naval et d'un atelier de réparation des navires.
- La halle à marées, très bien aménagée en 1980, est très dégradée et n'a jamais fonctionné.
- Les restaurants spécialisés dans le poisson, au nombre de 3, avec terrasses sont très fréquentés par la population locale et algéroise. Il existe également une cafétéria.

### 3. Carences constatées dans le port

- Le plan d'eau est extrêmement pollué en raison du déversement des eaux usées et des vidanges des bateaux.
- Le tirant d'eau est réduit au niveau de la passe du port en raison de son orientation, il y a donc une vulnérabilité aux ensablements réguliers.
- L'occupation des postes d'accostages est maximale.
- Les ventes de poissons se font à même le quai sans aucune condition d'hygiène et des espèces congelées et d'eau douce sont mélangées aux produits issus de la pêche locale.
- Le réseau d'AEP d'électricité et de téléphone disponibles dans la localité mais non dans les cases des pêcheurs ou sur les quais.
- Les quais sont encombrés de matériels divers (panneaux, chaluts, filets trémails, cordages… ).

### 4. La flottille de pêche

Elle se divise en trois catégories : la flottille chalutière, celle des sardiniers-senneurs et celle des petits métiers .

**a)** **Les chalutiers :** sont au nombre de 25 en 2013. Cependant certains sont immobilisés. L'effort de pêche réel exercé sur les stocks est très variable d'une année à l'autre. Il varie de 12 à 18 navires. La flottille est relativement âgée (13 bateaux ont plus de 20 ans). Durant les années 2000-2004 de nouveaux chalutiers ont été introduits au port avec des puissances moyennes importantes 600CV mais leur taux d'immobilisation est également fort important, avec un rendement irrégulier.

**b)** **Les sardiniers –senneurs :**53 sardiniers sont immatriculés au port. L'effort de pêche réel est de 46 bateaux. Les âges varient de 20 ans à un an. Les dernières acquisitions sont de forts tonnages (25 m et 71.21 JB). Cependant en raison du type de pêche pratiqué (strictement à la côte), les rendements restent faibles (55T/ navire / an).

**c)** **Les petits métiers :** elle constitue une flottille hétéroclite avec de petits embarcations de moins de 5m (77 %) et des navires plus importants (8 à 12 m). Le taux d'immobilisation est très élevé (60%) en raison de la petite taille des bateaux. Les rendements sont faibles et sont étroitement liés à l'état de la mer.

**5. Engins de pêche utilisés**

Pour les chalutiers : on peut distinguer deux grands types de chaluts.

**a)** **Le chalut à grande ouverture verticale** ou GOV (nommé 4 faces dans le port), a été introduit depuis 1982. Son utilisation se fait de septembre à avril. Son emploi a considérablement modifié la nature des espèces débarquées (plus d'espèces semi-pélagiques carangidés *Trachurus sp* , sparidés bogue *Boops boops* , *Pagellus sp*, des Gadidés *Merluccius merluccius* ) et le maintien des espèces benthiques classiques telles que la baudroie *Lophius sp*, raies *Raja sp* ,mustelles , rougets ). Depuis 1994, certains armateurs ont modifiés leur chalut en le transformant en chalut à cordes. Cette transformation permet d'augmenter la part des espèces benthiques.

**b)** **Le chalut de fond classique** utilisé principalement durant l'été au moment de l'interdiction de pêche au chalut en deçà des 3 milles. Les espèces cibles sont alors les crevettes Pénéidés et les poissons de fond (rougets, soles, rascasses, merlu …).

## 6. Perspectives d'amélioration :

L'atout principal de ce port est sa proximité avec de nombreuses villes et son passé historique en matière de pêche (traditions de construction navale, maîtrise des méthodes de pêches traditionnelles, de recettes culinaires spécifiques au poisson). Il existe donc un fort potentiel permettant un développement et une modernisation de la pêcherie de Bou Haroun.

Cependant, les structures portuaires nécessitent une mise à niveau rapide, essentiellement du point de vue des normes de sécurités et sanitaires.

- Il semble impératif de développer des industries tout autour de cette localité en rapport avec la pêche (ateliers de fabrications de lignes, de filets, de chaluts, usines de transformation des petits pélagiques …) .
- Il serait utile de procéder à une réorganisation des pêcheries et à une professionnalisation des métiers de la pêche.

Ces différents aspects devraient être pris en compte lors de l'application du plan d'aménagement des pêcheries (en cours d'élaboration après de nombreuses concertations entre professionnels et ministère de la pêche, MPRH).

**ANNEXE 3 : PROGRAMME DE L'ATELIER**

# Atelier sous régional (Algérie, Tunisie, Maroc)

# INDICATEURS GIZC

## Alger le 13, 14 et 15 novembre 2013

Dans le cadre de la mise en œuvre du projet Pegaso, l'association algérienne AREA-ED (association de réflexion, d'échanges et d'actions pour l'environnement et le développement) organise du 13 au 15 novembre 2013, à Alger, un atelier d'information et d'échanges sur l'utilisation des indicateurs pour le suivi des zones côtières en Méditerranée.

Cet atelier sous régional qui couvre la région Afrique du Nord est destiné en priorité aux utilisateurs des indicateurs côtiers en Algérie, au Maroc et en Tunisie. Cet atelier fait suite au premier atelier « indicateurs » organisé par l'AREAD ED en collaboration avec le Commissariat National du Littoral à Alger le 26 septembre 2011 et qui avait réuni des experts marins et côtiers de l'Algérie, de la Tunisie et du Maroc ainsi que la participation active des experts Pegaso, de l'UNESCO, du Plan Bleu et du CAR/PAP (chef de file en Méditerranée de la GIZC).

L'atelier se fait en collaboration entre Pegaso et MEDINA, dans un cadre de 30 ans d'expérience du Plan Bleu à valoriser.

## CONTEXTE

Depuis l'entrée en vigueur du Protocole GIZC en Méditerranée on assiste à une accélération du processus à différents niveaux et dans divers espaces méditerranéens visant à mettre en place les conditions de la GIZC. Parmi ces initiatives le lancement de l'élaboration de stratégies nationales GIZC accompagnées de Plans Côtiers GIZC sur des échelles de territoires plus petites mais plus pertinentes, notamment en Algérie et en Albanie. Ces initiatives viennent compléter la réflexion engagée dans le cadre du projet Pegaso, notamment sur la plate forme GIZC et les changements d'échelles.

Pendant les dernières décennies, diverses expériences GIZC ont été menées sur des problématiques simples et parfois plus complexes comme la mise en place des aires marines protégées, la maîtrise de l'urbanisation en zone côtière, la gestion des flux touristiques et la capacité de charges, les mécanismes de prise de décision ainsi que la question de la participation des acteurs locaux au processus de planification de l'espace et des usages. Le projet Pegaso a, en outre, permis d'engager une réflexion scientifique sur les outils, les méthodologies et les approches GIZC.

Ces questions ont été portées par de nombreux et divers acteurs internationaux, régionaux et locaux pour lesquels la Méditerranée est un terrain d'expérimentation, d'analyse et de prospective par excellence, notamment le PAM, le Plan Bleu, le CAR/PAP, le SMAP, ainsi que d'autres porteurs et bailleurs de fonds. Les Programmes d'Aménagement Côtiers élaborés par les autorités nationales en collaboration avec le CAR/PAP et les autres Centres d'activités régionales du PAM ont constitué à cet effet, un exercice riche en enseignements.

# RAPPORT DE L'ATELIER SOUS RÉGIONAL (Algérie, Tunisie, Maroc) SUR LES INDICATEURS GIZC

Le projet Pegaso, Coordonné par l'Université Autonome de Barcelone (UAB) en Espagne et financé par l'Union européenne dans le cadre du programme FP7, regroupe pas moins de 23 partenaires (universités, centres de recherches organismes internationaux, ONG et associations). Il se propose de créer un pont entre les connaissances scientifiques et les processus décisionnels relatifs à la gestion des côtes de la Méditerranée et de la Mer Noire aux niveaux local, régional et national.

Pegaso, aura permis à l'issue de 5 années de travaux de produire un certain nombre d'outils notamment des données scientifiques et statistiques, des images et des informations sur l'utilisation des sols, les feux de forêts et d'autres aspects des régions côtières, à même de constituer un système de gouvernance qui permettra aux États, régions, secteurs économiques et société civile de collaborer au titre de l'objectif commun du protocole.

## OBJECTIFS DE L'ATELIER

- Diffusion et appropriation des résultats de Pegaso et de MEDINA : l'atelier est une opportunité pour montrer l'utilisation d'un certain nombre d'indicateurs produits par Pegaso et MEDINA, et leur utilité auprès des décideurs, des scientifiques, des acteurs économiques et de la société civile, et de les confronter aux attentes des différents acteurs. L'appropriation de ces résultats est primordiale pour assurer une bonne gestion des zones côtières.
- Présentation de la Stratégie Nationale de la GIZC (en progrès) et tirer les enseignements des méthodologies consacrées aux indicateurs pour soutenir les processus GIZC sur les littoraux, en accord avec le protocole GIZC
- Mettre en cohérence et échanger sur les questions relatives aux indicateurs des zones côtières méditerranéennes entre les acteurs de ces zones en Algérie, au Maroc et en Tunisie, en étant sensible à leurs attentes et à ce qui a été préparé dans les trois pays.
- Travail collaboratif pour sélectionner et consolider un jeu commun, modeste mais pertinent, d'indicateurs, utilisables dans les différents pays, et répondant aux objectifs du Protocole GIZC.

Les indicateurs choisis serviront à montrer comment analyser, monitorer et mieux maitriser les processus urbains sur les littoraux, leurs forces motrices (par ex. densité de population, abandon de l'agriculture dans les zones intérieures, infrastructures portuaires, industries, flux touristiques, etc.). Les discussions permettront de travailler ensemble entre scientifiques et décideurs, dans un processus de participation permettant une meilleure compréhension de l'importance de construire une plateforme de gouvernance, nécessaire aux Stratégies Nationales de GIZC.

# PROGRAMME PRÉVISIONNEL DE L'ATELIER SOUS RÉGIONAL

## Indicateurs GIZC dans les zones côtières

## Alger, 13 - 15 novembre 2013

| Jour 1 : Mercredi 13 novembre 2013 | | |
|---|---|---|
| 08 : 30 – 09 :00 | Inscription des participants | |
| 09 : 00 – 09 :15 | Ouverture de l'atelier | Ministère de l'Aménagement du Territoire, de l'Environnement, Ministère de la Pèche et des Ressources Halieutiques |
| 09 : 15 – 09 :25 | Présidente de l'AREA ED<br><br>Mme Meriem Louanchi | Cadre de l'atelier et ses objectifs |
| 09 : 25 – 09 :40 | Représentant du PAP RAC | Le protocole GIZC en Méditerranée |
| 09 : 40 – 09 :55 | Coordinatrice du projet Pegaso<br><br>Mme Françoise Breton (UAB) | Importance des indicateurs dans le processus GIZC. Des indicateurs utiles |
| 09 : 55 – 10 :10 | Représentant du Plan Bleu<br><br>M Jean Pierre Giraud (PAM/Plan Bleu) | Prospective et indicateurs en Méditerranée |
| 10 : 10 – 10 :25 | Responsable Pegaso pour les indicateurs,<br><br>Mme Francesca Santoro (IOC/UNESCO) | Fiches techniques de plusieurs indicateurs sur l'urbain côtier, (DPSIR, échelles, données, utilité pour le décideur, etc.)… |
| 10 : 25 – 10 :45 | Pause café | |
| 10 : 45 – 11 : 00 | Mme Marta Dinares (UAB/MEDINA) | Les indicateurs de métabolisme urbain et leur utilité |
| 11 : 00 – 12: 00 | Séance 1 : Discussion sur les besoins et attentes par rapport a ce qui a été présenté (en groupe), ce qui manquerait, comment y répondre, etc. | 2 groupes et leur rapporteur (a)Pegaso indicateurs, (b) MEDINA indicateurs). |
| 12 : 00 – 13 : 30 | Déjeuner | |
| 13 : 30 – 14 : 30 | Séance 2 : Présentation des pays (Algérie, Maroc, Tunisie) concernant la mise en oeuvre du protocole GIZC en Méditerranée.<br><br>Le MATE (Algérie) présentera les travaux en cours de la Stratégie Nationale GIZC, objectifs, | Algérie : MATE (Samir Grimes<br><br>Coordinateur de la stratégie GIZC)<br><br>Maroc : |

| | | |
|---|---|---|
| | progrès, utilisation des indicateurs de Pegaso. | Tunisie : |
| 15 : 30 – 15 : 30 | Discussion sur les indicateurs dans le processus de Stratégie Nationale GIZC. | Modération par MATE et Pegaso |
| 15 : 30 – 16 : 00 | Pause café | |
| 16 : 00 – 17 : 00 | Rapports des groupes de travail de la séance 1<br><br>Discussion séances 1 et 2 | Modération par AREA ED et Pegaso |
| **Jour 2 : Jeudi 14 novembre 2013** | | |
| 09 : 00 – 11 : 00 | Séance N°3 : Travailler ensemble sur un petit groupe d'indicateurs pour les trois pays : justification par rapport aux besoins des pays, du Protocole GIZC, DPSIR, données, échelles, thèmes, etc. | Animation par les membres du groupe de travail |
| 11 : 00 – 11 : 15 | Pause café | |
| 11 : 15 – 12 : 15 | Restitution Finale des travaux de groupes et discussion générale : Conditions et préalables pour un tableau de bords efficace et effectif des zones côtières en Méditerranée, Résultats. | Modération par un expert Pegaso |
| 12 : 15 – 13 : 30 | Déjeuner | |
| 13 : 30 – 16 : 00 | Table ronde sur l'utilisation des indicateurs pour la GIZC, la sensibilisation et la communication, par secteur. Comment mieux intégrer chaque secteur dans la GIZC, quels indicateurs ? Vers quelle gouvernance ? Révision du jeu d'indicateurs pour les secteurs dans un contexte GIZC.<br><br>Par exemple : vision actuelle du secteur dans la GIZC, quelles sont les variables les plus pertinentes pour chaque secteur, identification des principales forces motrices qui peuvent faire varier ces variables, peut on les gérer ? quelles collaborations sont nécessaires ? vers un modèle de gouvernance ? | Animation par le MATE, le MPRH, le CNL, les Gardes Côtes, les secteurs, du Tourisme et du Transport ainsi que l'AREA ED, |
| **Jour 3 : vendredi 15 novembre 2013** | | |
| 09 : 00 – 16 : 00 | Sortie de terrain : problématiques de la GIZC sur la côte ouest d'Alger (Alger – Tipasa) : pêche, tourisme et agriculture, etc. : préservation d'un site côtier sensible, intégration du patrimoine archéologique dans une dynamique GIZC,…). | |

## ANNEXE 4 : LISTE DES PARTICIPANTS

| Nom Et Prénom | Fonction | Institution | Téléphone | Fax | Mobile | Mail | Adresse |
|---|---|---|---|---|---|---|---|
| Mme TOUBAL Wissam | Chargée du bureau des ressources génétiques | Direction Générale des Forêts | +213 21 915 286 | +213 21 915 286 | +213 550 634 115 | wis.toubal@gmail.com | Chemin Doudou Mokhtar, Ben Aknoun, Alger |
| Mme SERIDI Fadela | Directrice | Ministère de la pèche et des ressources halieutiques | +213 21 433 968 | | | F_seridi@yahoo.fr | Route des 04 canons, Alger |
| Mme SANTORO Francesca | Expert | Pegaso - UNESCO / IOC | +33 145 683 952 | +39 333 470 1771 | | f.santoro@unesco.org | Paris |
| Mme SAHNOUN Fadéla | Ingénieur principal | Commissariat National du Littoral (CNL) Antenne Oran | | | +213 798 768 404 | sahnoun_oran@yahoo.fr | CNL Oran |
| Mme RAMDANE Nadia | Chef de département protection | Parc National de Taza | +213 34 513 113 | +213 34 513 223 | +213 556 147 699 | ramdane_nadia@yahoo.fr | BP 70, Jijel 18000 |
| Mme MADANI Laalia Nawel | Ingénieur d'état | Centre National de Développement des Ressources Biologiques (CNDRB ) | +213 21 965 978 | +213 21 965 978 | +213 798 745 678 | cndrb2007.dz@gmail.com laalianawel@hotmail.fr | 11 Rue Mohamed Tazairt, Bab El Oued Alger |
| Mme LOUANCHI Meriem | Présidente | AREA-ED | +213 24 423 393 | +213 24 423 393 | +213 664 363 029 | meriem.louanchi@gmail.com | Route de Cherchell, 42240, Nador, Tipasa |
| Mme LOUANCHI Ferial | Secrétaire générale | AREA-ED | +213 24 423 393 | +213 24 423 393 | +213 669 877 472 | lairef@hotmail.com | Route de Cherchell, 42240, Nador, Tipasa |
| Mme KORICHI Hamida | Professeur | ENSSMAL | | | | midahirche@yahoo.fr | BP19, Bois des Cars, Dely Ibrahim, Alger |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mme GHEZALI Fouzia | Ingénieur d'État en écologie et environnement | Direction de l'Environnement de la wilaya de Tipasa | | | | | Tipasa |
| Mme DINARES Marta | Expert | MEDINA/UAB | +34 935 868 059 | +34 935 868 059 | +34 561 680 433 | Marta-dinares@uab.cat<br>Marta.dinares@uab.cat | UAB, Universitat Autònoma de Barcelona, Departament de Geografia, 08193 Bellaterra (Cerdanyola del Vallès), Spain |
| Mme CHENNIT NADIA | Directrice | Direction du Tourisme de la wilaya de Tipasa | | | | | Tipasa |
| Mme CHALAL Samira | Administratrice | AREA-ED | +213 24 423 393 | +213 24 423 393 | +213 773 399 201 | mira-area-ed@hotmail.com | Route de Cherchell, 42240, Nador, Tipasa |
| Mme BRETON Françoise | Expert | Pegaso / UAB | +34 935 813 549 | +34 935 814 812 | +34 606 347 204 | francoise.breton@uab.cat | UAB, Universitat Autònoma de Barcelona, Departament de Geografia, 08193 Bellaterra (Cerdanyola del Vallès), Spain |
| Mme BOUGUER-RA Djihane | Chef de service qualité et envi-ronnement | Agence de Bassin Htdro-graphique, Algérois, Hodna, Soumam (ABH-AHS) | +213 21 287 128 | +213 21 287 128 | | | Kouba, Alger |
| Mme BOUGH-ENOU Radia | Ingénieur d'État | Ministère de l'Aménagement du Territoire et de l'Environnement (MATE) | | | | | Route des 04 Canons, Alger |
| Mme BOUDJEMAL Nassima | Ingénieur d'État en sciences de la mer | Direction de l'Environnement de la wilaya de Tipasa | | | | | Tipasa |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mme BOUDE-FOUA Nassima | Ingénieur principal | Centre National de Développement des Ressources Biologiques ( CNDRB ) | +213 21 965 978 | +213 21 965 978 | +213 552 059 521 | cndrb2007.dz@gmail.com<br>boudefoua_n@yahoo.com | 11 Rue Mohamed Tazairt, Bab El Oued Alger |
| Mme BERKAT Rahima | CES | MPRH | | | | rberkat@yahoo.fr | Route des 04 Canons, Alger |
| Mme BENDJEDDA Nadjiba | Ingénieur d'État | Direction Générale des Forêts | +213 21 915 186 | +213 21 915 186 | +213 555 453 232 | bendjeddanadjiba@yahoo.fr | Chemin Doudou Mokhtar, Ben Aknoun, Alger |
| Mme BEN HOUIDI Kaouther | Ingénieur principal | Agence de Protection et d'Aménagement du Littoral (APAL) | | | +216 97 348 382 | k.benhouidi@apal.nat.tn | 1 rue Raspail Montfleury, 1089, Tunis, Tunisie |
| Mme BELAL Ghizlaine Souhila | Doctorante | Université Mohammed 1er, Faculté des Sciences, Oujda | | | +212 672 987 628 | Ghizlaine.belal@gmail.com | 08 Rue Sidi Boumediene, Oujda, Maroc |
| Mlle FERHAT Monia | Membre | AREA-ED | +213 24 423 393 | +213 24 423 393 | | area@area-ed.org | Route de Cherchell, 42240, Nador, Tipasa |
| M TAKOUCHE Mohamed Abdenacer | Secrétaire général | Association Mare Nostrum | | | +213 773 877 730 | nacer_ta@hotmail.fr | 42, Lot Barbarous, Cherchell. |
| M TAIBI Rachid | Directeur général | Agence Nationale des Ressources Hydrauliques (ANRH) | +213 21 542 559 | +213 21 542 542 | +213 661 523 394 | anrh@anrh.dz | 40 Avenue Mohammedi, Bir-Mourad-Rais, Alger |
| M TAHIRI Rachid | Chef de service | Conseil National de l'Environnement, Maroc | +212 537 576 646 | +212 537 576 645 | +212 661 550 043 | r_tahiri@yahoo.fr | N°45, Appt.2, Lotissement Houssima, Temara |
| M SILHADI Sismail | Assistant DG | Algérienne des Eaux (ADE) | +213 21 511 863 | +213 21 511 856 | +213 661 504 134 | silhadi_sismail@yahoo.fr | Zone Industrielle, Oued Smar, Alger |
| M SBIA Noureddine | Président | FACM | +213 21 664 659<br>+213 21 664 662 | +213 21 664 659<br>+213 21 664 662 | +213 555 858 252 | facm_algerie@hotmail.com | 56, Avenue Ahmed Ghermoul, 16208, Alger, Algérie |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| M SAFAR ZITOUN Mohamed | Assesseur | AREA-ED | +213 23 202 106 | +213 23 202 106 | +213 771 443 784 | szm@geomaticsolutions.dz | 08 rue SHAKESPEARE, El Mouradia, Alger |
| M REZAL Abdenour | Secrétaire général | Association Delphine | +213 24 893 106 | +213 24 893 399 | +213 556 967 471 | khelouia@gmail.com | Dellys, Boumerdes |
| M OUSSAID Hocine | Ingénieur d'État | Commissariat National du Littoral (CNL) Direction générale | +213 21 289 023 | +213 21 285 516 | | | Kouba, Alger |
| M MENAÏ Ahmed | inspecteur | Direction de la pèche et des ressources halieutiques | | | | | Tipasa |
| M KARIMI Mohamed | Ingénieur des eaux et forêts, Chef de service | Association Homme et Environnement<br><br>Direction régionale des forêts, Oujda | | | +212 661 981 028<br><br>+212 661 914 619 | karimi.ef@gmail.com | Bd. Mehdi Ben Toumert, imm. Eaux et Forêts, Oujda, Maroc |
| M KAIKAI Abdelouahed | Entrepreneur | Association de Gestion Intégrée des Ressources (AGIR) | +212 539 840 009 | +212 539 840 009 | +212 662 060 562 | akaikai30@gmail.com | 20, rue Amrou Ibne Al Asse, 32000, Alhoceima, Maroc |
| M KACHER Mohamed | Directeur général | Centre National de Recherche pour le Développement de la Pêche et l'Aquaculture (CNRDPA) | | | | | Bou Ismail, Tipasa |
| M HATTALI Ibrahim | Ingénieur d'État | Commissariat National du Littoral (CNL) Antenne Tipasa | +213 24 471 421 | +213 24 471 421 | | cnltipaza@yahoo.fr | Lotissement Chenoua Plage, Tipasa |
| M HATTALI Abderrahmane | Membre | AREA-ED | +213 24 423 393 | +213 24 423 393 | | abderrahman_h@yahoo.fr | Route de Cherchell, 42240, Nador, Tipasa |
| M HAMDANI Hacene | Président | Association de pèche artisanal « le dauphin » | +213 26 250 317 | +213 26 250 317 | +213 556 750 968 | hacene2012@gmail.com | G2, port d'Azeffoun, Tizi Ouzou |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| M HAMANI Salim | Directeur | Direction de la pèche de la wilaya de Tipasa | +213 24 477 248 | +213 24 477 248 | | | Tipasa |
| M GUERFI Mokhtar | Coordinateur | RASMER | | | | sguerfi@yahoo.fr | Alger |
| M GRIMES Samir | CES | MATE | | | | samirgrimes@yahoo.fr | Rue des 04 Canons, Alger |
| M GIRAUD Jean Pierre | Expert | Pegaso/plan Bleu | +33 492 387 144 | | | jpgiraud@planbleu.org | Plan Bleu, 15 rue Ludwig van Beethoven, Sophia Antipolis, 06560, Valbonne – France |
| M DI TOTA Massimiliano | Expert | AREA-ED | | | +212 661 374 244 | m.ditota@dene-consulting.info | Rabat, Maroc |
| M DELABECHE Mohamed | | AREA-ED | | | +213 770 502 298 | delabechemed@yahoo.fr | Cité des Dunes, Bt. A, Chéraga, Alger |
| M CHIHEB Mounir | Directeur | Aquapèche Algérie | | | +213 771 656 815 | aquapechealgérie@yahoo.com | Bordj El Kiffan, Alger<br>Aquapechealgérie.com |
| M CHEBAH Mouloud | Directeur régional | Agence Nationale des Ressources Hydrauliques (ANRH) | +213 25 399 024 | +213 25 399 572 | +213 662 833 087 | dre@anrh.dz | BP 150, Soumaa, Blida |
| M CHAFI Abdelhafid | Professeur | Université Mohammed 1er, Faculté des Sciences, Oujda | | | +212 660 541 351 | chafihafid@yahoo.fr | 30, rue Ikhlas, Hay Al Andalous, Oujda, Maroc |
| M BOUKRINA Mohamed | Directeur général | Commissariat National du Littoral (CNL) | | | | | CNL, Kouba, Alger |
| M BOUDHINA Hedi | Président | Association Régionale de l'Environnement et du Tourisme du Cap Bon | +216 98 345 889 | +216 72 260 271 | +216 52 822 888 | hedi.boudhina@gmail.com | 05, rue Mongi Slim, 8050, Hammamet, Tunisie |
| M BOUDEFOUA Belaid | Directeur | Engineering & Didactic Services | +213 26 259 163 | +213 26 259 163 | +213 771 770 114 | Eds_boudefoua@hotmail.com | Tigzirt, Tizi Ouzou |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| M BENSLIMANE Bilal | Trésorier ad-joint | AREA-ED | | | +213 771 122 626 | see_bill@live.com<br>see_benslimane@gmail.com | Hadjout, Tipasa |
| M BENDJEDID Moncef | Directeur | Parc National d'El Kala | +213 38 661 171 | +213 38 661 171 | +213 551 230 140 | m.bendjedid@yahoo.fr | Route des crêtes El-Kala, W. El-Tarf, 36100 |
| M BENCHARIF Mounir | Coordinateur | AREA-ED | +213 24 423 393 | +213 24 423 393 | +213 771 175 899 | m.bencharif@area-ed.org | Route de Cherchell, 42240, Nador, Tipasa |
| M BENAIDA Halim | Chef de département | Parc National de Gouraya | +213 34 211 947 | | +213 771 292 198 | hh.benaida@yahoo.fr | Sidi Touati, route du Gouraya Bejaïa, 06000 |
| M BELKESSAM Hamid | Président | Association RECIFS | | | +213 550 053 300 | h.belkessam@gmail.com | Alger |
| M BABA AHMED Rafik | VP AREA-ED | AREA-ED | | | +213 661 328 132 | bamedraf@gmail.com | Lotissement ECOTEC, N°26, El Kala, Tarf |
| M AHMANACHE Abdellah | Directeur | SARL Enviro Inspect, BET Environnement | | | +213 550 495 395 | Ahmanache.abdellah@gmail.com | Alger |

# Annex 4: Georgia CASE Site – Guria Coastal Region: Training Workshop Report

| | |
|---|---|
| Dissemination Level* | Public |
| Project acronym / number | Pegaso 244170 |
| Project title | People for Ecosystem based Governance in Assessing Sustainable development of Ocean and coast |
| Prepared by | Amiran Gigineishvili (Georgia CASES Coordinator),<br>Mamuka Gvilava (Pegaso Task Manager for BSC PS),<br>Nathalie De Hauwere (VLIZ Flanders Marine Institute),<br>Françoise Breton (Manager & Coordinator of Pegaso) |

# Georgia CASE Site – Guria Coastal Region: Training Workshop Report

Tasks 6.2 of Pegaso Project aims at building and enhancing and Task 6.3 at sustaining the capacity with end users and stakeholders through training, as well as through promoting the work and exchange of views using internet tools and the organisation of 'real' and 'virtual' brainstorming workshops, using expertise in the Pegaso Consortium.

Within the context of the ICZM Governance Platform the capacity building is fostered amongst the different end-user groups in CASES and, extending to South (Med) and East (Black Sea) networks of research and stakeholders. This part of the work involves identification of the key stakeholder groups and the development of a range of training efforts to promote awareness and to develop appropriate skill-sets among Pegaso end users.

In the above mentioned context series of training efforts were undertaken at the final stage of Pegaso addressing capacity building and participatory training workshops in various Southern Mediterranean (Turkey, Lebanon, Algeria, Greece, Egypt) and the Black Sea (Georgia) CASES.

Such a training and capacity enhancement is necessary to assist international, regional, national or local administrations to consider and to use the ICZM approach. The training aimed to build on the materials generated in the project, and utilising state of the art in relation to ICZM methodologies, tools and models.

The training in the Georgian CASE – Guria Coastal Region – included both the interactive workshop (20 November) as well as the prior- and post-training fact-finding reconnaissance trips along the Black Sea coast of Georgia to familiarize Pegaso Trainers (UAB, VLIZ) with conditions along the coastline (19 November), but also to introduce some training participants with these conditions in the light of the training workshop held the day before through assessment of positive and negative factors influencing the Georgian coastal zone (21 November). Both of these efforts, training and filed work, are described in the main part of the report (Sections 1.1 and 1.2), followed by the brief analysis of the results of the training as well as the evaluation by participants and trainers (1.3), while appendixes contain further details of site visits (Appendix 2.1), the training program (2.2), such as the logistical schedule (2.3), registration form (2.4), agenda (2.5), participants (2.6), feedback forms to evaluate the results (2.7) as well as all PowerPoint slides used to deliver the training to workshop participants (2.8).

Apart from describing the training workshop held in Georgian CASE (the only one held in the Black Sea Regional), this report aims at contributing into overall Pegaso Deliverable 6.2 on results of the basic training for stakeholders and end users in both Sea Basins.

As a last introductory remark, at least the following themes provided for in the Mediterranean ICZM Protocol were addressed and modelled with the training workshop in Georgia:

Article 15 Awareness-raising, Training, Education and Research – regional and local level training in various aspects of ICZM such as application of indicators.

Article 16 Monitoring and Observation Mechanisms and Networks – applying coastal inventories and indicators at the regional as well as CASES level.

## 1.1 Training workshop

Training workshop on coastal sustainability indicators, organized by FP7 Pegaso project, was held in Grigoleti, Guria Region of Georgia, on 20th of November, 2013. Objective of the training workshop was to provide basic understanding of coastal indicators in the view of their application at the international level, as well as to apply coastal indicators for the Guria CASE in Georgia as the basis for regional level reporting on the state of the coastal environment.

Participants of the training workshop included those authorities, agencies and organizations (local, national), which can contribute into the coastal indicator data and information provision and compilation, represented by personnel from the Georgian Statistics Office (GeoStat) and the spatial planning unit of the Ministry of Economy and Sustainable Development of Georgia. Regional/local participants included public servants from Lanchkhuti and Ozurgeti Municipalities, represented by the Members of the Municipal Councils of these two coastal districts of Guria Region. Participants (20 in total) also included some representatives of the local public and environmental NGO-s.

Main content of the training workshop was delivered by Pegaso representatives Dr. Françoise Breton, Manager & Coordinator of FP7 Pegaso Project (Universitat Autònoma de Barcelona, UAB) and Mrs. Nathalie De Hauwere from Pegaso project partner Flanders Marine Institute (VLIZ).

Dr. Breton, the main facilitator of the entire training effort, presented the Pegaso project in detail as well as elaborated on subjects such as Land cover and Cumulative Index Mapping of coastal and marine environments.

Mrs. De Hauwere provided comprehensive introduction into coastal sustainability indicators on example of European Pegaso and DEDUCE and other coastal indicators, as well as conducted an interactive session illustrating the use of Spatial Data Infrastructure (SDI) in disseminating coastal indicators. At the end of the interactive session participants of the workshop, the key stakeholders and decision-makers from two coastal municipalities of Guria Region, Lanchkhuti and Ozurgeti, were involved in the process of assessing the validity the Pegaso SDI at the regional & local levels.

*Figures 1: Facilitators of the training and content provides Dr. Breton and Mrs. De Hauwere*

*Figures 2: Stakeholders from Guria Region viewing Pegaso video presentations.*

The main thematic presentation of the training workshop on coastal sustainability indicatorsby Nathalie De Hauwere was indeed enriched by two polimedia video presentation by Dr. Francesca Santoro of UNESCO IOC "Pegaso Project: Integrated Coastal Zone Management Indicators" (http://polimedia.uab.cat/#v_381) and by Dr. Gonzalo Málvarez of UPO "The Pegaso platform. Supporting ICZM in the Mediterranean and black sea basins" (http://polimedia.uab.cat/#v_442), successfully demonstrated to workshop participants. The polimedia videos indeed proved to be useful for delivery of training materials during capacity building events, provided with high quality translation (excellent performance of the workshop interpreter Mrs. Lali Kereselidze should be commanded for synchronous translation of these sophisticated technical videos.)

The meeting was moderated by Dr. Françoise Breton, supported with local facilitation function by the Chairman of the Municipal Council of Lanchkhuti Municipality Mr. Amiran Gigineishvili. In addition to facilitation of the meeting agenda and delivering the informative presentation of the work done so far in the Georgian CASE – Guria Coastal Region, Mr. Gigineishvili, together with Dr. Mamuka Gvilava, BSC PS Task Manager for Pegaso and ICZM National Focal Point (NFP) for Georgia, presented the software instrument developed in support of the compilation of European progress marker indicators for integrated coastal zone management.

Mamuka Gvilava also demonstrated presentations on behalf of Alina Spinu of NIMROD, Romania (see Figure 3 below) and Lisa Ernoul of Tour du Valat results of the indicator and LEAC work, respectively, highlighting that compiling similar datasets for Guria are highly desirable. Important contributions of above mentioned authors and their colleagues together with four authors of this report in delivering the quality content to Georgian participants is kindly acknowledged.

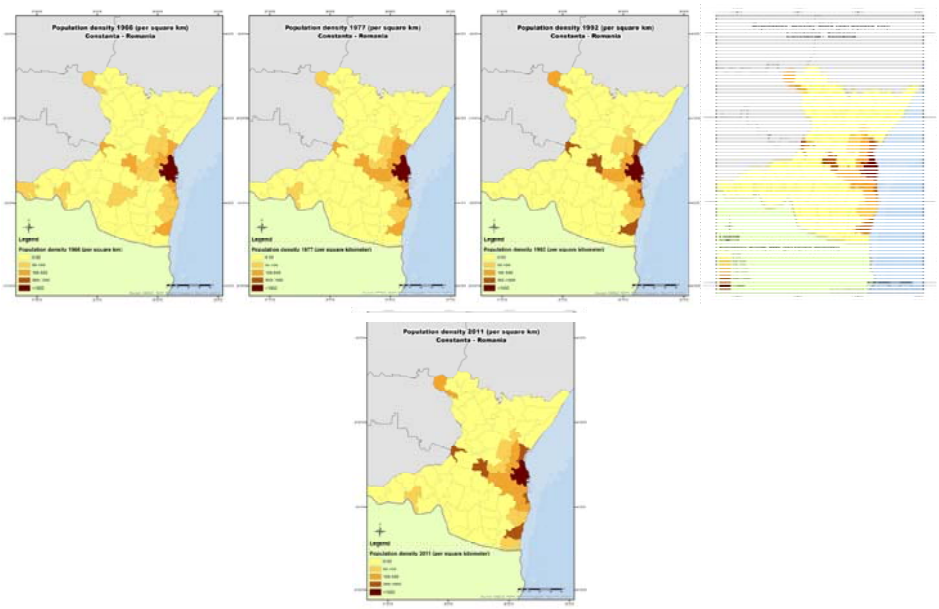


*Figure 3: Population density time series at NUTS 5 / LAU2 level for Constanta, Romania*

*(source: A. Spinu, M. Golumbeanu, NIMRD "Grigore Antipa", Romania)*

The training workshop benefited from detailed presentation of "Integrated Land-use Management Modelling of Black Sea Estuaries", performed by Mr. Giorgi Meskhidze of NGO Civitas Georgica. He alerted participants that within ILMM-BSE project it might be feasible through research and data collection activities to compile in a comprehensive way core sets of coastal sustainability indicators for Guria Region. This could be an excellent follow up to Pegaso in Georgian CASE.

The technical and introductory presentations were followed by the open discussion session, with major contribution of regional and local level decision-makers and representatives of the public. Interesting analysis was concerned with the informed review of the list of Pegaso indicators discussed in most interactive manner with the participants of the training workshop. As a result of this discussion the participants indeed appreciated usefulness and importance of the coastal sustainability indicators in addressing the coastal management issues on an informed basis. Perhaps the most interesting outcome of this discussion is that stakeholders agreed to support the formation of joint regional coastal forum/council to further the policy discussion on good coastal governance in Guria Region. Georgian CASE can indeed capitalize on this agreement and provide its facilitation and support in organizing further more detailed actions at the regional and local levels.

## 1.2 Field reconnaissance

Important part of the training organization and delivery was the prior- and post-workshop joint fact finding site reconnaissance visit along the Black Sea coast of Georgia. As mentioned above, on 19th of November site visits were organized specifically for the trainers to get them acquainted with the section of the coast to the north of the Georgia CASE (Poti, Anaklia), while on 21st of November site visits were joined by selected participants from the central agencies and local self-government. The Figure 3 below depicts Google Earth map of all sites visited, described further below with photos illustrating key issues documented during these joint fact-finding field visits. All places visited or discussed can be accessed at this Google Earth link: Georgia.kmz , while field reconnaissance photos with detailed captions assessing each site/location visited can be found in the Appendix 2.1.

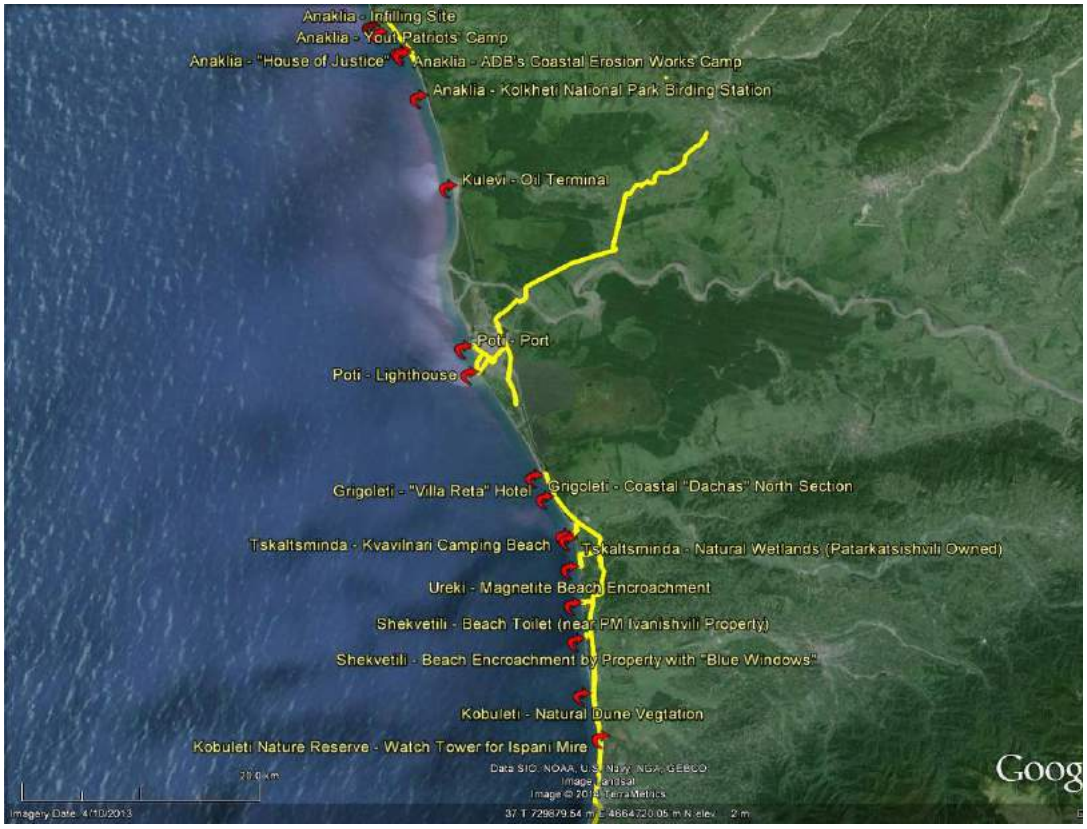



*Figure 4: Google Earth map with sites visited prior to training (Anaklia and Poti. Kulevi oil terminal shown, but not visited), as well as post-workshop reconnaissance (Grigoleti, Ureki, Shekvetili, Kobuleti)*

The meeting and the field work was filmed by local TV station team, planning to produce short video about the training and the prior- and post-workshop fact-finding

visits along the Guria coast to observe negative and positive examples of coastal management.

## 1.3 Recommendations

The following recommendations can be derived from training workshop and field reconnaissance discussions between the stakeholders, Pegaso trainers and CASE management:

- Stakeholders were able to appreciate the value of ICZM and witness results of their decisions not taking account of ecosystem based and more holistic approaches to coastal governance.

- Decision-makers agreed to support the establishment of the joint Coastal Council for Guria Region to form institutionally organized forum on ICZM including regular field visits to monitor processes.

- Urgent need is to establish international policies (such as ICZM Protocol) and national framework (such as promptly proceeding with enacting the draft Law on ICZM[6] and draft ICZM Strategy for Georgia[7]) so that ICZM implementation is indeed progressing until it is not too late, as still much natural beaches and other coastal resources remain, and before they could be destroyed.

- It might be appropriate to explore European level leverage so that Georgia is acting on its commitments with regard to coastal and marine governance, such as requesting proper governmental actions in the process of European association and approximation.

- Proceed with on-the-ground initiatives in a programmatic manner, utilising local resources as well as international assistance projects in synergy with the approaches such as Pegaso CASE.

- Mobilize strong local social action in support of good coastal governance practices with hands on projects such as beach cleanups, bathing water quality monitoring, spatial planning, and low cost innovative projects.

- Concentrate efforts on Guria as much has already been achieved in terms of action planning and capacity building in this coastal region, setting it as an example of good coastal governance for the rest of the Georgian coast and even sharing experience with Black Sea and other regional partners.

- Maintain the momentum of utilising and implementing tools with shared ICZM platform support.

[6] https://sites.google.com/site/iczmgeo/Home/20050412-e-draft-ICZM-Law-GEORGIA.pdf
[7] https://sites.google.com/site/iczmgeo/Home/20100322_Draft_ICZM_Strategy_GEORGIA_ENG.pdf

- Exploring the feasibility for various post-Pegaso actions and projects.

## 1.4 Evaluation summary

Training participants at the end of the workshop filled evaluation forms, rating the training content and expressing opinions on various aspects of the training session. From all 20 participants receiving the evaluation forms, 19 filled original evaluations were collected, including 15 anonymous responses of participants and 4 non-anonymous feedbacks from training providers. General results of evaluation are very positive. Participants provided higher average scores than results of self-evaluation by trainers. There responses and ratings are presented in Appendix 2.7 following the format used for evaluation, and containing details statistics as well as all narrative responses to evaluation questions as provided by each participant. Below is provided summary and average evaluation scores for participants, trainers and both combined.

**QUESTIONS ABOUT COURSE CONTENTS:**

**Was the content appropriate (Yes/No)? Please explain your answer**

Participants (11 explanations, 15 Yes, 0 No), Trainers (3 explanations, 4 Yes, 0 No)

**Did you understand the content (Yes/No)? Please explain your answer**

Participants (10 explanations, 15 Yes, 0 No), Trainers (3 explanations, 4 Yes, 0 No)

**Was the training material relevant to your needs (Yes/No)? Please explain your answer**

Participants (8 explanations, 15 Yes, 0 No), Trainers (3 explanations, 4 Yes, 0 No)

**How will you apply what you have learned (Yes/No)? Please explain your answer**

Participants (13 explanations), Trainers (3 explanations)

**QUESTIONS ABOUT THE TRAINERS (1= POOR, 5= EXCELLENT):**

**Were the trainers effective?**

Average: **≈ 4.76**Participants: 1 (0) 2 (0) 3 (0) 4 (3) 5 (10) **≈ 4.77**Trainers: 1 (0) 2 (0) 3 (0) 4 (1) 5 (3) **≈ 4.75**

**Did the trainers respond to doubts?**

Average **≈ 4.71** Participants: 1 (0) 2 (0) 3 (0) 4 (4) 5 (9)**≈ 4.69**Trainers: 1 (0) 2 (0) 3 (0) 4 (1) 5 (3)**≈ 4.75**

**QUESTIONS ABOUT TRAINING METHODS (1= POOR, 5= EXCELLENT):**

**Were the materials used useful?**

Average **≈ 4.47**Participants 1 (0) 2 (0) 3 (0) 4 (5) 5 (8) **≈ 4.62**Trainers 1 (0) 2 (0) 3 (1) 4 (2) 5 (1)**≈ 4.00**

**Was the teaching method appropriate?**

Average ≈ **4.59**Participants 1 (0) 2 (0) 3 (0) 4 (4) 5 (9) ≈ **4.69**Trainers 1 (0) 2 (0) 3 (1) 4 (1) 5 (2)≈ **4.25**

**Were you motivated to learn the contents?**

Average ≈ **4.65** Participants 1 (0) 2 (0) 3 (0) 4 (5) 5 (8) ≈ **4.62** Trainers 1 (0) 2 (0) 3 (0) 4 (1) 5 (3) ≈ **4.75**

**Was the level of difficulty appropriate?**

Average ≈ **4.69**Participants 1 (0) 2 (0) 3 (0) 4 (3) 5 (9) ≈ **4.75**Trainers 1 (0) 2 (0) 3 (0) 4 (2) 5 (2) ≈ **4.50**

**Would you recommend the course to your colleagues (Yes/No)? If no, explain your answer**

Participants (0 explanations, 13 Yes, 0 No), Trainers (1 positive explanation, 4 Yes, 0 No)

**QUESTIONS ABOUT TRAINING ADMINISTRATION:**

**Was the time and length of the training appropriate (Yes/No)? Please explain your answer**

Participants (9 explanations, 11 Yes, 2 No), Trainers (2 explanations 4 Yes, 0 No)

**What is your overall rating of the training (1= Poor, 5= Excellent):**

Average ≈ **4.65** Participants 1 (0) 2 (0) 3 (0) 4 (4) 5 (9) ≈ **4.69** Trainers 1 (0) 2 (0) 3 (0) 4 (2) 5 (2) ≈ **4.50**

# Appendices

## 2.1 Photos

*Figures 5: Coastal developments in Anaklia are indeed 'compatible' to MedOpen Torres Costa simulation game, but in this case as a reality game*

*Figure 6: Casino "Palm Beach" provided as per spirit of Law of Georgia on Supporting the Free Touristic Zones of Kobuleti and Anaklia (2010)*

*Figure 7: Site infilled, levelled and gravelled for some construction activities (for Anaklia-Lazika Port?), breaking the "palm beach" coastline*

*Figure 8: View in the northward direction, with new coastal developments of poor architectural quality and dilapidated pier from Soviet times*

*Figure 9: Same location as above, viewed from along the coastline*

*Figure 10: ADB is supporting the project for the arrangement of 10 tetrapod breakwaters, placed at 250-300 meter inshore of the beach along 4.1 km length of coastline. The cost of 1st stage is approx. EUR 6 million, 2nd estimated at 4-6 million*

*Figure 11: Quote from the 2013 Annual Report of the NFP for Georgia to the Black Sea Commission: "It appears that the purpose of the ADB project is to protect the coast for FUTURE developments rather than for EXISTING ones"*

*Figure 12: Brand new modern administrative*

*Figure 13: Loss of natural capital versus*

*building (so called House of Justice for Lazika City) in the middle of nowhere*

*urban encroachment: innovative architecture but not for this location (photo source: [http://eurofasad.ge](http://eurofasad.ge))*

*Figure 14: Beautiful Kolkheti wetlands with the mountains of Greater Caucasus in the background*

*Figure 15: Low impact green building of Kolkheti National Park field contact station seems deserted*

*Figure 16: Interpretation board is the only source of information in the absence of park personnel*

*Figure 17: Are these buildings HQ of Lazika Port? Media report of 2012.09.14 indicates government removed Lazika ads from the rooftops, pursuing with Port Anaklia without explaining the difference (http://www.netgazeti.ge/GE/105/News/12806 )*

*Figure 18: Draft National ICZM Strategy advocates for developing the capacity of existing ports instead of initiating new developments. MAERSK is planning to build new one south of Poti Port, RAKIA – in "Free Industrial Zone" to the north*

*Figure 19: Lanchkhuti "Guria" soccer team base prevented proliferation of private "dachas" to the south, despite creeping developments since 2000*

*Figure 20: Mediterranean ICZM Protocol 100 metre setback would not be complied by developments northward of the same location here at Grigoleti*

*Figure 21: Coastal erosion is not a concern for the environment per se, until inappropriate building practices interfere (view southward of "Villa Reta")*

*Figure 22: "Villa Reta" Hotel should better remove these concrete structures as they are no defence, while degrading beach quality and hinder access*

*Figure 23: Concrete fences collapsed, southward view at Tskaltsminda coast. Best intervention would be regular beach litter cleanup*

*Figure 24: Same location, northward view. Best intervention would be proper setback to demonstrate the benefits of coastal resilience*

*Figure 25: Same location as above, viewed from along the coastline*

*Figure 26: Multiscale team of coastal stakeholders (European, regional, national, local) in joint action*

*Figure 27: Lack of Mediterranean 100 m setback rule is clearly impacting the quality of Ureki beach*

*Figure 28: Beach toilet of unspecified wastewater technology (left). Seen in the background is the coastal property of the Georgian PM*

*Figure 29: Not all natural capital is lost along the Georgian coast, but quick action is required to preserve it from fast encroachments*

*Figure 30: Same location as above, viewed from along the coastline*

*Figures 31: Hotel with "blue windows" right on the beach, in hazard prone location, and with poor quality planning, architecture and construction*

*Figures 32: "Dachas" in the hinterland of the "blue windows" hotel can not be assured of seascape. Proper setback would preserve the property value*

*Figure 33: This natural beach with endemic plant species so far survived immediate vicinity of the newly built car park plot in the north of Kobuleti*

*Figure 34: Tourism development within the site of archaeological importance in Kobuleti, stimulated by the Law of Georgia on Supporting the Free Touristic Zones of Kobuleti and Anaklia (2010)*

*Figure 35: Picture of the field team taken at the observation tower in the Kobuleti Nature*

*Figure 36: Boardwalk is leading to peatland site of global significance (Kaffke, A.,*

*Reserve (mire Ramsar site is visible in the far background)*

*Couwenberg, J., Joosten, H., Matchutadze, I., Schulz, J. (2000): Ispani II: The world's first percolation bog. In: Crowe, A., Campeau, S., Rubec, L. (eds.): Millennium Wetland Event, Program with Abstracts. Québec. p. 487)*

## 2.2 Program

**PEGASO CASES TRAINING WORKSHOP, GEORGIA**

**Introduction into ICZM Toolbox – Indicators**

**20-21 November 2013, Grigoleti, Guria Region, Georgia**

**PROGRAM**

**Title:** PEGASO CASES Training Workshop in Georgia – Introduction into ICZM Toolbox – INDICATORS

**Objective:** Basic understanding of coastal indicators in the view of their application at PEGASO CASES, as well as potentially at national and regional level reporting on the state of the coastal environments.

**Methodology**: The approach in the training workshop would be to introduce and explain to CASES stakeholders and end users the coastal sustainability indicators. Considered in particular would be ongoing indicator work in the Black Sea countries and in Georgian CASE, how they fit with PEGASO indicators list, identifying priority and feasible indicators to develop, discuss methods, available data for delivering PEGASO indicators at different scales, how to feed them into Spatial Data Infrastructure (SDI), etc. Case would be established for integrated application of coastal indicator tools. Polimedia presentations will be used to introduce Cumulative Impact Mapping (CIM) methods, illustrate land cover changes such as artificialisation of coast and need for natural capital preservation, based on remote sensing of urban lights and changes in vegetation cover. Two working groups would be engaged to analyse and report on two coastal municipalities of Guria Coastal Region. Main drivers would be identified to understand the present system and draw solutions for future with policies such as ICZM Protocol/Guidelines. Participants will be able to take part in reality check on positive/negative coastal issues though field explorations.

**AGENDA** (indicative):

***Arrival day***

- Flight to Batumi and transfer to Grigoleti hotel (international participants), train from Tbilisi (national)
- Welcome dinner

***Training day***

- Opening and participant self-presentation (15 min)
- PEGASO project and role of CASES (15 min, PP, speaker F. Breton, UAB, Spain & polimedia video)
- Georgia CASES experience (15 min, CC, A. Gigineishvili)
- Introduction into coastal sustainability indicators (1 hour, PP, N. De Hauwere, VLIZ, Belgium & polimedia)
- ICZM implementation progress indicators (15 min, PS, M. Gvilava & CC, A. Gigineishvili, software demo)
- Land cover & Cumulative Index Mapping for coastal and marine environments (15 min, PP, F. Breton)
- SDI tools for dissemination of coastal indicators (30 min, PP, N. De Hauwere & polimedia G. Malvarez UPO
- Lunch break + 3 coffee breaks
- Interactive Q&A session for all participants (indicators, data sources, etc.) (25 min, PP facilitation)
- 2 working groups for analysis of issues and reporting (divers, threats, solutions) (2 hour, PP facilitation)
- Interactive discussion on coastal sustainability and ICZM policy for Black Sea (15 min, PP facilitation)
- Integrated land use management and modelling of Black Sea estuaries project (10 min, Civitas Georgica)
- Summary, planning of follow-up steps, wrap-up and conclusion (30 min, PP, CC, PS)
- Farewell dinner

(Abbreviations: PP – PEGASO Partner, PS – BSC PS/Georgia ICZM NFP, CC – Georgia CASES Coordinator)

***Departure day***

- Field visits (KNP and coastal sites), flight from Batumi (international), and train to Tbilisi (national)

**Participants:** Stakeholders would include those agencies and organizations (local, national), which may contribute into the coastal indicator data and information provision and compilation (through learning by doing process). Public servants from Lanchkhuti and Ozurgeti municipalities/districts would be given priority (~15 participants). Training would be open to PEGASO Partners and selected participants from Black Sea countries, wishing to participate with their own resources. Total number of participants not to accede 30 persons (including PEGASO trainers, international and national participants, organizers).

**Field visits:** Guests of Guria (international, national) will be offered boat trip to Kolkheti National Park (KNP). There will also be an opportunity to observe various coastal issues (negative, positive) and sites on route to KNP and then to Batumi (such as conservation of coastal wetlands, coastal erosion, beach litter, wastewater, etc.). Same day international participants will be able to leave from Batumi.

**Dates:** 20-21 November 2013.

**Timing:** arrival & hotel (19 November), training (20 November), field visits & departure (21 November).

**Hotel:** Villa Reta, Grigoleti, Guria Coastal Region (http://villareta.com).

**Venue:** Training Workshop will be held at the same hotel.

**Language:** Working knowledge of English language will be desirable (interpretation will be provided).

**Facilities:** Conference room for ~30 persons, projector, Wi-Fi, participants advised to bring their laptops.

**Flights** (international)**:** Easiest to reach Georgian coast is with Turkish Airlines which operates everyday roundtrip flights between Istanbul (13:15)-Batumi (17:15) and back Batumi (18:05)-Istanbul (18:05).

**Transport** (international)**:** Participants to be transferred form airport to hotel with minivan (~1 hour).

**Visa:** There is no visa needed for entering Georgia. Copies of invitations via email (upon request).

**Trains** (national)**:** Easiest to reach coast is with train from Tbilisi (08:30-13:00) and back (17:00-22:00).

**Transport** (national)**:** Participants to be transferred form train station to hotel with minivan (~20 min).

**Registration**: Registration Form & training workshop Program is available at PEGASO project webpage http://pegasoproject.eu. International and national participants should register well before the deadline of 15 November 2013 by filling registration form and emailing to amiran@lic.gov.ge and mgvilava@iczm.ge, as well as booking hotel stay at http://villareta.com/?page_id=1255 (as applicable).

**Costs:** International participants are expected to cover their travel and subsistence costs. Other costs of training organization would be covered by BSC PS from its PEGASO budget, including venue, catering and dinners during the workshop; minivan for local travel and site visits by international and national guest participants; KNP boat trip; translation/interpretation; travel, hotel stay & small DSA of Georgian participants coming from national agencies/organizations (~ 5 persons).

**PEGASO Trainers, Workshop Facilitators and Organizers:**

| | | | |
|---|---|---|---|
| Dr Françoise Breton | Nathalie De Hauwere | Mamuka Gvilava | Amiran Gigineishvili |
| Manager & Coordinator | PEGASO Project Partner | ICZM NFP Georgia | Georgia CASE Coordinator |
| EU FP7 PEGASO Project | VLIZ - InnovOcean Site | PEGASO Task Manager | Guria Coastal Region |
| Dept of Geography | Flanders Marine Institute | for Black Sea Commission | Lanchkhuiti Information Centre |
| Universitat Autònoma | Vlaams Instituut voor de Zee | Permanent Secretariat | Chairman-Elect of Municipal Council |
| de Barcelona (UAB) | Oostende, Belgium | Tbilisi, Georgia | Lanchkhuti, Georgia |

## 2.3 Schedule

**PEGASO CASES TRAINING WORKSHOP, GEORGIA**

**Introduction into ICZM Toolbox – Indicators**

**20 November 2013, Grigoleti, Guria Region, Georgia**

**SCHEDULE**

**(plan for 18-21 November)**

***18 November - trainer arrival***

***18 ნოემბერი - ტრენერების ჩამოსვლის დღე***

13:15 Arrival of Mamuka Gvilava to Grigoleti (hotel Villa Reta) via train Tbilisi-Poti and driving with David Gegichaishvili (car) to Batumi for airport pickup of Françoise Breton and Nathalie De Wandrecq.

13:15 მამუკა გვილავის ჩამოსვლა მატარებლით თბილისი-ფოთი და ავტომანქანა გრიგოლეთში. სასტუმრო ვილა რეტაში. მამუკა და დავით გეგიჩაიშვილი მიდიან ბათუმში (მან)ქანით ფრანსუაზის და ნატალის დასახვედრად აეროპორტში.

17:15 Arrival of Françoise and Nathalie at Batumi airport

17:15 ფრანსუაზის და ნატალის ჩამოსვლა ბათუმის აეროპორტში

18:30 Check-in of Françoise and Nathalie to Villa Reta hotel, Grigoleti

18:30 ფრანსუაზის და ნატალის რეგისტრაცია გრიგოლეთის სასტუმროში ვილა რეტა

19:30 Lunch in local restaurant with Françoise, Nathalie, Mamuka, Amiran, David.

19:30 ვახშამი ადგილობრივ რესტორანში: ფრანსუაზი, ნატალი, მამუკა, ამირანი, დავითი.

***19 November - trainer field trip day and arrival of participants***

***19 ნოემბერი - ტრენერების საველე გასვლის დღე და მონაწილეთა ჩამოსვლა***

09:30-10.30 Field visit to Poti to see port area and coastal erosion issues

09:30-10:30 საველე ვიზიტი ფოთში (“ახალგაზრდა” სანაპირო, პორტი და ნაპირების ეროზია)

10:30- 13:00 Field visit to Anaklia (tourist developments, reach Churia river till Kolkheti National Park, discuss coastal erosion and Anaklia port development vis-à-vis wetland protected area and tourism)

10:30 - 13:00 საველე ვიზიტი ანაკლიაში (ტურისტული განვითარება ანაკლიაში, მიმდინარე ჭეშმარიტების კოალიციის ერთიანი პარკამდე, ნაპირების ეროზიის და ანაკლიის პორტის განვითარების გეგმების დისკუსია ტურისტისა და ტერიტორიის ინტერესებში).

13:00-15:00 Lunch in Anaklia (if not available lunch at Grigoleti) and drive back to Grigoleti hotel

13:00-15:00 სადილი ანაკლიაში და დაბრუნება სასტუმროში (თუ სადილი ანაკლიაში არ არის: მცირედ დაგვიანება სასტუმროში და სადილი გრიგოლეთში).

15:00-17:00 checking venue and planning for Training day

15:00-17:00 სავარჯიშოების დაზუსტება და მზადება ტრენინგის დღისთვის

17:00-18:30 Field visit Tskaltsminda and Grigoleti beach areas (brainstorm better beach management)

17:00-18:30 საველე ვიზიტი წყალწმინდის და გრიგოლეთის სანაპიროებზე (პლიაჟების მართვის საკითხები)

19:00-20:30 Welcome dinner in local restaurant (or in hotel)

*Participants: Francoise, Nathalie, Mamuka, Amiran, driving with minivan (Poti, Anaklia).*

*David to pick up participants arriving with train Tbilisi-Poti and transfer them to hotel Villa Reta.*

*Arrived participants from Tbilisi who stay in the Grigoleti can join for Tskaltsminda visit & dinner*

*In all field trips and during training day we will be accompanied by operator and reporter from local TV to produce 10-15 min CASES Workshop video, including interviews with trainers, hosts, participants.*

19:00-20:30 სადილი ადგილობრივ რესტორანში (ან სასტუმროში)

*მონაწილეები ფრანსუაზი, ნატალი, მამუკა, ამირანი (ფოთი, ანაკლია).*

*დავითი გეგიჩაიშვილი მიიწვევს ჩამოსულ თბილისი-ფოთის მატარებლით ადგილობრივ მონაწილეებს და სასტუმრომდე მიაცილებს.*

*ექსპედიციებზე და სავარჯიშოების დროს ჩვენ თან ვიქნებით ოპერატორი და რეპორტიორი ადგილობრივი ტელევიზიიდან, რათა მოამზადონ 10-15 წთ ვიდეო ტრენინგის შესახებ, მათ შორის, ინტერვიუები ტრენერებთან, ორგანიზატორებთან, მონაწილეებთან.*

***20 November – training workshop day***

***20 ნოემბერი - ტრენინგის დღე***

09:30-17:30 Training Workshop (Agenda, 3 coffee breaks and 1 dinner for all participants)

09:30-17:30 ტრენინგი (დღის წესრიგი, 3 ყავა და 1 სადილი ყველა მონაწილეზე)

17:30-21:00 Dinner for all workshop participants at Villa Reta hotel (with wine and Gurian folk songs).

17:30-21:00 სამუშაო ტრენინგის ყველა მონაწილისათვის, სასტუმრო ვილა რეტა (ღვინით, გურული სიმღერებით).

***21 November – field trip day and departure***

***21 ნოემბერი - საველე ვიზიტის დღე და გაქრობა***

09:00-13:00 Kolkheti National Park (visitor Centre, then pontoon boat trip Paliastani and Pichori)

09:00-13:00 ეროვნული პარკი (ცენტრი, შემდეგ პალიასტომის ტბაში გასვლა პალიასტომსა და ფიჩორზე)

13:00-15:00 Field trip to coastal sites south from Grigoleti (short stops at Ureki, Shekvetili, Kobuleti) reaching Batumi with minivan.

13:00-15:00 საველე ვიზიტი სანაპიროს ხაზებზე გრიგოლეთის სამხრეთით (მცირე შეჩერებებით ურეკში, შეკვეთილში, ქობულეთში). მისული ბათუმისკენ მიკროავტობუსით.

## 2.4 Registration

15:00-16:00 Lunch at Megrul-Lazuri restaurant in Batumi.

15:00-16:00 სადილი ბათუმში, რესტორანი მეგრულ-ლაზური.

16:30 Batumi airport (18:00 Francoise, Nathalie), train to Tbilisi (16:30 Mamuka & 2 Tbilisi participants)

16:30 ბათუმის აეროპორტი (გაფრენა 18:00 ფრანსუაზი, ნატალი) და ბათუმი-თბილისის მატარებელი (გასვლა 16:30 მამუკა და 2 მონაწილე თბილისიდან)

*Participants: Francoise, Nathalie, Mamuka, Amiran, David, together with some other participants of the boat trip and trip to Batumi. Driving with minivan (Kolkheti, and then to Batumi).*

*მონაწილეები: ფრანსუაზი, ნატალი, მამუკა, ამირანი, დავითი, ასევე პანტონით გასეირნების და ბათუმისკენ საველე ვიზიტის მონაწილეები, მიკროავტობუსით (კოლხეთი, ბათუმი).*

*David to transfer one participant leaving with Poti-Tbilisi form Villa Reta to Poti train station.*

*ერთი მონაწილის გადაყვანა ხასტუმროდან სადამოხ ფოთი-თბილისის მატარებელზე.*

**PEGASO CASES TRAINING WORKSHOP, GEORGIA**

**Introduction into ICZM Toolbox – Indicators**

**20-21 November 2013, Grigoleti, Guria Region, Georgia**

**REGISTRATION FORM**

Registration due: As soon as possible but no later than **15 November 2013**

**[Please fill out this form and forward via email to amiran@lic.gov.ge and mgvilava@iczm.ge]**

Title:

Name:

Surname:

Organization:

Department:

Position:

Address:

Postal/zip code:

Country:

E-mail address:

Telephone and/or Mobile:

Short C.V. (~150 words, summarizing your experience and education):

Arrival (if applicable):

Departure (if applicable):

**[Please fill arrival/departure details (flight/train, place/time), if applicable to you, as well as please book your hotel stay by filling and submitting form available at http://villareta.com/?page_id=1255]**

## 2.5 Agenda

**PEGASO CASES TRAINING WORKSHOP, GEORGIA**

**Introduction into ICZM Toolbox – Indicators**

**20 November 2013, Hotel Villa Reta, Grigoleti, Guria Region, Georgia**

**AGENDA**

09:30 Registration of participants (coffee served during registration)

10:00 Opening of the meeting and participant self-presentation (meeting facilitation A. Gigineish

10:15 PEGASO project and role of CASES (F. Breton, with polimedia video on ICZM Platform)

10:30 Georgia CASES experience (A. Gigineishvili)

10:45 Introduction into coastal indicators (N. De Hauwere, with video of F. Santoro/A.-K. Lescrau

11:45 Coffee break

12:00 ICZM implementation progress indicators (M. Gvilava, software demo by A. Gigineishvili)

12:15 Land cover & Cumulative Index Mapping for coastal and marine environments (F. Breton)

12:30 SDI tools for dissemination of coastal indicators (N. De Hauwere, polimedia video of G. Ma

13:00 Interactive Q&A session for all participants (indicators, data sources, etc.) (facilitation F. Br

13:35 Lunch break

14:00 Example of the coastal indicators, Bouches-du-Rhône (France, Mediterranean Sea Constanta (Romania, Black Sea) (M. Gvilava, on behalf of A. Guelmami and A. Spinu)

14:35 Two working groups for analysis of issues, drivers, threats and potential solutions (modera by F. Breton, help in WG facilitation by A. Gigineishvili and M. Gvilava)

16:00 Coffee break

16:15 Two working group reports (selected rapporteurs)

16:30 Interactive discussion on coastal sustainability & ICZM policy for Black Sea (facilitation F. Br

16:45 Integrated land use management & modelling of Black Sea estuaries (G. Meskhidze, Civitas

17:00 Planning of follow-up steps and wrap-up (facilitation F. Breton, M. Gvilava, A. Gigineishvili)

18:00 Dinner for all participants at the Villa Reta hotel

**Training Workshop Facilitators and Organizers:**

| | | | |
|---|---|---|---|
| Dr. Françoise Breton<br>Manager & Coordinator<br>EU 7-FP PEGASO Project<br>Dept of Geography<br>Universitat Autònoma<br>de Barcelona (UAB) | Nathalie De Hauwere<br>PEGASO Project Partner<br>VLIZ - InnovOcean Site<br>Flanders Marine Institute<br>Vlaams Instituut voor de Zee<br>Oostende, Belgium | Mamuka Gvilava<br>ICZM NFP Georgia<br>PEGASO Task Manager<br>the Black Sea Commission<br>Permanent Secretariat<br>Tbilisi, Georgia | Amiran Gigineishvili<br>Georgia CASE Coordinator<br>Guria Coastal Region<br>Lanchkhuti Information Ce<br>Chairman-Elect of Municipa<br>Lanchkhuti, Georgia |

**პეგასო, საქართველოს ქეისი, სამუშაო შეხვედრა / ტრენინგი**

**სანაპიროს ზონის ინტეგრირებული მართვის (სზიმ) ინდიკატორები - შესავალი**

**20 ნოემბერი 2013, "ვილა რეტა", გრიგოლეთი, გურიის რეგიონი, საქართველო**

**დღის წესრიგი**

09:30 მონაწილეთა რეგისტრაცია (ყავა რეგისტრაციის დროს)

10:00 შეხვედრის გახსნა და მონაწილეთა წარდგენა (შეხვედრის წამყვანი - ა. გიგინეიშვილი)

10:15 პროექტი "პეგასო" და ქეისების როლი (ფ. ბრეტონი, ვიდეო - ს.ზ.ი.მ. პლატფორმა)

10:30 საქართველოს ქეისის პრეზენტაცია (ა. გიგინეიშვილი)

10:45 [illegible]

11:45 [illegible]

12:00 [illegible]

12:15 [illegible]

12:30 [illegible]

13:00 [illegible]

13:15 [illegible]

14:00 [illegible]

14:15 [illegible]

16:00 [illegible]

16:15 [illegible]

16:30 [illegible]

16:45 [illegible]

17:00 [illegible]

18:00 [illegible] "ვილა რეტა"

[illegible]

## 2.6 Participants

Universitat Autònoma de Barcelona Flanders Marine Institute

**PEGASO CASES TRAINING WORKSHOP – Introduction into Coastal Indicators**

**პეგასოს სამუშაო შეხვედრა - სანაპირის ინდიკატორები**

DATE: Wed, 20th of November 2013, 09h30 – 18h00 VENUE: Villa Arta Hotel, Grigoleti, Georgia
თარიღი: 20 ნოემბერი, 09:30-18:00, სასტუმრო ვილა რეტა, კრიგოლეთი, საქართველო

**Participants**

**მონაწილეების რეგისტრაცია**

| No | Name სახელი, გვარი | Institution ორგანიზაცია | Tel/Mobile ტელ/მობილური | E-mail ელ. ფოსტა | Signature ხელმოწერა |
|---|---|---|---|---|---|
| 1 | [illegible] | [illegible] | 591-32-41-41 | [illegible] | [signature] |
| 2 | [illegible] | [illegible] | 599-58-[illegible] | [illegible]@gmail.com | [signature] |
| 3 | [illegible] | [illegible] | 595 100181 | | [signature] |
| 4 | [illegible] | [illegible] | 595-15-25-67 | | [signature] |
| 5 | [illegible] | [illegible] | 591 197791 | bbasiashvili@economy.ge | [signature] |
| 6 | [illegible] | [illegible] | 599 [illegible] | | [signature] |
| 7 | [illegible] | [illegible] | 591-22-[illegible] | [illegible]@gmail.com | [signature] |
| 8 | [illegible] | [illegible] | 599 92-75-11 | [illegible]@gmail.com | [signature] |
| 9 | [illegible] | [illegible] | 599 976317 | | [signature] |
| 10 | [illegible] | [illegible] | 595 832308 | | |
| 11 | [illegible] | [illegible] | 551-23-01-09 | | [signature] |
| 12 | [illegible] | [illegible] | 599 335 900 | [illegible]@geo.net.ge | [signature] |
| 13 | [illegible] | [illegible] | 591 197341 | [illegible]@ec.org.ge | [signature] |
| 14 | De Hauwere Natalie | Flanders Marine Institute (VLIZ) | +32 59 34 21 30 | [illegible]@vliz.be | [signature] |
| 15 | [illegible] | [illegible] | 593 303957 | [illegible]@gmail.com | [signature] |
| 16 | [illegible] | [illegible] | 591 192323 | [illegible]@mail.ru | [signature] |
| 17 | [illegible] | [illegible] | 5445 13061 | [illegible]@civitas.ge | [signature] |
| 18 | [illegible] | [illegible] | 599 [illegible] | [illegible] | [signature] |
| 19 | Françoise BRETON | UAB - Universitat Autònoma de Barcelona | 0034 606 347 204 | francoise.breton@uab.cat | [signature] |
| 20 | [illegible] Mamuka Gvilava | BSC PS Task Manager ICZM NFP Georgia | 1995 (599) 546616 | mgvilava@iczm.ge | [signature] |

## 2.7 Evaluation forms

ტრენინგის შემდგომი შეფასება (Training Post-test)

**კითხვები ტრენინგის შინაარსთან დაკავშირებით (Questions about course contents)**

- სათანადო შინაარსის (ანუ სასარგებლო) იყო ტრენინგი? Was the content appropriate?

☐ დიახ (Yes)
☐ არა (No)

გთხოვთ, განმარტოთ თქვენი პასუხი (please explain your answer)

.....

- შეგიძლიათ ტრენინგის შინაარსის გაგებაზეთავისუფლად? (Did you understand the content?)

☐ დიახ (Yes)
☐ არა (No)

გთხოვთ, განმარტოთ თქვენი პასუხი (please explain your answer)

.....

- შეესაბამებოდა ტრენინგის მასალები თქვენს საჭიროებებს?
  (Was the training material relevant to your needs?)

☐ დიახ (Yes)
☐ არა (No)

გთხოვთ, განმარტოთ თქვენი პასუხი (please explain your answer)

.....

- როგორ გამოიყენებთ შესწავლილ მასალას? (How will you apply what you have learned?)

გთხოვთ, განმარტოთ თქვენი პასუხი (please explain your answer)

.....

**კითხვები ტრენერების შესახებ (1= ხუსტი, 5= საუკეთესო)**

**[Questions about the trainers (1= Poor, 5= Excellent)]:**

- იყვნენ ტრენერები ეფექტურები? (Were the trainers effective?) ___
- შეძლეს ტრენერებმა პასუხის გაცემა გაურკვეველ საკითხებზე? ___
  (Did the trainers respond to doubts?)

**კითხვები ტრენინგის მეთოდების შესახებ (1= ხუსტი, 5= საუკეთესო)**

**Questions about training methods (1= Poor, 5= Excellent):**

- სასარგებლო იყო გამოყენებული მასალები? (Were the materials used useful?) ___
- სათანადო იყო სწავლების მეთოდები? (Was the teaching method appropriate?) ___
- მოხერხდა თქვენი მოტივირება? (Were you motivated to learn the contents?) ....
- სათანადო ხარისხის იყო მასალები? (Was the level of difficulty appropriate?) .....

- გირჩევდით თუ არა თქვენს კოლეგებს წყლოვანი ეკოსისტემების გაცნობის ასეთი ტრენინგის გავლას?
  Would you recommend the course to your colleagues?

☐ დიახ (Yes)
☐ არა (No)

უარყოფითი პასუხის შემთხვევაში განმარტეთ თქვენი პასუხი (If no, please explain your answer)

.....

**კითხვები ტრენინგის ადმინისტრირების შესახებ (Questions about training administration):**

- სათანადო იყო თუ არა ტრენინგის დრო და ხანგრძლივობა
  (Was the time and length of the training appropriate?)

☐ დიახ (Yes)
☐ არა (No)

გთხოვთ, განმარტოთ თქვენი პასუხი (please explain your answer)

.....

- როგორ შეაფასებთ ტრენინგს მთლიანობაში? / (1= ხუსტი, 5= საუკეთესო): .....
  (What is your overall rating of the training? / (1= Poor, 5= Excellent))

**QUESTIONS ABOUT COURSE CONTENTS:**

**Was the content appropriate (Yes/No)? Please explain your answer**

**Participants** (15 Yes, 0 No):

- ICZM means caring for environment and therefore useful information was received in that respect. If we want to join the European community of nations we should aspire to European knowledge and experience.

- Would be nice to organize more training like this, as this helps us in our subsequent work.

- Very useful.

- Appreciated the usefulness and necessity of the indicators for the collection and characterisation of information.

- Data on ICZM indicators is necessary to take into account when developing spatial plans and regional development schemes in the coastal zone.

- Was useful to interact with experienced experts.

- Yes, I've learned about many such issues and problems which I did not know about in the past.

- Training has clearly shown us the problems in the integrated management of the Black Sea coastal zone.

- Yes, very useful.

- Obtained information about ICZM, which is very necessary for addressing developments in the coastal zone taking account of all aspects.

- Habitats are disappearing, socio-economic hardships are obvious, level of environmental awareness among decision-makers is low.

**Trainers** (4 Yes, 0 No):

FB. Interesting examples from Georgia.

MG. Lively discussions, good presentations.

AG. There was an opportunity to involve decision-makers and this was indeed revealed during the discussion process.

**Did you understand the content (Yes/No)? Please explain your answer**

**Participants** (15 Yes, 0 No):

- Trainers managed to communicate themes in clear language.

- Yes, with some difficulty in the beginning, but afterwards things became clearer and interesting and very useful as well.

- I think training like this should be conducted more frequently, would be very useful.

- Yes, sufficiently. It became obvious what kind of information is important and how to collect it.

- It was indeed useful for me as a planner/architect.

- Training material was clearly understandable as it was accompanied with lot of graphical materials and the training itself was very intensive and informative.

- Yes, because I encountered the trainers which are doing their job with full dedication and love.

- It is difficult to comprehensively understand all issues with one training event, but I consider that grasped in general terms the range of problems.

- Yes managed to grasp the basics, but more meetings are needed to get deeper insight.

- Can not claim that grasped very deep knowledge, but now have a better understanding of certain issues.

**Trainers** (4 Yes, 0 No):

FB. Very good interpreter – good work!

MG. Participants were active and adequate.

AG. ☺.

**Was the training material relevant to your needs (Yes/No)?**

**Please explain your answer**

**Participants** (15 Yes, 0 No):

- Yes, both from personal perspective and from professional point of view.

- Will definitely apply in my work.

- Yes, because for people from Black Sea coastal areas these are indeed useful subjects.

- Yes, because processing and systematizing these materials will help responsible persons to take account of negative and positive factors in decision-making.

- Yes indeed.

- Yes, because in my community we indeed need to analyze and resolve those issues which were discussed during the training.

- All Black Sea issues are of interest to me, particularly those concerned with my own region of Guria.

- I would prefer to have more practical set of materials.

**Trainers** (4 Yes, 0 No):

MG. Decision-makers represented.

AG. Yes – in the capacity of Head of Municipal Council. Yes – in the capacity of CASE Coordinator.

NH. Difficult sometimes Georgian-English. Translation was good, but Georgian slides were more difficult to follow.

**How will you apply what you have learned (Yes/No)?**

**Please explain your answer**

**Participants:**

- Will try to popularize these themes, informing the public.

- Provided material is frankly not very useful for the immediate application, but I hope we will meet again and I will gain more insight.

- For actual application in my personal needs the material provided was not that useful.

- Would try to formulate problems and tasks I am concerned with in the format of the indicators and would provide to interested stakeholders as well as to representatives of Pegaso, as requested.

- Material seems very useful and would apply when developing outlines for spatial development plans.

- Would apply those materials which would help me resolve actual needs in my community.

- Firstly the training demonstrated those problems which we probably are not often considering, but it raised our awareness of need to protect marine environmental and to act with principle to "Save the Black Sea for Children".

- I will apply materials as much as I can and will try to participate in any other meetings to get more insight.

- Will try to apply this knowledge to issues under my competence so that impacts on coastal zone are avoided.

- As necessary will engage in research on indicators.

- Would use materials on as needed basis.

- Would try to apply at local self-governance level for sound and analytical decision-making for effective planning and correct measure so that negative aspects are minimized and positive effects are maximized.

- Would try to develop species and habitats distribution ranges and their economic valuation as part of the database for decision makers.

**Trainers:**

FB. I hope Georgian people will apply principles of ICZM in their daily practice.

MG. Plan future participation events.

NH. Report to Ann-Katrien Lescrauwaet of VLIZ. Follow up indicators + SDI.

**QUESTIONS ABOUT THE TRAINERS (1= POOR, 5= EXCELLENT):**

**Were the trainers effective?**

**Participants**: 1 (0) 2 (0) 3 (0) 4 (3) 5 (10) **Trainers:** 1 (0) 2 (0) 3 (0) 4 (1) 5 (3)

**Did the trainers respond to doubts?**

Participants: 1 (0) 2 (0) 3 (0) 4 (4) 5 (9) **Trainers:** 1 (0) 2 (0) 3 (0) 4 (1) 5 (3)

**QUESTIONS ABOUT TRAINING METHODS (1= POOR, 5= EXCELLENT):**

**Were the materials used useful?**

**Participants:** 1 (0) 2 (0) 3 (0) 4 (5) 5 (8) **Trainers:** 1 (0) 2 (0) 3 (1) 4 (2) 5 (1)

**Was the teaching method appropriate?**

**Participants:** 1 (0) 2 (0) 3 (0) 4 (4) 5 (9) **Trainers:** 1 (0) 2 (0) 3 (1) 4 (1) 5 (2)

**Were you motivated to learn the contents?**

Participants: 1 (0) 2 (0) 3 (0) 4 (5) 5 (8) **Trainers:** 1 (0) 2 (0) 3 (0) 4 (1) 5 (3)

**Was the level of difficulty appropriate?**

**Participants:** 1 (0) 2 (0) 3 (0) 4 (3) 5 (9) **Trainers:** 1 (0) 2 (0) 3 (0) 4 (2) 5 (2)

**Would you recommend the course to your colleagues (Yes/No)?**

**If no, explain your answer:**

**Participants** (13 Yes, 0 No):

**Trainers** (4 Yes, 0 No):

NH. Do similar initiatives in other projects/CASES.

**QUESTIONS ABOUT TRAINING ADMINISTRATION:**

**Was the time and length of the training appropriate (Yes/No)?**

Please explain your answer:

**Participants** (11 Yes, 2 No):

- Better performance would not be possible, thanks.

- Timing schedule of the meeting was closely followed, and the meeting was a pleasant experience.

- All training agenda items were comprehensively completed.

- No, time was not enough, because we need to familiarize ourselves deeper with these problems and therefore need to cooperate on more intensive basis in the future.

- I consider that training was valuable; that enough time was devoted to comprehensive elaboration of discussed issues and that the trainers communicated the essence of the problems in a qualified manner.

-Yes, agenda was well planned, scheduled and followed.

- Theoretical and practical examples were not distinctly elaborated.

- Training time was sufficient for first acquaintance. Would be nice to repeat the exercise with more emphasis to practical issues.

- Duration of 2 or 3 days would be better. Field visits were useful.

**Trainers** (4 Yes, 0 No):

MG. One day was adequate choice.

NH. Just perfect: not too long, not too short. Field trips were very useful to be able to understand Georgian situation. Maybe for local people it might be longer to discuss more.

**What is your overall rating of the training (1= Poor, 5= Excellent)**:

Participants: 1 (0) 2 (0) 3 (0) 4 (4) 5 (9) Trainers: 1 (0) 2 (0) 3 (0) 4 (2) 5 (2)

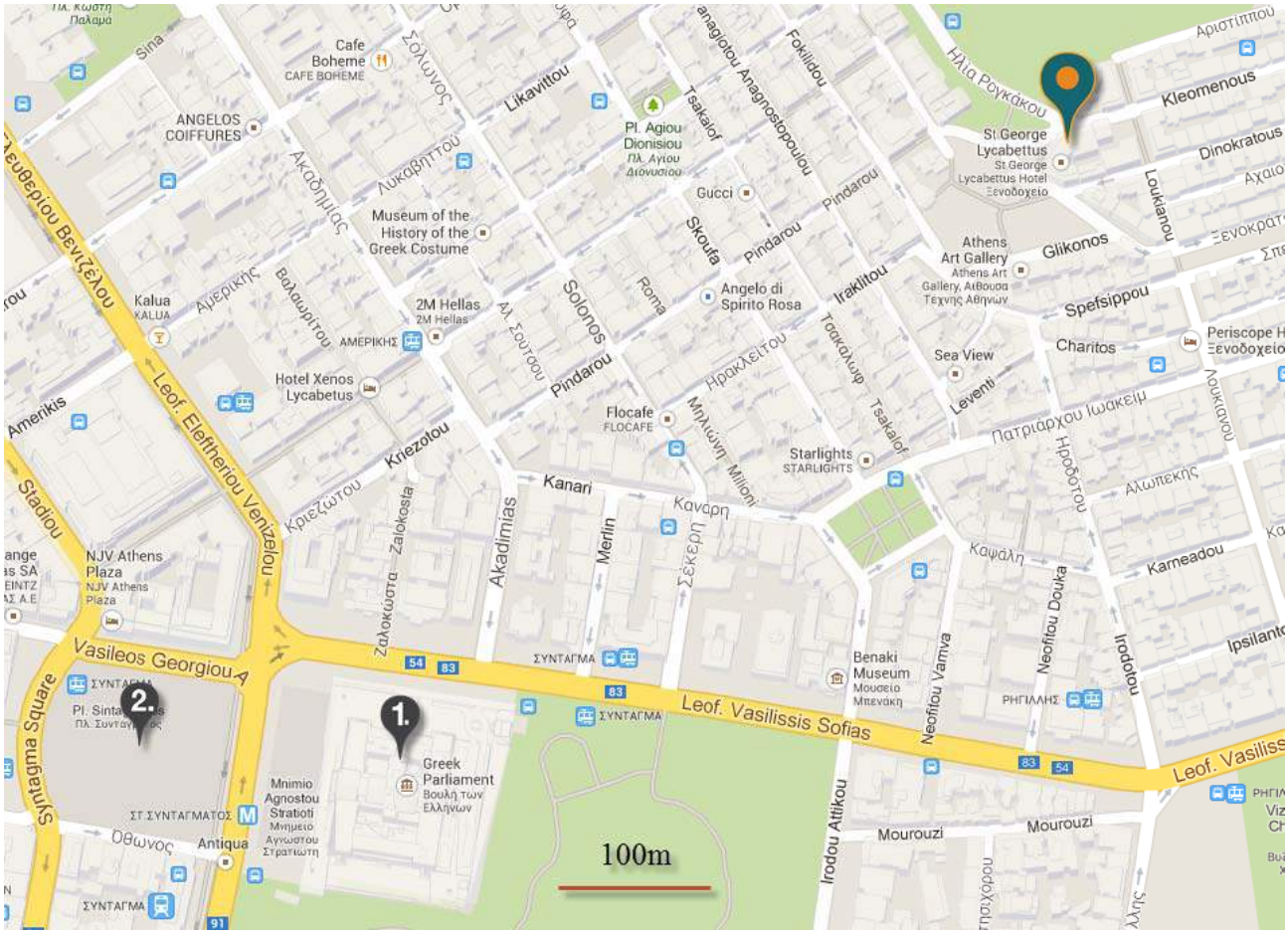
# Annex 5: The future of Greek aquaculture: Building a sustainable industry in the framework of integrated coastal zone management

## 1. Background

The workshop "The future of Greek aquaculture: Building a sustainable industry in the framework of integrated coastal zone management " is organized within the work plan activities of the FP7 EU project Pegaso and the Greek project partner Hellenic Centre for Marine Research. Pegaso, among others, is aimed to support the construction of an integrated coastal zone management (ICZM) governance platform, consistent with the aims of article 14 of the ICZM protocol for the Mediterranean, to support the development of integrated policies for the coastal, marine and maritime realms of the Mediterranean and to enlarge ICZM governance platform through intensive work at pilot sites. Coastal marine aquaculture is an important growing sector in the Mediterranean and there is a clear evidence for the necessity of its integration within the coastal management area in a "blue growth vision". In this framework, the workshop is called to touch the different aspects of aquaculture development in Mediterranean, focusing also on the Greek situation. Considering this background and in order to share experiences, a cooperative contribution will be given to this workshop through the activities of the Committee on Aquaculture (CAQ) of the General Fisheries Commission for the Mediterranean (GFCM), in particular sharing experience from the two implemented activities on the areas of site selection and monitoring and on indicators. Within this context, the main objectives of the workshop are to address the future of the development of a key sector such as aquaculture and the need for its integration within an ICZM approach, and to address the needs of indicators as communication tools as well as to follow the sustainable development of aquaculture. Thanks to the participation of experts from different fields, organizations and countries, the workshop is an opportunity for an exchange of experience and knowledge and for strengthening cooperation on common issues among different players and stakeholders. The workshop is organized in three days: the first day the focus will be on the general features related to aquaculture development and the integrated coastal zone experience in the Mediterranean, addressing, in particular, aspects related to marine spatial planning and its use for coastal zone management, socio -economic and research on aquaculture in the Mediterranean in general and in Greece in particular. The second day will be dedicated to a group exercise to address the use of indicators of sustainability for aquaculture and ICZM indicators in order to animate participation brainstorming and discussion for a common reflection towards the sustainable development of the activity. Finally, on the third day a field visit to Korinthiakos Gulf area fish farms is organized for the keynote speakers and organisers in cooperation with Galaxidi Marine Farm SA.

## 2. Location and Venue

The seminar was organised at St George Lycabettus Hotel (5() in the center of Athens on November 26-28, 2013.




*1, Greek Parliament; 2, Constitution square (center of Athens); green pointer, St George Lycabettus Hotel*

## 3. Agenda and program

| DAY 1 - Tuesday 26 November 2013 | | | |
|---|---|---|---|
| 8:30 | 9:00 | Registration | |
| 9:00 | 9:30 | Opening address | Françoise Breton, Pegaso coordinator, UAB<br>Fabio Massa, GFCM/CAQ |
| | | Welcome Addresses | Alexis Conides, HCMR |
| | | Presentation of Workshop objectives | François René, GFCM/CAQ |
| 9:30 | 9:50 | The Aquaculture within the GFCM - the Regional Fishery Management Organization for the Mediterranean and Black Sea | Fabio Massa, GFCM/CAQ |
| 9:50 | 10:20 | The ICZM Protocol and Pegaso | Françoise Breton, UAB |
| 10:20 | 10:50 | Planning initiatives, aquaculture and ICZM in Greece | Athena Mourmouris, YP.EKA. |
| 10:50 | 11:30 | Discussion: Aquaculture Planning MSP/ICZM | Chair: François René, GFCM/CAQ |
| 11:30 | 12:00 | **COFFEE BREAK** | |
| 12:00 | 12:20 | The main stakes in Greek marine aquaculture today (socioeconomic and crisis context) | Lara Barazi-Yeroulanos, Kefalonia Fisheries SA |
| 12:20 | 13:00 | Discussion: How to achieve economic sustainability of aquaculture in a period of crisis? | Chair: Spyros Klaoudatos, UNIVERSITY THESSALY |
| 13:00 | 14:00 | **LUNCH** | |
| 14:00 | 14:20 | Aquaculture technology evolution | François René, GFCM/CAQ |
| 14:20 | 14:40 | Interaction between aquaculture and environment" the regional knowledge and the situation in Greece (main trends and responses, AZA, AZE, EQBs, EIA, EMP) | Ioannis Karakassis, UNIVERSITY OF CRETE |
| 14:40 | 15:00 | The role of marine aquaculture research: needs and future trends and education | George Rigos, HCMR |
| 15:00 | 15:20 | Constraints and Priorities for Mediterranean Aquaculture: a Regional Approach | Giovanna Marino, ISPRA |
| 15:20 | 16:00 | Discussions on main opportunities and problems in Greek aquaculture: Research, innovation, development and training | Chair: Panos Christofilogiannis, AQUARK Co. |
| 16:00 | 16:20 | **COFFEE BREAK** | |

| DAY 1 - Tuesday 26 November 2013 | | | |
|---|---|---|---|
| 16:20 | 16:40 | International aquaculture networks and ERANETS | Dennis Lisbjerg, COFASP ERANET |
| 16:40 | 17:00 | The GFCM aquaculture multi-stakeholder platform and the ICZM Governance platform: possible future synergies and cooperation. | Fabio Massa, GFCM/CAQ<br>Françoise Breton, UAB |

| DAY 2 - Wednesday 27 November 2013 | | | |
|---|---|---|---|
| 9:00 | 10:00 | Introduction to sustainability in aquaculture.<br>The INDAM experience and methodology.<br>Indicators for the evaluation of sustainable aquaculture development. | Pablo Avila, GFCM/CAQ<br>François René, GFCM/CAQ<br>Denis Lacroix, IFREMER |
| 10:00 | 11:00 | Working groups exercise on identification and selection of indicators for sustainability in Aquaculture. (Economic, Environmental, Social and Governance dimensions) | Pablo Avila, GFCM/CAQ<br>François René, GFCM/CAQ<br>Denis Lacroix, IFREMER |
| 11:00 | 11:30 | **COFFEE BREAK** | |
| 11:30 | 12:30 | Working groups exercise on identification and selection of indicators for sustainability in Aquaculture. (Economic, Environmental, Social and Governance dimensions) | Pablo Avila, GFCM/CAQ<br>François René, GFCM/CAQ<br>Denis Lacroix, IFREMER |
| 12:30 | 13:30 | Presentation of Results of WG and Common Discussion. | Pablo Avila, GFCM/CAQ<br>François René, GFCM/CAQ<br>Denis Lacroix, IFREMER |
| 13:30 | 14:30 | **LUNCH** | |
| 14:30 | 16:30 | Synthesis and discussion.<br>Main recommendations for the integration of Aquaculture Planning and Management within the ICZM. | Representatives of Greek government, producers, scientists, media, networks (CAQ) WG |

### 3.1. Invitation

The announcement of the seminar was made through the fisheries/aquaculture magazine "Greek Fishing News". Following that a list of important stakeholders was drawn by the Hellenic Centre for Marine Research Pegaso focusing primarily on stakeholders that have administration role in ICZM and aquaculture such as the Ministry of Agricultural Development and Food and the Ministry of Environment, Energy and Climate Change.

Representatives of all these stakeholders were selected by name and position and were invited by email and direct contact by telephone (reminders and follow up) to ensure that they have clear information on the event.

### 3.2. Stakeholder selection

In all, 54 persons accepted the invitation out of 65 initially invited. These persons represented:

- Ministry of Agricultural Development and Food
- Ministry of Environment, Energy and Climate Change
- Ministry of Aegean and Insular Policy
- Ministry of Tourism
- Hellenic Centre for Marine Research
- Private supplier companies (HELNET, INVE)
- Aquaculture producers (Nireus, Selonda, Galaxidi Marine Farms, DIAS, Kefalonia Fish Farms)
- Consultancy companies (APC, Lamans, Aquark)
- Press (Fishing News)
- Universities and Technological Institutes
- National Aquaculture Producer Unions
- National Aquaculture Personnel Unions

### 3.3. Invited speakers

Those were:

- Fabio Massa, GFCM/CAQ: he presented the Mediterranean aquaculture sector within the General Fisheries Commission for the Mediterranean (GFCM), the GFCM objectives, plans and structure as well as the various aquaculture components of interest for GFCM in the Mediterranean and Black Seas.
- Françoise Breton, UAB: she presented Pegaso project and its objectives in relation to the ICZM protocoll (2008) as well as the produced toolbox for stakeholders including the SDI, the indicators, the LEAC, the scenarios and the economic valuation.
- Athena Mourmouris, Ministry of Environment, Energy and Climate Change: she presented the Greek aquaculture spatial planning plans so far that have been enforced by law from the point of view of the Ministry of Environment, Energy and Climate Change administration and licensing procedures which focuses on the conflict resolution between multi-uses of the Greek coastal zone.
- Lara Barazi-Yeroulanos, Kefalonia Fisheries SA: she made a circumstantial presentation on the past, present and future of the Greek aquaculture with facts and figures/numbers and in relation to the

Mediterranean competition. She also described in detail the vision for the Greek aquaculture in 2030.

- François René, GFCM/CAQ: he provided a circumstantial report on the past, presence and future of aquaculture technology for all production stages and its evolution within the objective of minimization of the environmental footprint of the aquaculture and the better management of conflicts.

- Ioannis Karakassis, University of Crete: he presented in depth the issue of interaction between aquaculture and the environment focusing on the current knowledge as well as the contribution to our knowledge from research and development projects carried out in Europe. This interaction includes the dispersion of by products and nutrients, the effects on wild fish populations, the interaction with protected species (seagrasses etc.) and the use of indicators-

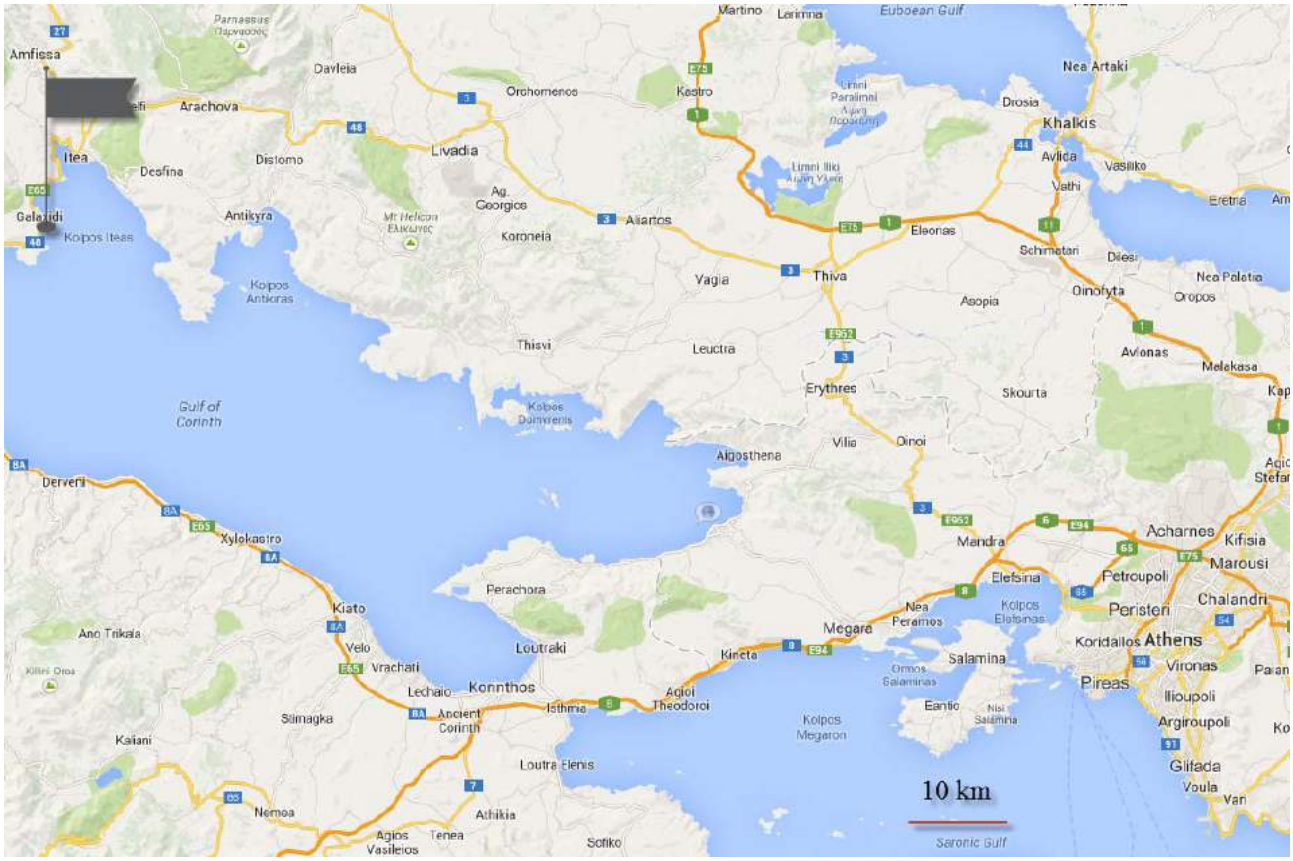
- George Rigos, Hellenic Centre for Marine Research: he presented the current state of research and training/education of the Greek aquaculture sector and its future needs in relation to space, feeding, management indicators, interaction with environment and health/welfare maintenance.

- Giovanna Marino, ISPRA: she presented the constraints and priorities of aquaculture development in the Mediterranean as elaborated through the AQUAMED project (7FP; 2010-2013). Constraints can be divided into 6 categories: Governance/administration, economic/financial, social/human, technical and environmental. The priorities include: simplify administration, aquaculture spatial planning, Market and consumer policies, sustainable feeds, environmental and food safety, knowledge management and transfer, disease management and environmental management and governance.

- Dennis Lisbjerg, COFASP ERANET: he presented COFASP eranet which is a network of cooperation between the research funding agencies of EU member states for fisheries, aquaculture and processing sectors as well as its precursor, the MARIFISH eranet (exclusively for fisheries).

### 3.4. Workshop structure and participation process

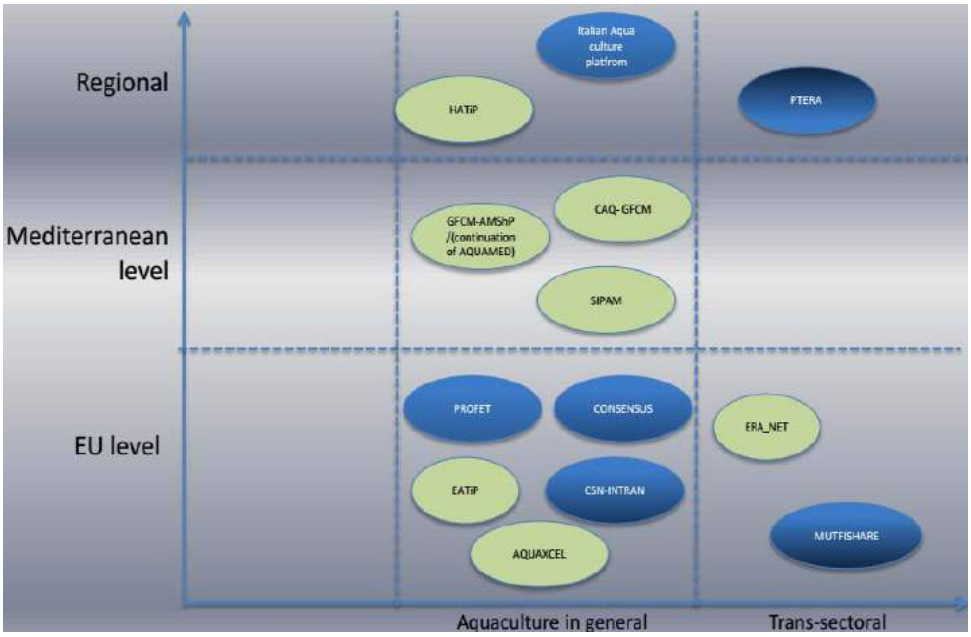
On the first day (November 26) the organisation of interaction between participants was based on a hybrid system of presentations (monologue) and round table discussions (dialogue) between stakeholders for the first day. Four (4) plenary discussion sessions were organised between groups of presentations during the 1$^{st}$ day. During the second day (November 27), the participants were divided in 3 groups related to environment, social and administration groups and during closed sessions they discussed on respective indicators sets of the InDAM indicator system of GFCM presented by Pablo Avila. Care was taken to include in all 3 groups, representatives of all stakeholders regardless their background so that all are represented. The objective of the session was for the groups to identify the most important indicators from the InDAM list, rank their selection, and provide their joint comments for the correction/change/amendment/deletion of indicators. On the third day (28 November), the invited speakers and some of the participants participated in an excursion which included a visit to the archaeological site of Delfi and a visit to the Galaxidi Marine Farms SA following a kind invitation of the company director, Ms Nancy Panteleimonitou.




## 4. Lessons learned

The following comments originate from the evaluation questionnaires of the participants:

- such events with this structure and active participation of participants for a common goal (this case, InDAM indicators) are rare in Greece; for some participants, such events never happened before in Greece with such an audience. However, such events have been organised within research projects with a limited audience of scientists and rarely stakeholders; in this context, some participants considered this event as a primary brainstorming event for which, a follow-up will be needed
- there is a complete lack of applied scientific tools for the management of aquaculture (such as the indicators); usually the tools used are finance/economic related by accountants and managers
- there exists a great number of platforms for aquaculture which are more or less not connected and uncoordinated. Example below, from Dr G. Rigos, presentation:




- rare opportunity to learn the opinions and agendas of stakeholders from the farm staffs to the Ministries - all were represented in this seminar.
- unfortunately the interest of the central administration for such events is extremely low; they are attracted more to the person who organises the event rather than the event objectives themselves (in this case, there were 2 more workshops on aquaculture organised on November 26 which attracted around 20 participants - scientists - most of which participated in Pegaso seminar afterwards).
- the seminar provided the opportunity to the participants to connect in their minds the whole chain of administration from the farm staff to the Ministry level and identify their position along this chain - some participants and especially low level stakeholders as farm staff do now have a clear picture of the administration chain in the aquaculture sector; in addition, the participants had the opportunity to understand holistically what is integrated coastal zone management and the position of aquaculture within this concept; therefore, the seminar contributed significantly in the raising of awareness of the stakeholders especially those involved in the finalization of the national strategic plan of aquaculture within the recent EU policies and guidelines.
- seminars of this kind require a special organisation so that they are both technical and non-technical so that it can be understood by all types of stakeholders.
- participants stated that the outputs and experience from the seminar can be useful for others in the same departments of Ministries and will be transferred by the participants; a senior administrator (Ministry Director) also stated that the experience with working on InDAM (second day) will be

very useful for junior administrators to learn how to set and monitor goals (in general; as methodology of thinking/working).

- some administrators pointed out that they did not know that there are other agencies that have similar/overlapping objectives in relation to aquaculture and therefore, such events can have important secondary importance (outside the main objectives).
- some participants pointed out that debates are missing and much needed; especially events that are multi-disciplinary, multi-national and multi-sectoral.
- the InDAM system seems to be interesting and useful for Greek aquaculture; the results of the plenary discussion showed that InDAM system is promising and several comments were presented for changing/correcting and adding indicators from the lists; more effort is needed to apply the system and prove its usefulness; some participants indicated that InDAM should be simplified (smaller number of indicators)[8].
- the indicator concept for the environment seems to be known to most stakeholders (more or less); however, the holistic concept of environment-governance/administration- social/economic indicators is now known/the stakeholders are not aware; the seminar contributed significantly to this goal.
- such events require a better IT support; some participants stated that the absence of wifi connection was negative; this is especially important for administrators who needed to be connected for their work in Ministries[9].
- the seminar provided the opportunity to the stakeholders to understand the need of a common broad platform for aquaculture development and avoid compartmentalization.
- the seminar provided the opportunity to stakeholders to understand the extremely high number of RTD projects on aquaculture that have been carried out in the past and today and especially understand how little information has been either used/applied or disseminated to the stakeholders.

## 5. Documentation

### 5.1. Website

For the sole purpose of dissemination of the material collected from the seminar i.e.:

- photos
- audio recordings
- the seminar information package
- presentation files

the Pegaso team of Hellenic Centre for Marine Research created the following website at google.drive:

**https://googledrive.com/host/0B_3or3h8k5JHU3JISDdsZjFTakU**

[8] *Note by HCMR: we should make clear from the start that the InDAM system (and similar systems) provide a broad list of indicators from which any stakeholder may select what is useful for him/her and as such, it is good to be broad and more or less complicated*
[9] *Note by HCMR: our mistake; should purchase connections though this would cost around 1000 €*

pegasoproject.eu

# International Seminar

SEVENTH FRAMEWORK PROGRAMME

HOME | Contact Us | The Hotel

## Overview

The workshop "**The future of Greek aquaculture: Building a sustainable industry in the framework of integrated coastal zone management**" is organized within the work plan activities of the FP7 EU project PEGASO and the Greek project partner Hellenic Centre for Marine Research. PEGASO, among others, is aimed to support the construction of an integrated coastal zone management (ICZM) governance platform, consistent with the aims of article 14 of the ICZM protocol for the Mediterranean, to support the development of integrated policies for the coastal, marine and maritime realms of the Mediterranean and to enlarge ICZM governance platform through intensive work at pilot sites.

Coastal marine aquaculture is an important growing sector in the Mediterranean and there is a clear evidence for the necessity of its integration within the coastal management area in a "blue growth vision". In this framework, the workshop is called to touch the different aspects of aquaculture development in Mediterranean, focusing also on the Greek situation. Considering this background and in order to share experiences, a cooperative contribution will be given to this workshop through the activities of the Committee on Aquaculture (CAQ) of the General Fisheries Commission for the

## Connections

- Photos
- Info package
- Presentations
- Audio Recordings
- Βεβαίωση Συμμετοχής

Mediterranean (GFCM), in particular sharing experience from the two implemented activities on the areas of site selection and monitoring and on indicators.

Within this context, the main objectives of the workshop are to address the future of the development of a key sector such as aquaculture and the need for its integration within an ICZM approach, and to address the needs of indicators as communication tools as well as to follow the sustainable development of aquaculture.

Thanks to the participation of experts from different fields, organizations and countries, the workshop is an opportunity for an exchange of experience and knowledge and for strengthening cooperation on common issues among different players and stakeholders.The workshop is organized in three days: the first day the focus will be on the general features related to aquaculture development and the integrated coastal zone experience in the Mediterranean, addressing, in particular, aspects related to marine spatial planning and its use for coastal zone management, socio - economic and research on aquaculture in the Mediterranean in general and in Greece in particular. The second day will be dedicated to a group exercise to address the use of indicators of sustainability for aquaculture and ICZM indicators in order to animate participation brainstorming and discussion for a common reflection towards the sustainable development of the activity. Finally, on the third day a field visit to Korinthiakos Gulf area fish farms is organized for the keynote speakers and organisers in cooperation with Galaxidi Marine Farm SA.

Hellenic Centre for Marine Research I.C.ZM. team, **PEGASO** project

## 5.2. Selected photos

# Annex 6: Nile delta northern lakes: Investment scenarios for restoration actions and sustainable development within ICZM frame

**Conrad Hotel; Cairo, 10th – 11th December, 2013**

Minutes of meeting

Prepared by

Denis Lacroix and Suzan Kholeif

(Ifremer – National Institute of Oceanography and Fisheries)

# Agenda

**10th December 2013**

| Time | Title | Speaker |
|---|---|---|
| **9:30 - 10:00** | Registration | |
| **10:00 - 10:30** | Opening official talks- welcome address | **Dr. Ramzy George Estino**<br>Minister of Scientific Research |
| **10:30 - 10:45** | Pegaso aims and objectives | **Dr. Francoise Breton**<br>**Pegaso Coordinator**<br>UAB, Barcelona, Spain |
| **10:45- 11:15** | How to secure the sustainable development of Nile delta Egyptian Northern lakes under the constraints of the global change | **Dr. Suzan Kholeif**<br>**FORCE Coordinator**<br>**NIOF, Egypt** |
| **11:15 -11:40** | **Coffee Break** | |
| **11:40 – 12:00** | Principles of ICZM and their application in various studies | **Dr.Mohamed Farouk**<br>EEAA, Egypt |
| **12:00 – 12:30** | Hydro-dynamics of the low delta of Egypt and modelling of salt entrance in the rivers and the ground water | **Dr. Nahed El Arabi**<br>Underground water Institute |
| **12:30 – 13:00** | Integrated Coastal Zone Management (ICZM) and spatial planning to integrate aquaculture: case study, Diba Triangle Zone, north west Manzala lake, Egypt. | **Dr. Sherif SADEK**<br>ACO, Egypt |
| **13:00 – 13:20** | Sustainability in Mediterranean aquaculture: guidelines and experiences | **Dr. Roberto Ugolini**<br>MADE coordinator, Italy |
| **13:20 – 14:30** | **Lunch break** | |
| **14:30 – 15:00** | Economics of costal Egyptian aquaculture from extensive scale to industry | **Dr. Ahmed Barrania**<br>National Planning Institute, Egypt |
| **15:00 – 15:30** | "Challenges and perspectives in sustainable development in the Mediterranean". Plan Bleu experience | **Dr. Hugues RAVENEL**<br>Director of the Blue Plan,<br>France |
| **15:30 – 16:00** | Introduction to DEGEST method | **Denis LACROIX**<br>Directorate for foresight and strategy, Ifremer, France |
| **16:00 – 16:15** | **Coffee break** | |
| **16:15 – 18:00** | Six working groups for 6 parameters: demography, environment, governance, economics, societies and Science & technology / DEGEST method | Members of the workshop including specialized experts in the 6 fields |

*11th December, 2013*

| *Time* | *Title* | *Speaker* |
|---|---|---|
| ***9:00 – 10:40*** | - Presentation of conclusions of each group<br>***- Building of the matrix of hypothesis and the scenarios*** | *Reporter of each working group*<br>Collective work: management :<br>D. Lacroix |
| ***10:40 – 11:00*** | ***Coffee break*** | |
| ***11:00 – 13:00*** | ***Launching of the Round tables (RT) starting from the three scenarios: applications for sustainable devpt of low Nile delta*** | *3 Working groups: (A) Objectives; (B) Stakeholders; (C) Tools and means* |
| ***13:00 – 14:00*** | ***Lunch*** | |
| ***14:00 – 15:00*** | ***Presentation of conclusions of each group (3 sets of conclusions for the 3 scenarios)*** | *Reporter of each working group* |
| ***15:00 – 15:40*** | ***Open discussion for the selection of one likely / optimum scenario*** | |
| ***15:40 – 16:00*** | ***Coffee break*** | |
| | Synthesis of discussion<br>Selection of recommendations and roadmap for the selected scenario (RT D)<br>Final assessment of the workshop<br>***Conclusion*** | *All participants*<br>*Assessment proposed by*<br>*D. Lacroix to attendants;*<br>Suzan Kholeif |

*Round table A:* ***Objectives*** *for the sustainable development of Egyptian Nile delta lakes*

*RT B:* ***Stakeholders*** *involved in the management of Egyptian Nile delta lakes under global change*

*RT C:* ***Tools & means*** *of the planning of the sustainable development of Egyptian Nile delta lakes*

*RT D:* ***Steps for the roadmap*** *and structure of the global planning of sustainable development of Egyptian Nile delta lakes*

**Participants: 40 to 50 persons from**

- Egyptian Ministries involved (Scientific Research, Environment, Irrigation)
- Relevant universities, Research Institutes, NGOs, stakeholders
- Regional authorities (Centre of disaster crises management, EEAA, GAFRD, National Center for land use, Nile Delta Governorates)
- French embassy (French attaché)
- Delegation of the European Union to Egypt

***Organizing Committee***

| ***Name*** | **Institution** | **Mobile** |
|---|---|---|
| Françoise BRETON: | UAB, Barcelona, Spain | 34 / 606 347 204 |
| Suzan KHOLEIF: | National Institute of Oceanography and Fisheries | +2/01006635389 |
| Denis LACROIX: | Ifremer / DS / Veille et Prospective | 33 (0)4 99 57 32 58 |

SUMMARY:

The meeting is started by the welcome notes by Egyptian Authorities;

- Egyptian Minister of Scientific Research
- Governor of Kafr El-Sheik,
- EU Delegation of Egypt
- Head of EEAA
- Head of GAFRD
- Francoise Breton, Pegaso Coordinator
- Suzan Kholeif, Nile Delta Case Coordinator

## *The first session:*

- ⇨ Overview of Pegaso project By Francoise Breton, Pegaso Coordinator
- ⇨ How to secure the sustainable development of Nile delta Egyptian Northern lakes under the constraints of the global change. By Suzan Kholeif, Nile Delta coordinator

Then Coffee Break

## *The second session:*

- ⇨ Principles of ICZM protocol and their application in various studies, Mohamed Farouk, EEAA.
- ⇨ Hydro-dynamics of the low delta of Egypt and modelling of salt entrance in the rivers and the ground water,
- ⇨ Overview of Aquaculture in Egypt, Prof. Ashraf Abdel Sameeh, NIOF
- ⇨ Sustainability in Mediterranean aquaculture: guidelines and experiences, Dr. Roberto Ugolini

  MADE coordinator, and .....Italy

## *The third session:*

- ⇨ Economics of costal Egyptian aquaculture from extensive scale to industry, Prof. Ahmed Barrania, National Planning Institute, Egypt.
- ⇨ "Challenges and perspectives in sustainable development in the Mediterranean". Plan Bleu experience,. Dr. Hugues RAVENEL, Blue Plan, France

## *The Fourth session:*

- ⇨ Introduction to DEGEST method, Denis LACROIX, Directorate for foresight and strategy, Ifremer, France

**End of day one**

## Day 2, 11th December 2013

### *B. TABLE 1: TIME SCHEDULE FOR THE EXERCISE*

*C.*

| DAY/time | **Tuesday 10th of Dec.** | **Wednesday 11th of Dec.** |
|---|---|---|
| Morning | **9.00-10.20**<br>Lectures | **9.00-10.40**<br>**STEP 2**: Presentation of the conclusions of the 5 WG<br>Matrix building<br>Scenarios selection<br>**11.00-13.00**<br>**STEP 3:**Impacts of scenarios on sectors and actors. Set of the 3 WG |
| Lunch break | | |
| After noon | **14.30-15.30**<br>Lectures<br>**15.30-16.00**<br>Introduction to<br>DEGEST Method;<br>Presentation of focus, sectors and actors<br>**16.15-18.00**<br>**STEP 1:** Working groups on the 5 Degest parameters | **14.00-15.00**<br>Reporting of the 3 WG on impacts of scenarios on sectors and actors<br>**15.00 – 16.00**<br>**STEP 4:** Open discussion<br>on priorities and strategies<br>**16.15-17.30**<br>Recommandations for roadmap<br>Lectures assessment<br>Conclusion |

**As indicated in the 2nd day agenda, the day started by**The DEGEST Methodology

Definition

The method is derived from the American school of futuring and is named DEGEST. It is combined with the scenarios building, as defined by the French school of foresight. This scenario method is the most used method in foresight analysis.

**Five working groups for 5 parameters**

**Demographics**

**Economics**

Governance & Society

**Environment**

**Society**

**Science & Technology**

- Each group has includes the specialized experts
- The objective of each working group is to select three main hypothesis for the evolution of their parameter for the horizon of 2030, in Egypt.

  **These hypothesis have tobe realistic but contrasted** enough to differ significantly from one to another. The outlines of each hypothesis have to be summarized in few words (less than 10) in order to be easily presented in a table.

  The group selects one moderator, and one speaker for the presentation of the results to the audience.

  The objective of this exercise is to propose to decision makers, in a given field, **a simple and easy-to-use method.**This method should give them the capacity to undertake similar analysis whenever they need it. As a method is detailed in 4 simple steps, this work can be replicated with all required adaptations according to the focus of the study, the long term objectives, the partnership, etc. This method is a new mean for applied foresight in the toolbox of Pegaso.

**TABLE 2 : Matrix of hypothesis for Egypt**

| HYPOTHESIS<br>FIELD | 1 | 2 | 3 |
|---|---|---|---|
| DEMOGRAPHY | **Best. Pop increases, One million / year,**<br><br>**Devpt in rural areas so deconges-tion of towns.**<br><br>**102 Million** | *Medium. Small decrease of rate of increase, Still big towns No strong emigration, 102 Million* | Bad, Plus 1,5 Million / yr, No incentives for outskirts or out, Overpopulation in cities and social pbs<br><br>111 Million |
| **ENVIRONMENT** | *Increase environmental degrada-tion, Impacts on economy, Numer-ous bad spots* | Main threats from climate change, Sea level rises Lido displacement, Reduced gov services | **Better evolution related to better governance, control of industry and urbanization** |
| **GOVERNANCE**<br><br>**& SOCIETY** | ***Future of hope , stable gover-nance, Good quality of R and D***<br><br>***Devpt, Good negociation*** | No progress, Weak gov, Conflicts notably in aquacul-ture, Instability, Less coop-eration | |
| **ECONOMICS** | Bad situation, Annual growth li-mited to 3, Reduction of living standards | *Slight improvement thanks to growth of 5, More tour-ism, Better justice, More entrepreneurs* | **Optimistic one, Better growth up to 7. Political and social stability, Higher standards** |
| TECHNOLOGY<br>(& SCIENCE) | Education : continuity as usual (=Bad)<br><br>Transfer of techno: Bad<br><br>Quality system : No<br><br>Weak interdisciplianry work | **Educ: THE Revolution**<br><br>**TT : Follow the right scientif-ic way for TT**<br><br>**QS : Developed**<br><br>**IW : Increased** | *Educ : Gradual change*<br><br>*TT: Follow the right scientific way for TT QS : Developed*<br><br>*IW : Increased* |

**Scenario 1 Bold**: **“.Utopia or Wonderland.”**

*Scenario 2: “.Good planning in difficulties... “*

Scenario 3: “ Current situation.....

## 2. Second step: Matrix and scenarios

All groups report the three main hypothesis in each field.

Then the global matrix can be filled (table 2)

The next step is the selection of three main scenarios, for the whole country, for the horizon of 2030.

The rule of construction is to select one hypothesis for each parameter.

It is compulsory to select successively the hypothesis of the first parameter (Demography).

This means that the exercise is processed three times.

It is compulsory to select one hypothesis in each parameter. This has to be done according to the global vision given by the selected hypothesis. It must be consistent and coherent to the hypothesis which are progressively selected

A same hypothesis in a parameter can be selected for two different hypothesis in Demography.

Once the group has three sets of hypothesis, it has to check the global consistency of each set.

Then the group gives a "title" to the selected scenario in order to facilitate the discussion

An example is given in Annex 2

## **3. Third step**: Impacts of scenarios on sectors and actors

The group is now split into 3 groups:

The group 1 is in charge of the Scenario 1

The group 2 is in charge of the Scenario 2

The group 3 is in charge of the Scenario 3

Each group has to consider successively the impacts of the scenario on:

1. SECTOR 1 (Natural resources such as minerals, water, living organisms...) and also of the ACTORS A (State, Ministries, regional authorities...)

2. SECTOR 2 (Industry and processing; all transformation activities from material, from Oil to nanos-technologies...) and also of the ACTORS B (Civil society, associations, syndicates, NGOs...)

3. SECTOR 3 (Services such as tourism, banks, insurance, transportation, electronics networks in Internet and outside Internet...) and also of the ACTORS C (Research and development; international, public and private)

The question for each "box" of the table is: **which would be the impacts of each scenario on the activities of the sector and the priorities of the actors?**

**TABLE 3: Scenarios, sectors and actors**

| *Scenario*<br><br>Criteria | **Scenario 1 Utopia or Wonderland**<br><br>**WGs; Economy and Demography.** | ***Scenario 2.***<br><br>**Planning in difficulties**<br><br>**WG Environment** | **Scenario 3**<br><br>**Current situation**<br><br>**WG Governance and Science** |
|---|---|---|---|
| **SECTOR 1**<br><br>Natural resources | Optimum use of resources, preservation and ensurance of sustainibility | More stress on available resources | Loss of natural resources |
| **SECTOR 2**<br><br>Industry and processing | Greener practices, less pollution, reduction of unemployment, Better income, added value of processing, more globalization | Slight improvement | Collapse of industry, rise of black work |
| **SECTOR 3**<br><br>Services | More services, in quality and quantity | Same situation or may be some slight improvement | Poor or limited services |
| | | | |
| ***ACTOR A***<br><br>State, Ministries, regional authorities | Better policy enforcement and rationalisation of policies and legislation, reduction of bureaucracy, better coordination in authority | More sectorial management and coordination, | Interministerial crisis leading to new decentralised management |
| ***ACTOR B***<br><br>Civil society, companies associations, syndicates, NGOs... | Higher level of participation, better awareness of the issues, more support from NGOs | Increase effort s to environment awareness, incentives from state to conservation and protection | Advocacy and examples of local action |
| ***ACTOR S***<br><br>Research and development | More applicable research to poorest pop. More funds for Rand D, More connection to end users | Provide acurate data to decision makers, need for new technologies | International projects meeting needs |

## **4. Fourth step:** Discussion and recommendations for stakeholders

The table 3, when completed, is a support to discussion.

Two frames can be used for **the selection of a strategy for a concrete roadmap**.

The first one is to consider that all scenarios have the same probability to occur. Then decision makers may prefer to look for a nucleus of necessary priorities, which show to be similar, whatever the scenario. It is also called "**Measures without regret**".

The second one is to consider that there is obviously an "optimum" scenario". Consequently, which are the decisions to take to shape the future in order to reach this "**optimum scenario**"?

**TABLE 4 : Scenarios, sectors, actors and strategies for a roadmap**

| *Scenario*<br><br>**Criteria** | **S 1. Utopia or Wonderland** | ***S2*. Planning in difficulties** | **S 3. Current situation** |
|---|---|---|---|
| **SECTOR 1**<br><br>Natural resources | Optimum use of resources, preservation and assurance of sustainability. | More stress on available resources | Loss of natural resources |
| **SECTOR 2**<br><br>Industry and processing | Greener practices, less pollution, reduction of unemployment, Better income, added value of processing, more globalization | Slight improvement | Collapse of industry, rise of black work |
| **SECTOR 3**<br><br>Services | More services, in quality and quantity. | Same situation or may be some slight improvement | Poor or limited services |
| | | | |
| ***ACTOR A***<br><br>State, Ministries, region. authorities | Better policy enforcement and rationalisation of policies and legislation, reduction of bureaucracy, better coordination in authority | More sectorial management and coordination, | Interministerial crisis leading to new decentralised management |
| ***ACTOR B***<br><br>Civil society, assoc. NGOs... | Higher level of participation, better awareness of the issues, more support from NGOs | Increase effort s to environment awareness, incentives from state to conservation and protection | Advocacy and examples of local action |
| ***ACTOR C***<br><br>Research and development | More applicable research to poorest pop. More funds for Rand D, More connection to end users | Provide accurate data to decision makers, need for new technologies | International projects meeting needs |

| | | | |
|---|---|---|---|
| Mix of common recommendations | 1. Education Notably basic and training 19<br>2. More sectoral management and coordination 8<br>3. Incentives from govt for conservation and protection 2<br>4. National Sectoral strategy for the delta 4<br>5. Extension to inland spaces and resources 5<br>6. Sort or review laws to control conflicts of interest 9<br>7. Ensure the participation of all stakeholders in decision making process 7<br>8. Encourage investors and clusters to serve the Society 5<br>9. Support sustainability in all decisions and selections 5<br>10. Better transfer of intl technology and appropriation 5<br>11. Share of databases among all decision makers 7<br>12. Enhancing public awareness as general 3<br>13. Promoting scientific research 7<br>14. Create new economic / urban centers<br>15. Support to green technology /ecology engineering 4<br>16. Better link between Academic science and Industry 9<br>17. Decentralisation 4 | | |
| Selection of a preferable scenario | | ***S2*. Planning in difficulties** | |

At the end of the day, The questioners were circulated to all participants, so that can assess the workshop impact. The following

# The evaluation analysis of workshop Questioners

**Training Post-test**

**Questions about course contents:**

Was the content appropriate?

**100% Yes**

**0% No**

Did you understand the content?

**100% Yes**

**0% No**

Was the training material relevant to your needs?

**100% Yes**

**0% No**

**Questions about the trainers (1= Poor, 5= Excellent):**

Were the trainers effective?

**5% give them 3**

**20% give them 4**

**75% give them 5**

Did the trainers respond to doubts?

**7% give them 3**

**13% give them 4**

**80% give them 5**

**Questions about training methods (1= Poor, 5= Excellent):**

Were the materials used useful?

**20% give it 4**

**80% give it 5**

Was the teaching method appropriate?

**5% give it 3**

**20% give it 4**

**75% give it 5**

Were you motivated to learn the contents?

**15% give it 4**

**85% give it 5**

Did you find the materials useful?

**15% give it 4**

**85% give it 5**

Was the level of difficulty appropriate?

**98% Yes**

**2% NO**

Would you recommend the course to your colleagues?

**100% Yes**

**0% NO**

**Questions about training administration:**

Was the time and length of the training appropriate?

**65% Yes**

**35% No**

What is your overall rating of the training?/(1= Poor, 5= Excellent)

**75% give it 4**

**25% give it 5**

# List of participants

| Name | Organization |
|---|---|
| George Iskander Estino | Minister of Scientific Research |
| Counsler Mohamed Agwa | Governer of Kafer El-Sheik |
| Prof. Mohamed Abdel Fatah | NIOF president |
| Dr. Heba Gaber | Delegation of EU of Egypt |
| Prof. Mohamed Isamil Ibrahim | Dean of Faculty of Science,Alexandria, Univ, Egypt |
| Prof. Khaled Moselhy | Vice president of NIOF |
| Prof. Dr. Magdy Tawfik | Fac. Of Science – Ain Shams Univ |
| Prof. Dr. Diaa Al-Qousi | Ministry of Water Resources and Irrigation |
| General / Osama Senger | Head of Crisis Management and Disasters Risk Reduction sector Information and Decision Support Center Egyptian Cabinet of Ministers |
| Prof. Dr. Mahmoud Hussein | President of General Authority for Fish Resources Development (GAFRD) |
| Eng. Mohamed El Gazar | General Authority for Fish Resources Development (GAFRD) |
| Eng. Mohamed Shaaban | General Authority for Fish Resources Development (GAFRD) |
| Dr. Sameh El-Kafrawy | NARSS |
| Prof. Dr. Omran Freihy | Coastal Research Institute (CORI) |
| Prof. Dr. Ibrahim Abd El Megiud | President of Costal Research Institute (CORI) |
| Prof. Dr. Amr El Sammak | President of EEAA |
| Prof. Dr. Alaa Abd El-Motaleb | President of Drainage Research Institute National Water Research Center |
| Prof. Dr. Ashraf El-Sayed El-Wakeel | Drainage Research Institute |
| Prof. Dr. Ahmed Baranya | Institute of National Planning |
| Dr. Mohamed Farouk | EEAA |
| Eng. Noha Samy | EEAA |
| Prof. Dr. Aly El Builtagy | NIOF |
| Prof. Dr. Ashraf Goda | NIOF |
| Prof. Dr. Reda Fishar | NIOF |
| Dr. Wahid Mofadel | NIOF |
| Dr. Mohamed El-Maamoney | NIOF |
| Prof. Dr. Radwan Gad El-Rab | NIOF |
| Prof.Dr. Mohamed Mohamed El Fekky | President of the cooperative union of the wealth of water |
| Prof.Dr. Awad Marzouk | General Secretary, cooperative union of the wealth of water |
| Mr. Roberto Ugollini | MADE PROJECT MANAGER |
| Eric Zoetmulder | Dutch Management Consultant, NGO |
| Eng. Mohamed Sabry | Aquaculture consultant office |
| Mr. Fayed El- Shamley | Environmental Affair Consultant Manager of Burullus Protectorate |
| Eng. Mohamed Ayat Allah Lotfy | The National Center for Planning State Land Uses |
| Prof. Dr. Suzan Kholeif | Nile Delta Case coordinator, NIOF FORCE coordinator |
| Walaa Ali | Pegaso PHD Student |
| Youmna Zalouk | Administrator - NIOF |
| Dr Denis LACROIX | Ifremer / DS / Veille et Prospective, France |
| Dr Françoise BRETON | Pegaso Coordinator. Univ Autonoma Barcelona |
| Dr Hugues RAVENEL | Plan Bleu, France |
| Dr Nahed Al Arabi | Director of underground institute |

| | |
|---|---|
| Akram Mohamed Fekry | MWRI |
| Shawki Ali Refaay | The central administration of water resources for irrigation - Kafr El Sheikh |
| Abd El naser Ali Showman | The central administration of water resources for irrigation - El Behera |
| Wael Refaat | ACDI / VOCA |
| Eng. Fayed El Shamly | Kafer El Sheik Governorate. Director of Burullus Protectorate |
| Gamal Zaki Mohamed El Shimy | The central administration of water resources for irrigation - Dakahleia |
| Ashraf El Sayed | Drainage Research Institute |
| Ramy El Said | Administrator - NIOF |
| Walaa Fatouh | Administrator - NIOF |
| Soaad El Awadi | Administrator - NIOF |

# Guidebook for a foresight exercise

*International workshop on*

Guidebook for foresight exercise

Prepared by Denis Lacroix

(Ifremer / Scientific planning directorate / Foresight analysis)

Conrad Hotel; Cairo, 10-11 December. 2013

# Content

**Introduction to foresight analysis**

**1. First step:** the DEGEST parameters

**2. Second step:** Matrix and scenarios

**3. Third step**: Impacts of scenarios on sectors and actors

**4. Fourth step:** Discussion and recommendations forstakeholders

**Annexes**

Annex 1: Example of Matrix for Indonesia (2008)

Annex 2: Example of Matrix of scenarios for Indonesia

Annex 3: Example of Impacts of (2) scenarios on SECTORS in Indonesia

Annex 4: Example of Impacts of (2) scenarios on ACTORS in Indonesia

## Introduction

Foresight analysis is used for millenniums but reliable methods have been developed after the 2nd World War. Several tools are available, but the aim remains the same: to clarify the conditions of a decision and to enrich the knowledge on the consequences of this decision. This ambitious goal requires all resources of human intelligence and notably various methods, from quantitative approaches or qualitative ones. Simples rules have to be considered: freedom of thinking, multiplicity of data sources, open discussion, collective intelligence based on "brainstorming" recommendations.

The objective of this exercise is to propose to decision makers, in a given field, **a simple and easy-to-use method.** This method should give them the capacity to undertake similar analysis whenever they need it. As a method is detailed in 4 simple steps, this work can be replicated with all required adaptations according to the focus of the study, the long term objectives, the partnership, etc. This method is a new mean for applied foresight in the toolbox of Pegaso.

### *D. TABLE 1: TIME SCHEDULE FOR THE EXERCISE*

*E.*

| DAY/time | **Tuesday 10th of Dec.** | **Wednesday 11th of Dec.** |
|---|---|---|
| Morning | **9.30-10.20**<br>Lectures | **9.00-10.40**<br>**STEP 2**: Presentation of the conclusions of the 5 WG<br>Matrix building<br>Scenarios selection<br>**11.00-13.00**<br>**STEP 3:** Impacts of scenarios on sectors and actors. Set of the 3 WG |
| Lunch/break | | |
| After noon | **14.30-15.30**<br>Lectures<br>**15.30-16.00**<br>Introduction to DEGEST Method;<br>Presentation of focus, sectors and actors<br>**16.15-18.00**<br>**STEP 1:** Working groups on the 5 Degest parameters | **14.00-15.00**<br>Reporting of the 3 WG on impacts of scenarios on sectors and actors<br>**15.00 – 16.00**<br>**STEP 4:** Open discussion<br>on priorities and strategies<br>**16.15-17.30**<br>Recommendations for roadmap<br>Lectures assessment<br>Conclusion |

## 1. First step: the DEGEST parameters

### *Method*

The method is derived from the American school of futuring and is named DEGEST. It is combined with the scenarios building, as refined by the French school of foresight. This scenario method is the most used method in foresight analysis.

The principle is based on the study of the trends for six (or five) main components of world and countries evolutions:

**Demographics**

**Economics**

Governance (1)

**Environment**

***Society (1)***

**Technology (including. science)**

*(1) Governance and society may be merged if required*

The participants are split in 5 groups as Governance and Society are merged.

The objective of each working group is to select three main hypothesis for the evolution of their parameter for the horizon of 2030, in Egypt.

**These hypothesis have tobe realistic but contrasted** enough to differ significantly from one to another. The outlines of each hypothesis has to be summarized in few words (less than 10) in order to be easily presented in a table.

The group selects one moderator, one secretary and one speaker for the presentation of the results to the audience.

An example of this step is given in annex 1, for Indonesia, in 2008.

**TABLE 2 : Matrix of hypothesis for Egypt**

| HYPOTHESIS<br>FIELD | 1 | 2 | 3 |
|---|---|---|---|
| DEMOGRAPHY | | | |
| ENVIRONMENT | | | |
| GOVERNANCE & SOCIETY | | | |
| ECONOMICS | | | |
| TECHNOLOGY (& SCIENCE) | | | |

**Scenario 1 Bold** : "**.....**"

*Scenario 2 Italic* : "*.... "*

Scenario 3 Underlined : " .....

## **2. Second step:** Matrix and scenarios

All groups report the three main hypothesis in each field.

Then the global matrix can be filled (table 2)

The next step is the selection of three main scenarios, for the whole country, for the horizon of 2030

The rule of construction is to select one hypothesis for each parameter.

It is compulsory to select successively the hypothesis of the first parameter (Demography).

This means that the exercise is processed three times.

It is compulsory to select one hypothesis in each parameter. This has to be done according to the global vision given by the selected hypothesis. It must be consistent and coherent to the hypothesis which are progressively selected

A same hypothesis in a parameter can be selected for two different hypothesis in Demography.

Once the group has three sets of hypothesis, it has to check the global consistency of each set.

Then the group gives a "title" to the selected scenario in order to facilitate the discussion

An example is given in Annexe 2

## **3. Third step**: Impacts of scenarios on sectors and actors

The group is now split into 3 groups:

The group 1 is in charge of the SECTOR 1 (Natural resources such as minerals, water, living organisms...) and also of the ACTORS A (State, Ministries, regional authorities...)

The group 2 is in charge of the SECTOR 2 (Industry and processing; all transformation activities from material, from Oil to nanos-technologies...) and also of the ACTORS B (Civil society, associations, syndicates, NGOs...)

The group 3 is in charge of the SECTOR 3 (Services such as tourism, banks, insurance, transportation, electronics networks in Internet and outside Internet...) and also of the ACTORS C (Research and development; international, public and private)

The question for each "box" of the table is: **which would be the impacts of each scenario on the activities of the sector and the priorities of the actors?**

**TABLE 3 : Scenarios, sectors and actors**

| *Scenario*<br><br>**Criteria** | **Scenario 1.** | ***Scenario 1.*** | **Scenario 3** |
|---|---|---|---|
| **SECTOR 1**<br><br>Natural resources | | | |
| **SECTOR 2**<br><br>Industry and processing | | | |
| **SECTOR 3**<br><br>Services | | | |
| | | | |
| ***ACTOR A***<br><br>State, Ministries, regional authorities | | | |
| ***ACTOR B***<br><br>Civil society, associations, syndicates, NGOs... | | | |
| ***ACTOR C***<br><br>Research and development | | | |

## **4. Fourth step:** Discussion and recommendations for stakeholders

The table 3, when completed, is a support to discussion.

Two frames can be used for **the selection of a strategy for a concrete roadmap**.

The first one is to consider that all scenarios have the same probability to occur. Then decision makers may prefer to look for a nucleus of necessary priorities, which show to be similar, whatever the scenario. It is also called "**Measures without regret**".

The second one is to consider that there is obviously an "optimum" scenario". Consequently, which are the decisions to take to shape the future in order to reach this "**optimum scenario**"?

## TABLE 4 : Scenarios, sectors, actors and strategies for a roadmap

| *Scenario*<br><br>Criteria | **Scenario 1.** | ***Scenario 2.*** | **Scenario 3** |
|---|---|---|---|
| **SECTOR 1**<br><br>Natural resources | | | |
| **SECTOR 2**<br><br>Industry and processing | | | |
| **SECTOR 3**<br><br>Services | | | |
| | | | |
| ***ACTOR A***<br><br>State, Ministries, region. authorities | | | |
| ***ACTOR B***<br><br>Civil society, assoc. NGOs... | | | |
| ***ACTOR C***<br><br>Research and development | | | |
| | **PRIORITIES** | | |
| Same probability of happening of the scenarios | **PRIORITIES as "Measures without regret"** | | |
| Selection of a preferable scenario | | *(example)*<br><br>**PRIORITIES to reach this scenario** | |

**LITERATURE**

Alcamo, J. (Ed.), 2008 : Environmental futures : the practice of environmental scenarios analysis. Elsevier. 196 p.

Cornish Edward. 2004 : Futuring : the exploration of the future; Bethesda (Md) : World Future Society, 313 p.

Dale R., J. Asgard et J. Alcamo, 2007 : Environment for development. UNEP report on foresight on environment in 2050. Chap. 9 : The future today. P. 75.

Evad, 2008 (Coord. J. Lazard): guide to the co-construction of sustainable development indicators in aquaculture. Joint work Cirad, Ifremer, Inra, IRD, Univ. Montpellier 1). 144 p.

GFCM, 2010 : Regional synthesis of the Mediterranean marine finfish aquaculture sector and development of a strategy for marketing and promotion of Mediterranean aquaculture. GFCM Studies and Reviews No. 88. Rome, FAO. 214 p.

Institute for security studies, 2006 : the new global puzzle : what world for the EU in 2025 ? Ed. by Nicole Gnesotto and Giovanni Grevi. Paris; 249 p .

IUCN, 2007: Aquaculture and environment in Mediterranean aquaculture; Guide for the sustainable development of Mediterranean aquaculture. 110 p. (26 experts)

Jamieson D., 2005 : Adaptation, mitigation and justice in Perspectives on climate change : Science, Economics, Politics, Ethics. Elsevier editor; pp. 217 – 248

Jouvenel H de, 2004: An invitation to foresight. Futuribles. Coll. Perspectives. 89 p.

Katavic I (coord), 2005 : Guidelines to marine aquaculture planning, integration and monitoring in Croatia. Dir. of Fisheries. Min. of agriculture. Zagreb. Croatia. 77 p.

Mediterranean perspectives of the Blue Plan on environment and development; Ed. By G. Benoit and A. Comeau. Ed. de l'Aube. 430 p.

MEDPRO, 2013: Prospective analysis for the Mediterranean region; EU/DG Research Foresight studies. 74 p.

Millenium Ecosystem Assessment 2005 : Report on the assessment of ecosystems for the Millenium. Unesco. 59 p.

Pahl-Wostl C., 2008: Participation in building environmental scenarios. *In* Environmental futures : the practice of environmental scenarios analysis. Ed; J. Alcamo. pp. 105 -122.

Schwartz P., 1991 (2007): The art of long view: planning for the future in an uncertain world. Ed. John Wiley & sons. Chichester. 273 p.

UNEP/ global environment outlook : Yearbook : www.unep.org/geo/yearbook

Van der Heijden K., 1996 : Scenarios, the art of strategic conversation. John Wiley and sons Ltd. Chichester. UK. 299 p.

**Annex 1: Example of Matrix for Indonesia (2008)**

| HYPOTHESIS<br>FIELD | 1 | 2 | 3 |
|---|---|---|---|
| DEMO-<br>GRAPHY | Population size increasing<br>1.45 % per Yr<br>(347 Millions) | High population density in Java (>50% of total pop.); (347 Millions | emigration > immigration<br>(negative)<br>1.2 % /yr (320 M) |
| ENVIRON-<br>MENT | Improved resource restoration and biodiversity including civic education (+ intl support) | Extremely bad environment situation | Reduced pollution<br>In air and water<br>Some waste management |
| GOVERNANCE | Good governance<br>(Democracy + decentralisation + involvement of civil society) | Medium Quality<br>Governance (good & bad initiatives) | Chronic Crisis (Corruption, separatism, terrorism…) |
| ECONOMICS | Slow increase thanks to non-tradable industries (3%) | High rate of growth related to long-term good governance and biodiversity | No economic growth due to overpopulation, natural disasters and social issues |
| SOCIETY | Unemployment will increase, creating high social gap between huge poor class and middle class | More stratified society | No change in the society |
| TECHNO-<br>LOGY<br>(& SCIENCE) | No government coordination<br>Slow brain drain | Less means for S&T<br>Technology gap increasing | Improvement of government coordination<br>Support to young scientists |

**Annex 2: Example of Matrix of scenarios for Indonesia (2008)**

| HYPOTHESIS<br>FIELD | 1 | 2 | 3 |
|---|---|---|---|
| DEMOGRAPHY | **Population size increasing**<br>**1.45 % per Yr**<br>**(347 M)** | *High population density in Java (>50% of total pop.); (347) M* | emigration > immigration<br>(negative)<br>1.2 % /yr (320 M) |
| **ENVIRONMENT** | Improved resource restoration and biodiversity including civic education (+ intl support) | ***Extremely bad environment situation*** | Reduced pollution<br>In air and water<br>Some waste management |
| **GOVERNANCE** | Good governance<br>(Democracy + decentralisation + involvement of civil society) | **Medium Quality**<br>**Governance (good & bad initiatives)** | *Chronic Crisis (Corruption, separatism, terrorism…)* |
| **ECONOMICS** | Slow increase thanks to non-tradable industries (3%) | High rate of growth related to long-term good governance and biodiversity | ***No economic growth due to overpopulation, natural disasters and social issues*** |
| **SOCIETY** | ***Unemployment will increase, creating high social gap between huge poor class and middle class*** | More stratified society | No change in the society |
| TECHNOLOGY<br>(& SCIENCE) | *No government coordination*<br>*Slow brain drain* | **Less means for S&T**<br>**Technology gap increasing** | Improvement of government coordination<br>Support to young scientists |

**Macro-Scenario 1 Bold** : **"Higher urgent challenges"**

*Macro-Scenario 2 Italic: "Crisis& Unstability "*

Macro-Scenario 3: "Improvement and better future"

**Annex 3: Example of Impacts of (2) scenarios on SECTORS (Indonesia, 2008)**

**RESTRICTED TO AQUACULTURE SECTOR**

| *Scenario*<br><br>FIELD | **1. Higher urgent challenges** | | 3. Improvement & better future |
|---|---|---|---|
| Fresh water aquaculture | **Reduced**<br><br>Limitation for freshwater availability;<br><br>Bad quality of products<br><br>Some good quality spots | | **Increase (less than for marine aquaC)**<br><br>More controlled aquaC to protect biodiversity and aquatic ecosystems; Polycult. + Improved technol-ogies<br><br>Larger and larger scale dev. |
| **Marine water aq-uaculture** | **Limited development**<br><br>Bad general quality of coastal waters<br><br>High pressure on resources | | **Sustainable devpt**<br><br>High value species; New techno.: open sea cages, polyculture. Higher risks of diseases<br><br>Risk of "capitalistic" short term investments |
| **Rules & regulations** | **Min. policy for AquaC**.<br><br>Rules for food health control<br><br>Frequent illegal dvpt<br><br>Low level of support notably thru NGOs | | **Complete & specific set of laws related to aquaC.**<br><br>Support to "eco-management?"<br><br>High level of control |
| **Interactions with fisheries** | **Overexploitation** of natural resources; decreasing supply<br><br>Competition for access to sites | | **A new relationship**<br><br>Competition for access to sites & markets; need for partnership for agreement; set of artificial reefs; Better management of stocks (incl. restocking paid by govt) |
| **Markets** | **Limited potential** for aquac products;<br><br>Need of import | | **New markets opportunities**<br><br>Numerous local and int'l markets<br><br>Mix of various qualities & prices<br><br>Price global increase<br><br>Support for local production<br><br>Aqua tourism & advertisement |
| **Image** | **BAD**…..<br><br>Some spots for Int'l tourism | | **GOOD** Come and visit Indonesian aquaculture |

**Annex 4: Example of Impacts of (2) scenarios on ACTORS (Indonesia, 2008)**

**RESTRICTED TO AQUACULTURE STAKEHOLDERS**

| Macro- scenario<br>Stakeholder | 1. Higher urgent challenges | | 3. Improvement & better future |
|---|---|---|---|
| Relevant Ministries | *Awareness of importance of Aquac*<br>Review of aquaculture policy<br>**Cooperation** + NGOs + In t'l bodies<br>Japanese model for Fisheries for co-management of the coast<br><br>*Special areas for development*<br>Education to sustainability | | **NO PROBLEM** |
| **Chamber of commerce & industry** | *Education*<br>Mix with Tourism sector<br>**Special areas** with support of Media & State & NGOs | | Support of Gov Media, NGO<br><br>*Eco-tourism*<br>Shrimp, abalone, seaweeds<br>**Diversification of species & products** |
| **Banks** | **Investments in some spotsonly**<br>Partnership with int'l banks<br>Support of NGOs<br>Care + with biodiversity<br><br>*Support of State for special loans* | | Share from 50 to 80 %in Aquac<br>Funds for Conservation projects<br>Partnership with other banks<br>**Lower tax from govt** + Tax free during the first 5 years |
| **Fishermen associations** | OK for the govt programme<br>**Higher controlpenalties**<br>for illegal fishing<br>Support asked from Media NGOs | | *Restocking programmes*<br>And related training |
| **NGOs Including Ecologists** | **Polyculture for sustainability**<br>**Better education & training**<br>Freshwater aquac only on small islands | | **Eco-tourism**<br>**Eco-sustainability control**<br>Intl NGOs assess the impacts |
| **Media** | Important role to play<br>**Extended education**, infos for all<br>Through all channels, press, radio, Internet<br>Ask for better governance | | Debates on aquaculture<br>Support to eco-friendly technologies<br>Interactions with foreign media |

# Annex 7: List of funding agencies

| *Organization* | *Interest* | *Link* |
|---|---|---|
| Alfred Sloan Foundation | Fellowships to young scientists with little or no outside support. | http://www.sloan.org |
| Arab Fund for Economic & Social Development (AFESD) | Water, energy, roads and ports sectors in The Arab countries. | http://www.arabfund.org/ |
| Asian Development Bank (ADB) | Poverty reduction in Asia and the Pacific. | http://www.adb.org |
| Both Ends | sustainable solutions for environmental and poverty-related issues. | http://www.bothends.org/en/ |
| Centre for International Earth Science Information Network (CIESIN) | Intersection of the social, natural, and information sciences, and specializes in on-line data and information management, spatial data integration and training, and interdisciplinary research related to human interactions in the environment. | http://www.ciesin.org/ |
| Community Development Carbon Fund (World Bank Unit) | Link small-scale projects in developing countries seeking carbon finance with companies, governments, foundations, and NGOs seeking to improve the livelihoods of local communities and obtain verified emission reductions (ERs). | http://www.communitycarbonfund.org |
| Department for International Development | The United Kingdom's government agency for development assistance. | http://www.dfid.gov.uk |
| European Commission | Direct financial contributions in the form of grants in support of projects or organisations which further the interests of the EU or contribute to the implementation of an EU programme or policy. Projects related to environment, consumers, health, agriculture, fisheries and foods, etc... | http://ec.europa.eu/index_en.htm |
| European Commission- LIFE Programme | Environmental and nature conservation projects throughout the EU, as well as in some candidate, acceding and neighbouring countries. | http://ec.europa.eu/environment/life/ |
| European Commission- TEMPUS | Higher Education reform in the Partner Countries including Lebanon. | |
| Ford Foundation | Grants funds to organizations and individuals. | http://www.fordfound.org |
| French CNRS | The official website of the French National Research Council. | https://dri-dae.cnrs-dir.fr/spip.php?rubrique116 |

| Organization | Interest | Link |
|---|---|---|
| French Global Environmental Facility | Promotion of environmental protection in developing and transitional countries. | http://www.terravivagrants.org/Home/view-grant-makers/government-organizations/french-global-environmental-facility |
| Grassroots Grant Programme of Japan | Primary health care, Primary education, Poverty relief, Public welfare, Environmental protection, and Anti-personnel mine clearance in developing countries | www.lb.emb-japan.go.jp/GGPfile/ggp_guidlines_en.doc |
| French Global Environmental Facility | Promotion of environmental protection in developing and transitional countries. | http://www.terravivagrants.org/Home/view-grant-makers/government-organizations/french-global-environmental-facility |
| Institut de Recherche pour le Developpement (IRD) | Development | www.ird.fr |
| Integrated Framework Trust Fund | Provides trade-related technical assistance for Least Developed Countries. | http://www.wto.org/english/tratop_e/devel_e/a4t_e/enhance_if_e.htm |
| International Oil Pollution Compensation Funds | Provides compensation for oil pollution damage resulting from spills of persistent oil from tankers. | http://www.iopcfund.org/ |
| Lebanese Ministry of Environment | | www.moe.gov.lb |
| National Council for Scientific Research (CNRS) - Lebanon | Formulating national science and technology policy, initiating, guiding, supporting and conducting scientific research programmes and activities in Lebanon | http://www.cnrs.edu.lb |
| National Science Foundation | International programs | http://www.nsf.gov |
| Office of Naval Research (ONR) | Innovative scientific and technological solutions to address current and future Navy and Marine Corps requirements | http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx |
| Packard Foundation | Grants projects related to conservation, science, population, etc… | http://www.packard.org/grants/ |
| Institut de Recherche pour le Developpement (IRD) | Development | www.ird.fr |

| Organization | Interest | Link |
|---|---|---|
| Pocchiari Foundation Fellowship | Every two years one or two travelling fellowships are awarded of US$ 10 000 each, funds permitting, to researchers from developing countries to enable them to gain new experience relevant to their research. | http://www.who.int/governance/awards/pocchiari/en/index.html |
| Summit of the Americas | Promote economical development and address environmental concerns. | http://www.summit-americas.org/default_en.htm |
| The Academy of Sciences for the Development World (TWAS) | Promotes scientific capacity and excellence for sustainable development in the South. | http://twas.ictp.it/ |
| The Conservation Leadership Programme (CLP) | Offers support to young conservationists living and working in Africa, Asia, East/Southeastern Europe, Latin America and the Caribbean, the Middle East and the Pacific Islands. | http://www.conservationleadershipprogramme.org/About Us.asp |
| The Department of Health and Human Services- US Government | It's the Grants.gov program's managing partner, and allows access to the 26 federal grant-making agencies available through this convenient E-Government initiative. | http://www.grants.gov/aboutgrants/agencies_that_provide_grants.jsp |
| The Foundation Center | The Foundation center gives grants to projects related to environment, animals, education…etc | http://fdncenter.org/ |
| The Global Environment Facility (GEF) | The Global Environment Facility (GEF), established in 1991, helps developing countries fund projects and programs that protect the global environment. There is the Small Grants Programme for institutions. | http://www.gefweb.org |
| The Margaret McNamara Memorial Fund | It supports students mainly women studying in the US and Canada. | http://www.mmmf-grants.org/ |
| The Rotary Foundation | Rotary Foundation grants support Rotarian efforts to change lives and serve communities through projects that promote peace, fight disease, provide clean water, save mothers and children, support education, and grow local economies. | http://www.rotary.org/en/AboutUs/TheRotaryFoundation/Pages/ridefault.aspx |
| The Short and Medium-term Priority Environmental Action Programme (SMAP) | SMAP is a framework programme of action for the protection of the mediterranean environment, within the context of the Euro-Mediterranean Partnership. The Partners have selected by consensus the following five priority fields of action for the SMAP : Integrated Water Management, Waste Management, Hot Spots (covering both polluted areas and threatened biodiversity elements ), Integrated Coastal Zone Management, and Combatting Desertification. | http://ec.europa.eu/environment/archives/smap/program.htm |
| The Spencer Foundation | The Foundation's research programs provide funding for investigations that promise to yield new knowledge about education in the United States or abroad. | http://www.spencer.org |

| Organization | Interest | Link |
|---|---|---|
| Trust Fund for Statistical Capacity Building (TFSCB) | The Trust Fund for Statistical Capacity Building (TFSCB) has been established by the Development Data Group of the World Bank to strengthen the capacity of statistical systems in developing countries | http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/SCBEXTERNAL/0,,contentMDK:20100547~menuPK:244204~pagePK:229544~piPK:229605~theSitePK:239427,00.html |
| United Arab Emirates Health Foundation Prize | The purpose of the Foundation is to award a prize to a person or persons, an institution or institutions or a nongovernmental organization or organizations, who have made an outstanding contribution to health development. | http://www.who.int/governance/awards/arab_emirates/en/index.html |
| USAID | Projects related to: Environment & Global Climate Change, Agriculture & Food Sanitation, Education,Water & Sanitation, etc... | http://www.usaid.gov/ |
| World Heritage Fund | Protection of World Heritage Sites | http://whc.unesco.org/pg.cfm?cid=160 |
| World Resources Institute (WRI) | Acting much like an internal venture fund, the Global Impact Fund will direct financial resources to: •Scale up critical initiatives that can drive big changes in the world•Help China, India, and Brazil green their economies•Finance innovative ideas and create a culture of innovation at WRI. | http://www.wri.org |
| Mava Foundation | Conservation | http://www.mava-foundation.org/ |
| ENPI CBC med | Cross-border cooperation in the Mediterranean | http://www.enpicbcmed.eu/ |
| United Nations Development Program (UNDP Lebanon) | Call for tenders | http://www.undp.org.lb/ |
| Middle East Partnership Initiative (MEPI) | Developing strong programs within and across the Middle East and North Africa. | http://mepi.state.gov/ |
| Erasmus Mundus | Scholarships and academic cooperation | http://ec.europa.eu/education/external-relation-programmes/mundus_en.htm |