



Technical Report No. 7

EVALUATION 1ST PHASE CASE STUDY DIALOGUE FORA



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Photos:

Top Left: 1st Case Study Dialogue Fora meeting for the Jucar River Basin, D. Assimacopoulos

Top Medium: 1st Case Study Dialogue Fora meeting for Portugal

Top Right: 1st Case Study Dialogue Fora meeting for Syros Island, D. Assimacopoulos

Bottom Left: Photo: 1st Case Study Dialogue Fora meeting for Switzerland, S. Rock

Bottom Right: 1st Case Study Dialogue Fora meeting for the Po River Basin

Abstract

This document presents the outcomes from the first round of Case Study Dialogue Fora (CSDF) meetings organised within the DROUGHT-R&SPI project. In total five meetings were held: in Valencia, Spain (28th March 2012), Lisbon, Portugal (30th May 2012), Hermoupolis, Greece (17th July 2012), Zurich, Switzerland (5th September 2012), and Parma, Italy (1st October 2012). The workshops aimed at establishing a platform for cooperation and exchange of knowledge among project partners and local stakeholders and analysing past drought management efforts.

This document includes an overview of the first round of workshops and recommendations for enhancing the science-policy interface in the subsequent rounds of CSDF meetings. It has been developed by the NTUA with the cooperation of UPVLC, ISA-CEABN, UB-CERTeT, ETH, and WSL.

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1 Introduction

One of the main activities in the DROUGHT-R&SPI project is the enhancement of the science-policy interface in order to support the development of drought management plans within the framework of WFD River Basin Management Plans. In the case of the WP2 Case Studies, this will be achieved through the establishment of Case Study Dialogue Fora (CSDF) and the organization of Case Study Dialogue Meetings. In particular, three Rounds of Workshops are foreseen that will support the implementation of WP2 activities and the Case Study development process. Table 1.1 lists the themes of each round of events and the main questions to be addressed and discussed with the stakeholders.

Table 1.1: *The DROUGHT-R& SPI Case Study Dialogue Fora meetings*

Round of workshops	Workshop Themes	Pertinent questions
1 st	<ul style="list-style-type: none"> • Analysis of past events in terms of natural hazards, socio-economic and environmental impacts • Analysis of underlying causes and responses 	<ul style="list-style-type: none"> • What were the impacts? • What are the factors that determine current vulnerability to drought? • How are these factors linked to the current system? • Which measures were taken for mitigating drought impacts? Were these effective?
2 nd	<ul style="list-style-type: none"> • Development of scenarios for underlying causes 	<ul style="list-style-type: none"> • How will the factors that determine current vulnerability evolve?
3 rd	<ul style="list-style-type: none"> • Assessment of options for long-term drought risk reduction 	<ul style="list-style-type: none"> • Which options are most suitable and effective for mitigating future drought threats? • What are the trade-offs of alternative responses?

Each round of events is structured in two phases:

1. **Phase 1:** Organisation of a “format” CSDF Workshop for a selected Case Study; and
2. **Phase 2:** Organisation of similar events in the rest of Case Study regions.

The “format” Workshop serves as a model for setting the discussion framework among project partners and local stakeholders (e.g. agenda, facilitated group discussions, support material). The following Workshops are organised based on the outcomes, successes and pitfalls of the “format” workshop.

The 1st Round of Workshops was organised during the second half of the first project year (March to October 2012). The first CSDF Workshop was held in Valencia for the Jucar River Basin (28th March 2012). This Workshop has been selected as the “format” event for the 1st Round, as there is a long tradition in water management in Spain, a Drought Management Plan is already in place for the Jucar River Basin and thus there is significant learning potential from past efforts with coping with drought. Four other Workshops followed; a Workshop has not been organised for the Netherlands Case Study, as drought management is not a priority for The Netherlands and there was limited interest by the stakeholders.

This document is structured as follows:

- Section 2 provides a brief overview of the outcomes of the 1st Round of CSDF Workshops.
- Section 3 presents the results from a questionnaire survey undertaken during the Workshops for evaluating the project’s and Workshop processes.
- Session 4 concludes the document with a set of recommendations on how the science-policy interaction in workshops can become more effective.
- The Annexes provide the Workshop minutes, the agendas and the participant lists for the five events.

2 Overview of the 1st Round of Workshops

The 1st Round of CSDF Workshops aimed at: (i) introducing DROUGHT-R&SPI to the CSDF, (ii) establishing a basis for cooperation with the CSDF through the whole project duration, and (iii) collecting information from the stakeholders regarding past drought events, in terms of impacts, vulnerability and responses. The paragraphs that follow briefly describe the outcomes of each CSDF Workshop, emphasising on the discussion outcomes on vulnerability to drought and the assessment of the current drought management framework.

2.1 The Valencia Workshop

The CSDF Workshop on “Jucar River Basin, Spain – Operative Droughts in Water Resources Systems” was the first event organised in the DROUGHT-R&SPI project. It was held on the 28th of March 2012 in Valencia (venue: Sala de Juntas de Rectorado, Universidad Politécnica de Valencia) and was attended by project partners, members of the External Advisory Board, and representatives from key stakeholder groups in the Jucar River Basin (Table A.2). The workshop aimed at discussing the current drought management framework in the Jucar River Basin (JRB), in order to identify past failures and positive developments.

The workshop was organised in three sessions (the agenda is given in Table A.1):

1. *Session 1* was introductory to the workshop and included presentations of the DROUGHT-R&SPI project, the aims of the workshop and of the Jucar River Basin Case Study.
2. *Session 2* was dedicated to past drought management efforts and included presentations from selected stakeholders and a facilitated discussion on past drought impacts and current vulnerability to drought.
3. *Session 3* involved an overall assessment of the current management framework, and particularly of the options for coping with drought.



Figure 2. 1: Photo from the 1st CSDF Workshop in Valencia

The discussion on vulnerability of the JRB to drought was based on the impact trees developed for the JRB (Figure 2. 2 to Figure 2. 4). Stakeholders were given time to present their experience from the recent 2005-2008 drought event and comment on the impact trees. The main discussion points can be summarised as follows:

- The environmental sector is still the most vulnerable to drought, as the wetlands in the Jucar River basin (Albufera) are highly dependent on the runoff and aquifer levels for water supply.
- Besides the improvements in water supply, the problem of ensuring that all water demands are covered during drought remains as a challenge, and could lead to conflicts among users.

- The main impacts in the past were:
 - a. Urban supply: Deterioration of water quality, Increased exploitation costs, Reduced income, Extra charges on consumers bill;
 - b. Agricultural production: Reduction of water supply (Linear relation between benefits and water supply);
 - c. Hydropower: Reduced production, inefficient performance of the production system;
 - d. Environment: Risk of the river bed running dry at some spots at its middle course.
- The implementation of the Drought Management Plan contributed in minimizing drought impacts during the 2005-2008 event.

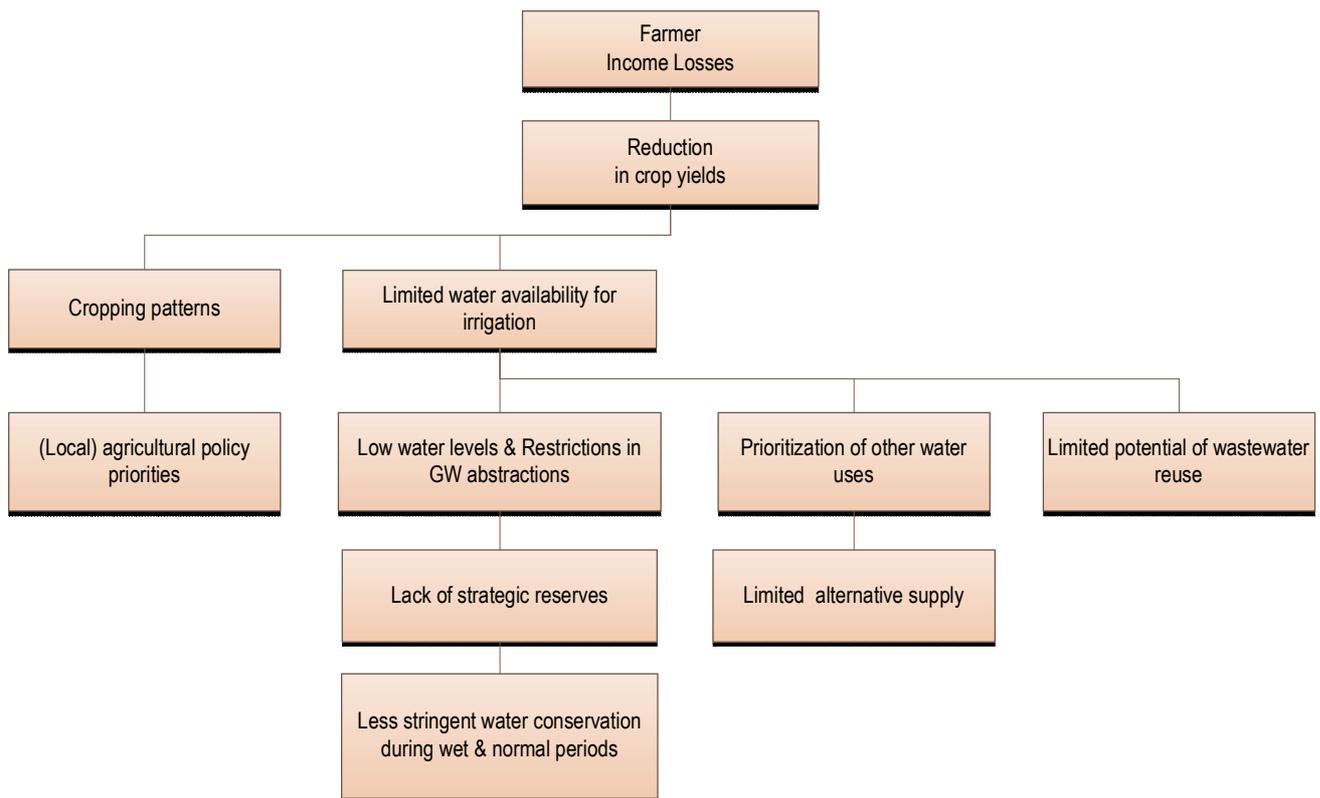


Figure 2. 2: *Impact tree for the agriculture in the Jucar River Basin*

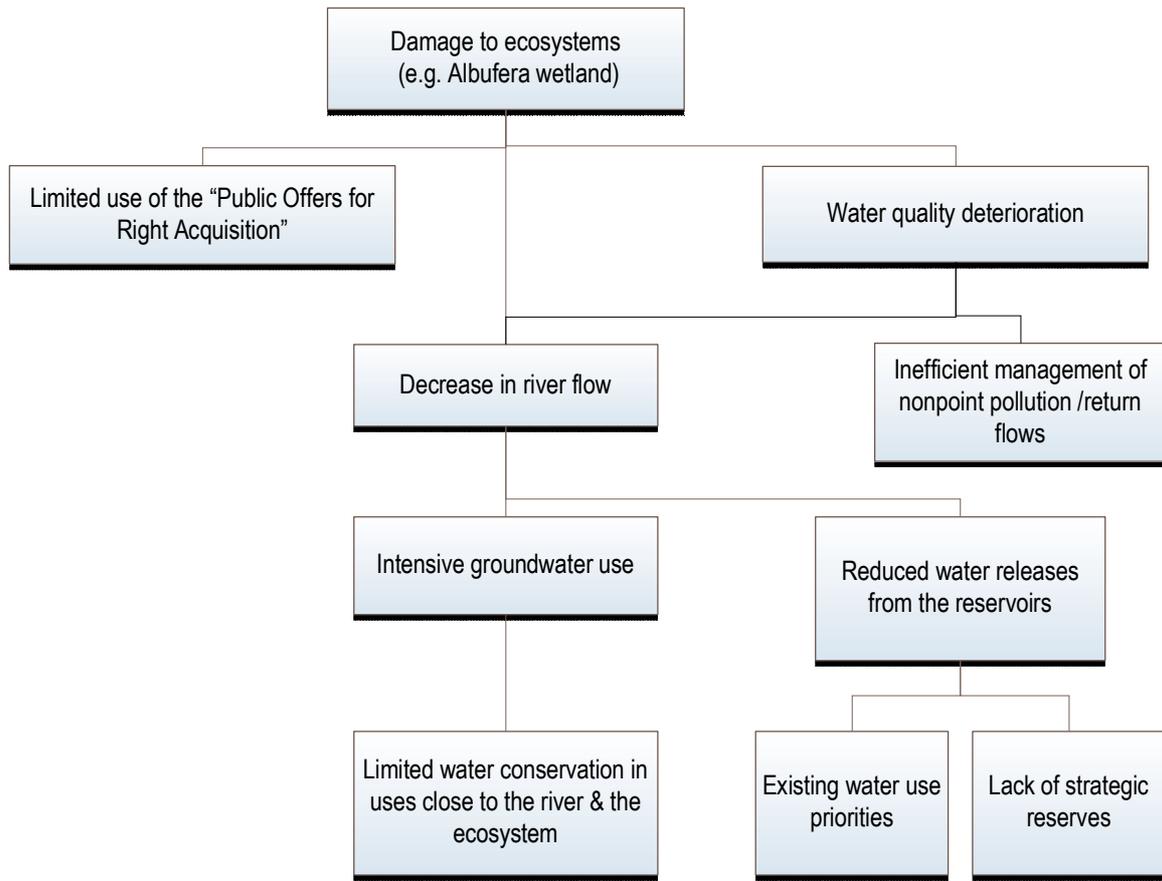


Figure 2. 3: Impact tree for the environment in the Jucar River Basin

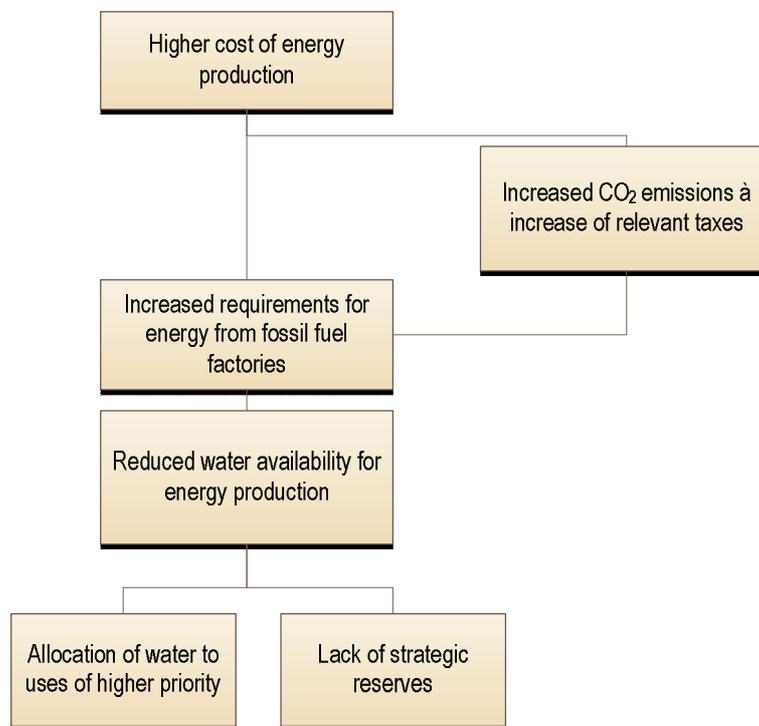


Figure 2. 4: Impact tree for the energy production sector in the Jucar River Basin

The workshop concluded with a list of ‘Positive Aspects’ and ‘Issues for Improvement’ in the current drought management framework (**Table 2.1**). Overall, there was a general consensus among stakeholders that the responses applied were adequate and further improvements are anticipated in the revised version of the Drought Management Plan.

Table 2.1: Overview of the analysis and assessment of the current drought management framework in the JRB

Responses & processes that contributed to minimizing drought impacts	Policy gaps & recommendations for improving drought management
<ul style="list-style-type: none"> • Drought protocol/ SDP (Special Drought Plans) • Indicators, thresholds and scenarios established • Drought Permanent Commission (DPC) and Technical Office • Water Rights acquisition in relation with river flow available • Transparency enhance due to DPC and + co-responsibility • Water flow maintenance for Albufera wetland • Technical management measures (...) that are permanent nowadays • Low pressure water distribution network for Valencia City • Use of technology for studies and control • Users organized (irrigated farmers) • Collaboration between CHJ and Iberdrola for river flow contribution • Access to information • Good knowledge of risk ensured • Farmers insurance for risk reduction and increasing of transparency and co-responsibility • Coordination between interested parties 	<ul style="list-style-type: none"> • In-depth studies about real impacts and economic effects of drought • Limited consideration of impacts in other sectors like tourism, rainfed agriculture, environment • Drought management approach focused on water issues • Need to improve SDP integration into RBMP • Municipality Contingency Plans to be improved • Analyze compensation plan for farmers • Fish mortality + invasive species + salinity increasing • To evaluate Drought management responses • Management improvement of certain water systems in the basin • Calculation of real water resources availability (induced drought) and improve groundwater abstraction registration system • Legal provision implementation (environmental demand as a previous restriction) • Drought management commission to be maintain for planning during normal situation • Integration of agricultural policy into water management policy • Climate change • Infrastructures improvement (modernization) • Increase environmental flow for Albufera wetland (+ quality) • Contingency Plans for all users

2.2 The Lisbon Workshop

The CSDF Workshop for the Portugal Case Study was held on the 30th of May at the CEABN (Institute of Agronomy, Lisbon). It had the form of small-scale group discussions and thus it was attended by representatives of key stakeholder groups and members of the ISA-CEABN (Figure 2. 5). The agenda (Table B.1) included three sessions:

1. During the first session a brief presentation was given on the DROUGHT-R&SPI project, preliminary results of case study Portugal, goals and expected outcome from the workshop.
2. The second session was dedicated to the Identification, evaluation and analysis of impacts and underlying causes of impacts (vulnerability) of drought episodes 2004-2006, 1998-1999 and 1991-1995.
3. The third session involved a discussion on the responses adopted in the past, particularly for the two drought events examined in the project.



Figure 2. 5: Photo from the 1st CSDF Workshop in Lisbon

Initially the discussion was focused on the selection of the two most important past drought events. Stakeholders proposed that the DROUGHT-R&SPI analyses should focus on the 1991-1995 and 2004-2006, taking into account the recorded impacts and drought characteristics (based on the SPI-12 values presented to the stakeholders).

Subsequent discussions focused on the vulnerability of Portugal to drought and the assessment of responses adopted in the past. The main discussion outcomes were:

- Vulnerability to drought in terms of public water supply was very much improved after the 1991-95 drought event. Therefore, during the 2004-2006 drought most people did not feel the lack of water in their houses since most regions of the case study were already provided with large reservoirs, with enough capacity for water provision during a prolonged (2-3 years) drought. Alternative water supply systems are common in some areas and their use is only intensified during droughts where needed. The 2004-06 drought was also an opportunity for improvement, since after this event many water supply entities started implementing contingency plans.
- Monitoring is seen as the basis for drought management and efficient risk reduction. Data monitoring for drought management was initiated around 1991 when strong investments on monitoring began. However, the budget for monitoring has been decreasing in the last years and today there is almost no investment on data monitoring, which is extremely important and needs financial and human resources.
- The revision of the legal instrument “Convenção de Albufeira” is needed, as well as a legal definition of exploitation regimes for reservoirs with quantification of water uses to ensure ecological flows at international basins and improve mitigation/management of conflicts during droughts. The newly published River Basin Management Plans should include such exploitation regimes for reservoirs but do not.
- Stakeholders considered that the most important drought impacts are conflicts, impacts on agriculture (particularly rainfed agriculture) and impacts on biodiversity. The impact trees developed for Portugal are presented in Figure 2. 6 and Figure 2. 7.

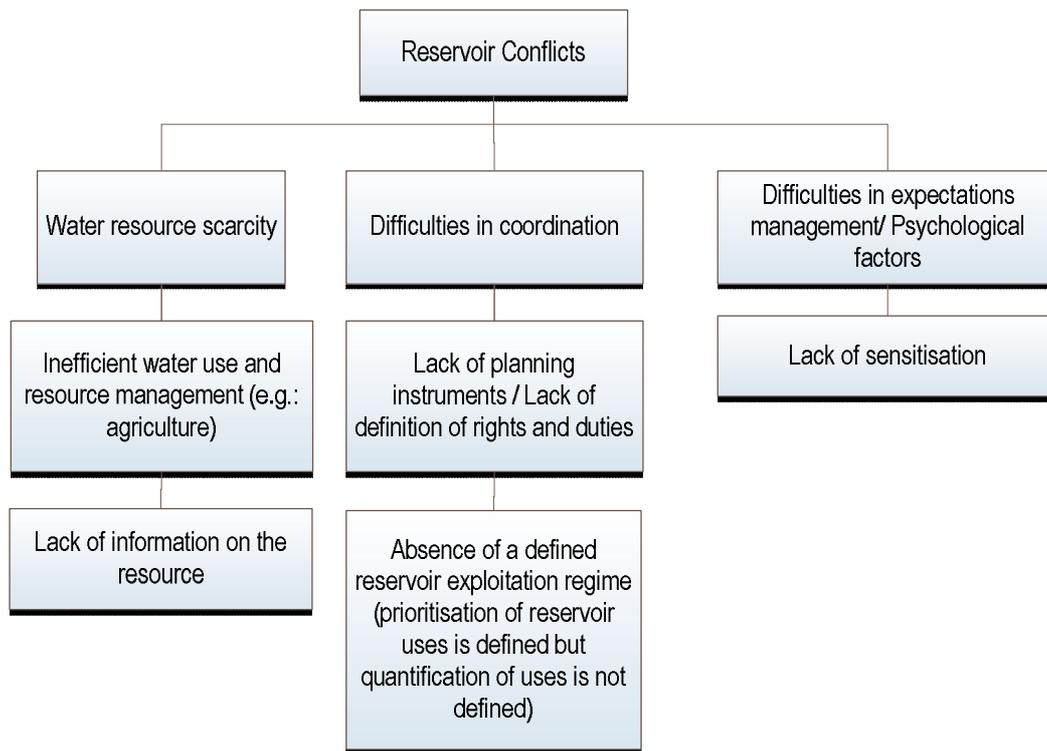


Figure 2. 6: *Impact tree diagram regarding conflict among users in Portugal*

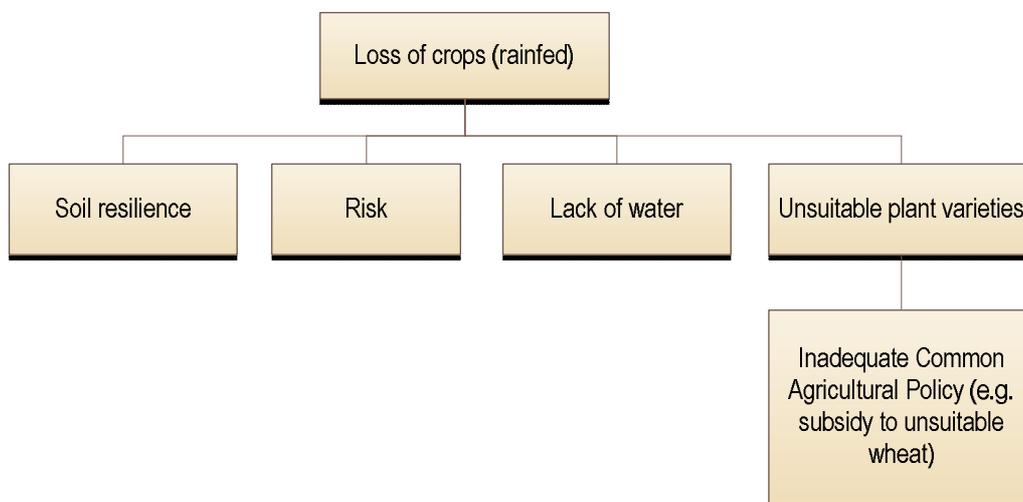


Figure 2. 7: *Impact tree diagram for the case of losses in rainfed agriculture in Portugal*

With regard to the responses adopted in the past, stakeholders from Portuguese water and energy companies stated that much investment has already been made to improve efficiency and reduce losses in water supply distribution networks and energy production. Investments made by 27 public water supply entities contributed to reduce losses from 19% to 12% in 7 years (2004-2010), which led to 10 million m³ of water saving. Although there are still distribution networks with 40% losses from capture to tap, after 2011 all entities have to be regulated (which should improve efficiency and loss reduction). Farmer behaviour changes were not a consequence of sensitisation campaigns but instead a consequence of water scarcity and technical support/rural extension, which led to the implementation of

water-saving irrigation systems. The outcomes from the overall assessment of drought management framework are given in Table 2.2.

Table 2.2: *Overview of the analysis and assessment of the current drought management framework in Portugal*

Responses & processes that contributed to minimizing drought impacts	Policy gaps & recommendations for improving drought management
<ul style="list-style-type: none"> • Creation of a Drought Commission in 2005 • Law changes (exceptional and transitional arrangements) • Sensitisation campaigns for responsible water use in urban areas (which led to changes in behaviour) • Increased water pricing in some irrigation perimeters (e.g. Algarve) • Investments made to improve efficiency and reduce losses of urban water supply • Use of treated wastewater for garden irrigation • Use of treated wastewater to reinforce irrigation (e.g. applied in river Sorraia in 2011, near Lisbon) • Good understanding between Portuguese and Spanish governments • Albufeira Convention (“Convenção de Albufeira”), which is a good planning instrument (although needs to be revised and improved – see second column) • Regulation of all public water supply entities to improve efficiency and water loss reduction of distribution networks (undergoing at a national level) • Society involvement in environmental issues related to drought management (e.g. biodiversity conservation) 	<ul style="list-style-type: none"> • Absence of a concerted management for Iberian hydric resources • Outdated public water supply legislation • Outdated/absent cadastre of groundwater caption sources (wells, etc) • Absence of a legal definition of a large reservoir • Absence of monitoring and fish management in reservoirs (what hampers the implementation of preventive measures and efficient mitigation measures during droughts) • Poor knowledge and management of water uses downstream of reservoirs • Absence of monitoring; poor functioning of the monitoring networks • Absence of programmes and scenarios for drought periods in the newly published River Basin Management Plans (which only include such information for floods) • Use previous work, lessons learnt and recommendations from the 2005-Drought Commission (to prevent loss of individual and institutional memory) • Invest in monitoring (e.g. hydrological data; drought impacts, particularly impacts on biodiversity); use the available National Funds (Fund for the Protection of Hydric Resources and Fund for Environmental Intervention) • Revise the Albufeira Convention (“Convenção de Albufeira”) (e.g. the Convention was made to manage floods and not droughts and plans flow regime for normal years and not for drought years) • Create concerted planning for groundwater and superficial waters • Avoid a centralized policy for water management • Implement/legally define a regime for reservoir exploitation (e.g. quantification of uses, definition of rights and duties) and for groundwater exploitation • Optimise multiple water use for large irrigation reservoirs • Improve management of ecological flows during drought events • Improve responses for mitigating drought impacts on fish in reservoirs and rivers

2.3 The Syros Workshop

The 1st Case Study Dialogue Fora Workshop for the Syros Case Study took place in Hermoupolis, Syros, on the 17th of July 2012 (venue: Conference Room of the Cyclades Chamber). The meeting participants included stakeholders and decision-makers for discussing with them the existing drought management framework in Syros island, focusing on past impacts and responses. The full list of participants is given in Table C.2.

The Workshop included two sessions:

1. *Session 1* was introductory to the DROUGHT-R&SPI project and the Syros Case Study.
2. *Session 2* focused on the results from the analyses undertaken until then for Syros and involved a group discussion on past drought management. Themes addressed were:
 - a. Vulnerability of Syros to drought;
 - b. Overview and assessment of existing practices for coping with drought;
 - c. Identification of elements that could improve drought preparedness and management in the island.



Figure 2. 8: *Photo from the CSDF Workshop in Syros*

The discussion on past drought impacts and vulnerability was based on the impact trees developed for the case of Syros island (Figure 2. 9 and Figure 2. 10). The two sectors mostly affected by drought are agriculture and domestic supply, whereas limited attention is given to the environment and particularly the groundwater bodies. Stakeholders commented that water scarcity problems are the main priority for local authorities. Past measures for coping with water scarcity have a positive effect on drought management, and thus the need for separate management approaches is not acknowledged. Stakeholders identified three main practices that could improve water and drought management: (i) desalination, (ii) water storage in cisterns, and (iii) wastewater reuse (either for groundwater recharge or irrigation). A summary of the discussion outcomes is given in Table 2.3.

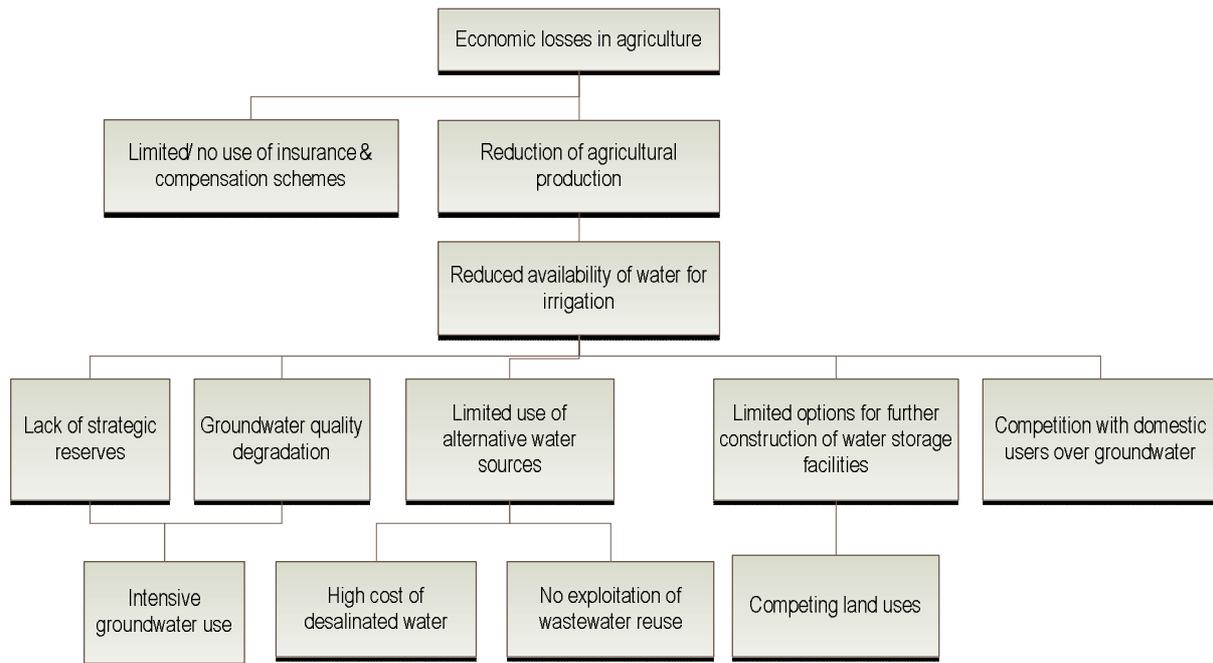


Figure 2. 9: Impact tree diagram for the agricultural sector in Syros island

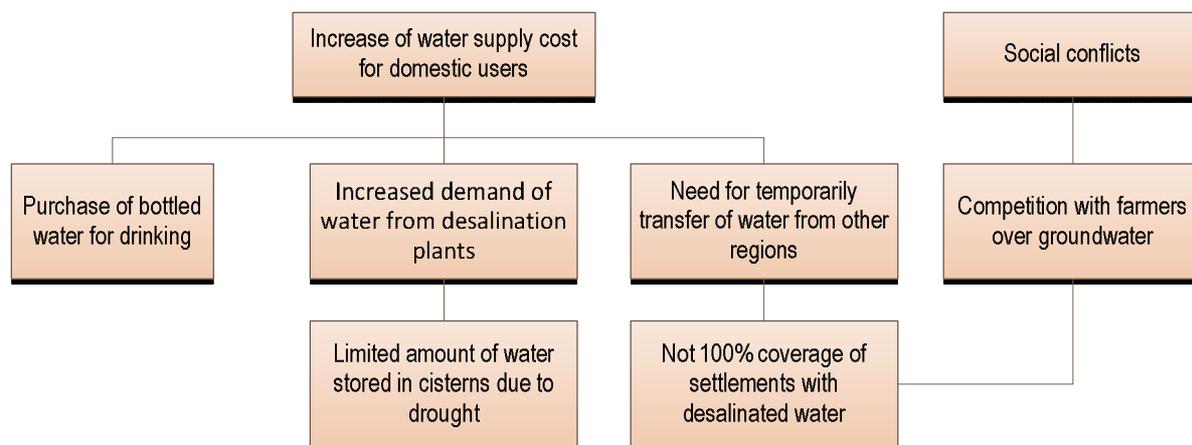


Figure 2. 10: Impact tree diagram for the domestic sector in Syros island

Table 2.3: Overview of the analysis and assessment of the current drought management framework in Syros island

Responses & processes that contributed to minimizing drought impacts	Policy gaps & recommendations for improving drought management
<ul style="list-style-type: none"> • Investments in desalination • Water saving culture of the inhabitants • Use of existing practices to cope with water scarcity <ol style="list-style-type: none"> a. Use of drip irrigation b. Water storage in cisterns 	<ul style="list-style-type: none"> • Lack of national or regional drought policy • Uneven allocation of funds (among users / Municipalities) • Limited use of participatory processes (minimum representation of the agricultural sector) • Fragmentation of responsibilities • Limited consideration of groundwater management • Development of Water management plans • Establishment of monitoring/data networks

2.4 The Zurich Workshop

The Case Study Workshop dedicated to the Switzerland Case Study was held on the 5th September 2012 (Figure 2. 11). Drought is a relatively rare phenomenon in Switzerland and there is no significant experience in drought management. Therefore, this workshop focused on the prototype of an “Information platform on Drought” (developed in a Swiss research project in which members of Drought R&SPI consortium are involved) instead of the assessment of past responses to drought.

The Workshop included three sessions:

1. *Session 1* was introductory to drought research in Switzerland and included a presentation of the prototype of the information platform.
2. *Session 2* was organised following the method of “World-café”. Three groups were organised, each of which discussed the following topics:
 - a. Layout/Structure of the platform (e.g. access, target group);
 - b. Products (e.g. which data to include);
 - c. Design (e.g. colours, pixel, presentation).
3. *Session 3* involved a synthesis of the recommendations/comments made by each group.



Figure 2. 11: Photo from the CSDF Workshop in Zurich

A summary of the recommendations/comments made with regard to the structure, products and design of the drought information platform is given in Table 2.4.

Table 2.4: Recommendations for the development of a Swiss drought information platform

Layout/structure	<ul style="list-style-type: none">• Important is to clarify the final user of the platform (e.g. farmers association or farmer) as this influences the degree of abstraction of the indicators presented and the kind of presentation• Different sectors addressed might appreciate information when to water their fields etc.• Platform should also inform politicians and media• Platform should give links to information about other countries and how they deal with drought• The Platform should not warn, only inform; warning needs practical expertise and permanent attention• Include information about possible implications
Products	<ul style="list-style-type: none">• Products have to be supplemented, at present too much on run-off• Consistency with data from other platform important• Long-term forecast helpful• Raw data is preferred by specialists, interpreted data by specialists• Include press articles, news-ticker• Interest by public: 1) present situation; 2) Prognosis, 3) Responses by government(s)
Design	<ul style="list-style-type: none">• Platform should show catchments, not just maps• Provide explanations for data• Links to other platforms• Link of topical data and climatology is useful

2.5 The Parma Workshop

The first CSDF Workshop for the Po River Basin was held on the 1st of October 2012. Representatives from the Po River Basin Authority and other stakeholder groups (farmers associations, public authorities in charge of the management of the lakes, irrigation and land reclamation consortia, research centres, regional governments, etc.) participated in the Workshop and discussed on the past and current vulnerability to drought of the Po River Basin.



Figure 2. 12: Photo from the CSDF Workshop in Parma

The workshop included three sessions:

1. *Session 1:* After the welcome by the Secretary of the hosting institution (the Po river basin Authority), and a short introduction of the DROUGHT-R&SPI project, this session was dedicated to the presentation of the preliminary results coming from the questionnaire survey on the evaluation of the responses to the past drought events (2003 and 2006/07) in the Po basin.
2. *Session 2:* This session involved a facilitated discussion among stakeholders on three issues:
 - a. The findings of the questionnaire survey;
 - b. The past and current vulnerability to drought of the Po river basin;
 - c. Identification of Strengths, Weaknesses, Opportunities, and Threats (SWOT Analysis) of drought management.
3. *Session 3:* The session was dedicated to summarising the stakeholder reflections in the SWOT Analysis. The participants shared their key conclusions about strengths, weaknesses, opportunities and threats, as given in Table 2.5.

Table 2.5: *SWOT analysis of drought management in the Po River Basin.*

Strengths	Weaknesses
<ul style="list-style-type: none"> • More and more complete, wide and systematic knowledge and information about the of the Po river basin (for example, hydro-meteorological data, forecasting model, etc.) • Higher knowledge, awareness and experience by the stakeholders about the governance of the water crises: reduction of "institutional vulnerability" 	<ul style="list-style-type: none"> • Bad communication between the technical committee (cabina di regia) and external actors/stakeholders, including public opinion • Discrepancy between the emergency drought management and the planning of the drought management • Slowness of the decision process of "cabina di regia"
Opportunities	Threats
<ul style="list-style-type: none"> • Reduction of vulnerability of the electricity sector 	<ul style="list-style-type: none"> • Increase of the vulnerability of the farming sector due to the increase of agriculture addressed to the energetic sector (as it is increasingly hydro-demanding, in particular if it uses newly cultivated areas) • Rapid evolution of the external environment / context (technological, economic, such as changes of crops, of irrigation periods, electricity prices, etc.) which might make quickly out of date the planning decisions taken • Differences on water availability, and in water demand, in the territory of the Po basin

Moreover, the outcomes of the first CSDF Workshop were used, together with the data collected (until then) for the Po River Basin within the work undertaken for the DROUGHT project, to design an impact tree diagram for the main sector affected by the past drought events, and thus considered the most vulnerable economic sector, agriculture (Figure 2. 13).

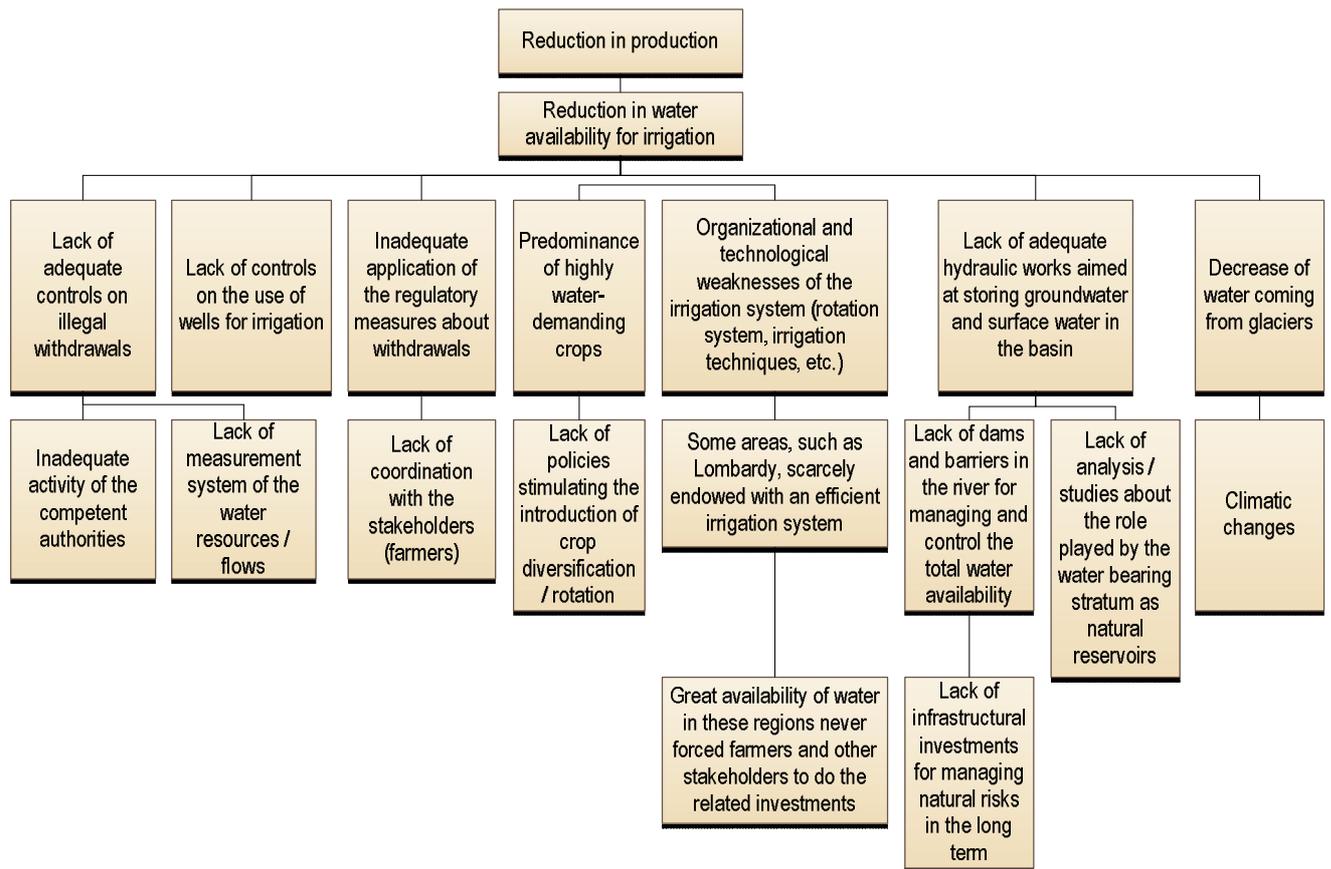


Figure 2. 13: Impact tree diagram for the agricultural sector in the Po River Basin.

3 Evaluation of the Workshops

During the implementation of each Workshop, a questionnaire (Annex F) was distributed to the participants, comprising a set of questions aimed at assessing the workshop processes and impacts, as well as collecting feedback from participating stakeholders on the Project. Two types of questions were included: open questions, where respondents were called to provide their own answers, and scored questions, where respondents were called to provide scores from 1 to 5 (lowest to highest) on issues raised. Filled questionnaires were received only for the Workshops organised in Spain and Portugal.

The participants rated the overall efficiency of the workshop processes quite highly (Figure 3. 1). The lowest scores were assigned to the discussion on past drought impacts and current vulnerability, as well as the discussion concerning past responses to reduce drought risk. Stakeholders indicated the need for “targeted” discussions, specific addressing one topic, to avoid dispersing of the discussion. One additional comment concerned the background information for the discussions. Some stakeholders indicated that if there had been more information available on past impacts and responses, this would have allowed a better and more effective characterization, discussion and analysis of historic droughts.

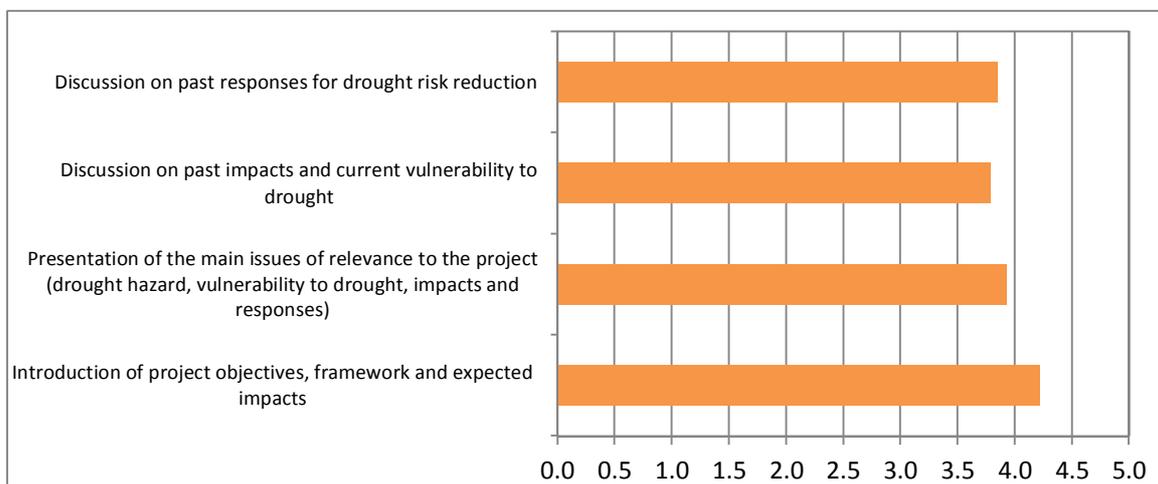


Figure 3. 1: Participants perception of the efficiency of the processes followed during the Workshop (score averages)

Regarding the information provided during the Workshop, the Workshop participants rated the information provided during the workshop as satisfactory. The average scores ranged from 3.2 to 3.7, with the lowest scores assigned to the information provided for recorded impacts and the highest scores assigned to the information provided related to the natural hazard (Figure 3. 2). This result is indicative of the lack of studies/information available on past drought impacts and their assessment in economic terms, as well as on the effectiveness of past responses.

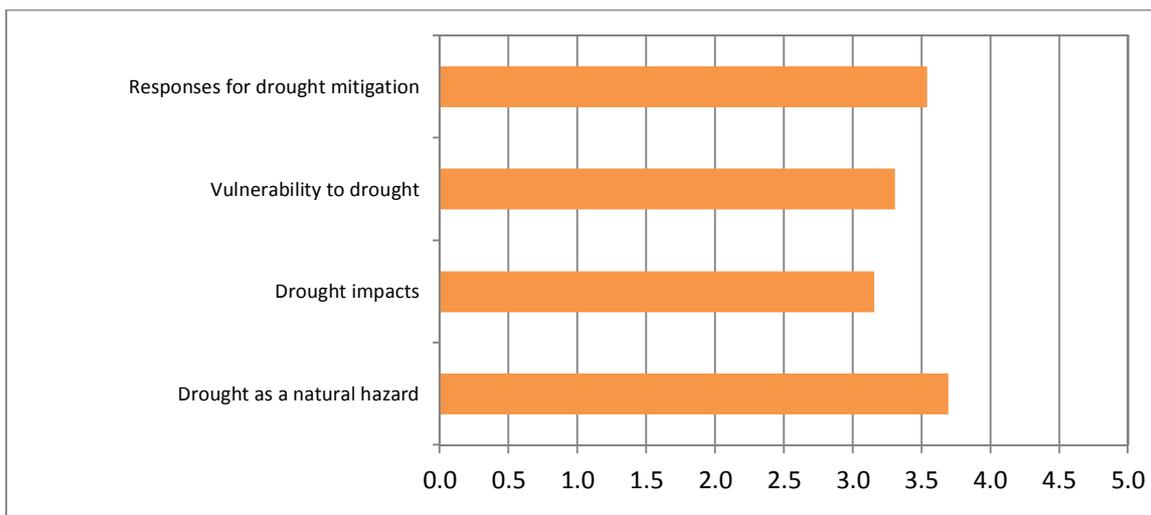


Figure 3. 2: Participants perception of the information provided during the Workshop on key issues (score averages)

With respect to the organization and implementation of the workshops, a number of notable recommendations were put forward by the participants:

- The workshops can include dedicated sessions for group discussions per sector, to discuss/ analyse in more detail the sector-specific drought issues;
- Environmental impacts should be also highlighted, as the discussions are typically oriented to economic sectors (e.g. agriculture);
- The topic of drought monitoring and early warning is important for stakeholders and should be a core component on the Case Study analyses;
- The presentation of “best practices” was proposed, as a means for disseminating available knowledge from other areas regarding drought management.

In terms of the perceived feasibility of achieving the project objectives, questionnaire results are given in Figure 3. 3. The assessment of options for drought risk mitigation and the analysis of current and future socio-economic and environmental impacts were scored quite highly from the respondents of questionnaires, whereas the least feasible objective was scored the development of a methodology for drought monitoring and early warning.

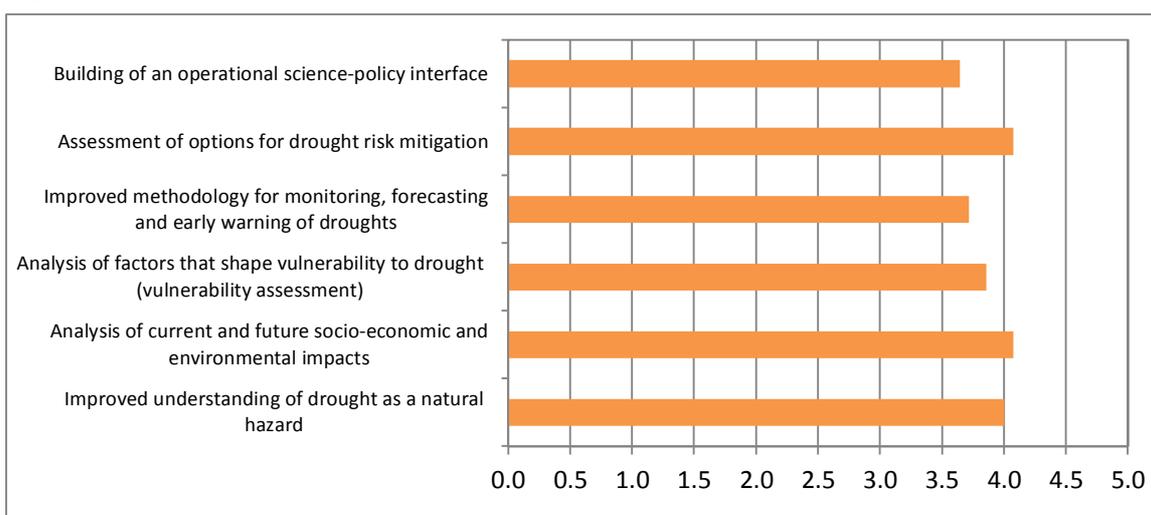


Figure 3. 3: Feasibility of achieving the project objectives (score averages)

The participants rated the foreseen and planned Project activities with an average score of 4 (Figure 3.4). The process of bringing together stakeholders and researchers was assigned the highest score whereas the process of providing a better insight towards drought risk was given the lowest rating. This scoring indicates that research results were efficiently disseminated to the stakeholders that valued their involvement in the project and the opportunity to discuss with researchers and other stakeholders on drought management.

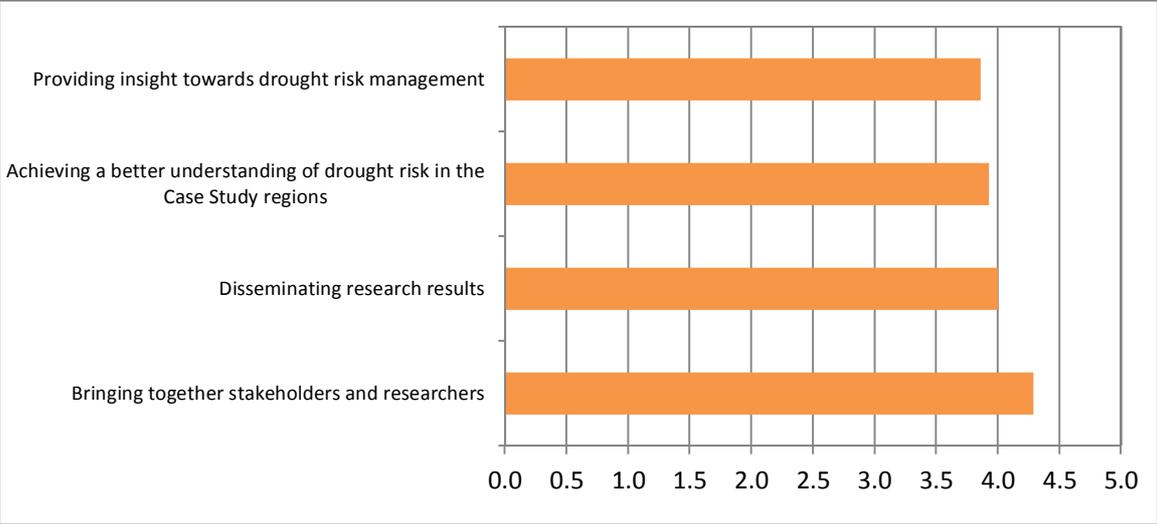


Figure 3.4: Rating of foreseen and planned project activities with respect to specific objectives (score averages)

The level of engagement of different stakeholders within the Case Studies in the project processes and activities is rated with average scores (Figure 3.5). The limited participation of local-level water users in the Workshops resulted to the lowest score for this stakeholder group, whereas the highest score was assigned to the technical community and water professionals, which were mainly present in the events.

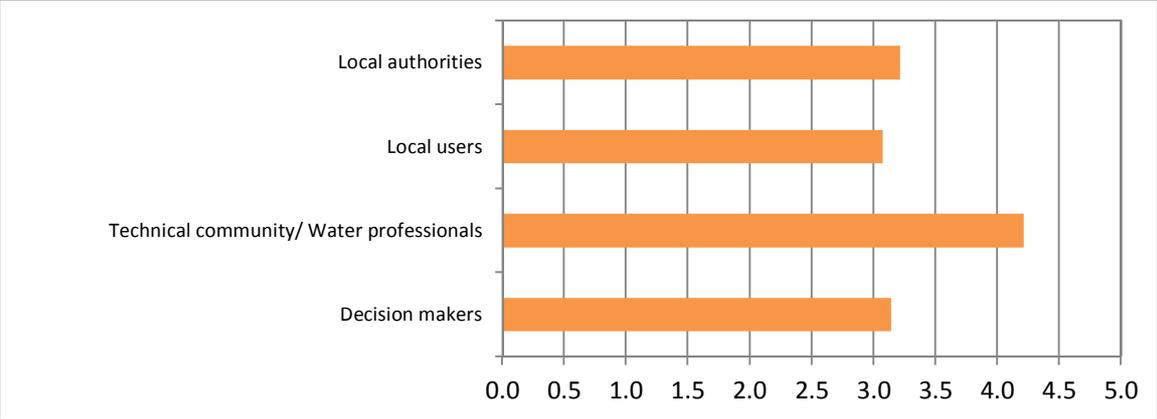


Figure 3.5: Level of engagement of different stakeholders (score averages)

4 Conclusive remarks - Recommendations

The Case Study Dialogue Fora meetings offered the opportunity to disseminate the project activities to local actors, exchange knowledge and opinions with regard to drought management, and obtain stakeholder views on the strengths and weaknesses of the project.

Stakeholders pointed out two points as the greatest strengths of the project: the interfacing with stakeholders and the integrated analysis of drought, in terms of hazard, impacts, vulnerability and responses. Stakeholders stressed the need for reliable information to support decision and policy making and recommended the participation/involvement of decision-making politicians and local users in forthcoming events. In addition, the presence of representatives from different sectors enables the exchange of experiences from various activities, which interact and require common ground in practice.

The multidisciplinary of the project was highly appreciated. The collection and dissemination of information/data regarding past drought characteristics, impacts and responses could support future drought management efforts. Emphasis was also placed on the analysis of environmental impacts in the project, which are typically ignored.

Regarding the two scales of analysis within DROUGHT-R&SPI (pan-European and Case Studies), CSDF members commented that there is great potential for knowledge integration at the European level through the project processes and activities. However, regarding the Case Studies, they expressed their fear that analysis at national level may not conclude to applicable results, as there are difficulties in studying and characterizing the drought phenomenon at this scale.

Another issue addressed was the applicability of project results. Stakeholders indicated that, as with many international projects, there is the risk of DROUGHT-R&SPI not achieving useful results to solve specific problems, particularly at the national scale, since it could be limited by research standards, lacking applicability. A topic of interest is the project outcomes regarding drought monitoring and early warning and the assessment of past management efforts.

Recommendations made for enhancing the science-policy interfacing include:

- The participation of more stakeholders in the workshops and the organisation of dedicated sessions per sector;
- The involvement in the CSDF Workshops of researchers, outside DROUGHT-R&SPI, who have been studying drought issues. This would enable a further dissemination of knowledge and use of results from previous efforts;
- The continuous contact and cooperation between scientist and stakeholders, providing updates on the project progress, rather than simply organising annual meetings;
- The development of material (either scientific papers or consolidated reports) for disseminating project results for further use by other research projects or even public officers.

Annex A: The Valencia Workshop

Table A.1: Agenda of the Jucar CSDF workshop

9:15	Welcome by Amparo Giralt, Vice Rector of UPV, and Joaquín Andreu (UPV)
9:25	The Jucar Drought R&SPI Case Study – Challenges and expectations, Joaquín Andreu, UPV
Session 1: Introduction	
9:35	The Drought R&SPI research scope and expected outcomes, Dr. Henny vanLanen, Drought R&SPI Coordinator, WU
9:45	Learning from the past – Preparing for the future: Research across different spatial scales in Drought R&SPI, Prof. D. Assimacopoulos, NTUA
09:55	Prevention and Management of Droughts in the Jucar River Basin Authority: Special Drought Plan, Javier Ferrer, CHJ (River Basin Organization)
11:00	Coffee Break
Session 2: The natural hazard and the vulnerability of the Jucar River Basin to drought: Manifested impacts of recent events and policy drivers	
11:30	The 2005-2008 drought event in the JRB, Javier Ferrer, CHJ
12:00	Water markets as a measure for drought mitigation, Luis Carijo Alonso, CHJ
12:20	Facilitated Discussion #1 on past drought impacts and current vulnerabilities (Facilitator: Dionysis Assimacopoulos, NTUA) Different sectors perception about droughts in the JRB: <ul style="list-style-type: none"> • Antonio Llopis, Ayuntamiento de Valencia (Urban) • Alberto Ferrer, Acequia Real del Júcar (Traditional Irrigation) • Francisco Belmonte, Junta Regantes Mancha Oriental (Mixed Sources Irrigation) • Fernando Moreno, Iberdrola (Hydroelectricity) • William Colom, Acció Ecologista Agró (NGO – Environment) • Juan Carlos Cuevas, Agroseguro (Agricultural Insurance Company)
Session 3: Evaluation of past responses for drought risk reduction and impact mitigation	
13:45	Facilitated Discussion #2 on the evaluation of past responses (Facilitator: Dr. Lucia Di Stefano, UCM)
14:15	Closure of Jucar CS-DDF Next steps and way forward - Joaquín Andreu and Dionysis Assimacopoulos

Table A.2: List of stakeholders participating in the Jucar CSDF workshop

Name	Agency/ organisation
Javier Ferrer	CHJ (Jucar River Basin Authority)
Luis Garijo	CHJ
Antonio Llopis	Municipality of Valencia
Alberto Hervás	ARJ (Acequia Real del Júcar) – Surface Irrigators association
Francisco Belmonte	JCRMO (Junta Central de Regantes de la Mancha Oriental) – Groundwater Irrigators Association
Fernando Moreno	Iberdrola (Hydropower production)
William Colom	AGRO – Environmental NGO
Juan Carlos Cuevas	Agroseguro – Agricultural Insurance Company

Table A.3: Minutes of the Jucar CSDF workshop

DATE:	28/03/2012
VENUE:	Universitat Politècnica de València
ORGANISERS:	UPVLC
<p>Brief minutes</p> <p>This workshop was special since it was the first one realised for the project, with the presence of all the partners. The workshop was welcomed by Joaquín Andreu (PI from UPVLC) followed by a presentation of the project by Henny van Lanen. Dionysis Assimacopoulos highlighted the aim of this first workshop and set a number of questions for the CSDF members to be considered during their presentations. In a first part of the workshop, the point of view from administration was given with presentations by Javier Ferrer (CHJ) about the Special Drought Plan for the Jucar River basin and the last drought episode suffered in the years 2005-2008. Luis Garijo presented the water rights exchange market which was established for ensuring minimum flows in the river, one of the measures considered in the Special Plan. A discussion on past drought impacts and current vulnerabilities was facilitated by Dionysis Assimacopoulos, presenting the impact trees for the JRB developed by the NTUA. The second round of presentations was on the perception of several sectors affected by drought. This way, urban supply, traditional irrigation, mixed sources irrigation, hydroelectricity, environmental NGOs, and insurance companies, presented the problems and impacts they suffered during the last drought episode and showed the way their sectors had dealt with them. Afterwards, Lucia De Stefano facilitated a discussion between the CSDF about the evaluation of the responses given to the last drought episode. The event was closed by Joaquín Andreu.</p>	
<p>Main discussion points – Results and recommendations</p> <p><i>A. Vulnerability to drought</i></p> <ul style="list-style-type: none"> • Environment: The existing wetlands in the Jucar River basin (Albufera) are very vulnerable to drought episodes because of their dependence on the runoff and aquifer levels. • Water supply: A big amount of different demands in the system makes that when drought episodes occur the guarantees are threatened. Conflicts between users. <p><i>B. Past impacts</i></p> <ul style="list-style-type: none"> • Urban supply: Deterioration of water quality, Increased exploitation costs, Reduced income, Extra charges on consumers bill • Agricultural production: Reduction of water supply (Linear relation between benefits and water supply) • Hydropower: Reduced production, inefficient performance of the production system • Environment: Risk of the river bed running dry at some spots at its middle course. <p>However, thanks to the Drought Management Plan the impacts were lower than in previous episodes and even inexistent.</p> <p><i>C. Evaluation of past responses</i></p> <p>All the stakeholders coincide that the responses given were good but there is still space for improvement for future drought episodes. And the Drought Plan should be revised.</p> <p><i>D. Other issues</i></p> <p>None</p>	

Annex B: The Lisbon Workshop

Table B.1: *Agenda of the Portugal CSDF workshop*

9:30	Welcome
9:45	Presentation of DROUGHT-R&SPI project and case study PORTUGAL. Goals and expected outcome from the workshop
Session 1: Impacts and Vulnerability	
10:15	Roundtable discussion: Identification, evaluation and analysis of impacts and underlying causes of impacts (vulnerability) of drought episodes 2004-2006 and 1998-1999 Questions for discussion: <ul style="list-style-type: none"> • Do you agree with this list of impacts? Why? What are the most important impacts? • Do you think Portugal is still vulnerable to droughts? What are the most vulnerable sectors? Why? What are the factors underlying vulnerability to droughts in the present?
11:15	Coffee Break
11:30	Questions for discussion (continuation): Why did these impacts occur? What are the main factors that shaped vulnerability of the different sectors to drought during the episodes considered? How are these factors interrelated?
13:00	Lunch Break
Session2: Responses adopted	
14:30	Evaluation and analysis of responses adopted during drought episodes of 2004-2006 and 1998-1999 Questions for discussion: <ul style="list-style-type: none"> • Do you agree with the responses implemented to mitigate the drought episodes considered? • Which were the most efficient responses and the responses that failed considering drought impact mitigation and risk reduction for the episodes considered? What criteria (political, technical, economic, social and environmental) do you use to consider that a response was efficient? • Which were the main differences in the management of the two drought episodes considered? How could the management of the two drought episodes have been improved? Which other factors can be considered to reduce vulnerability to drought in Portugal?
16:15	Coffee Break
16:30	Synthesis of the discussion and conclusion
17:30	Closure

Table B.2: *List of stakeholders participating in the Portugal CSDF workshop*

Name	Agency/ Organisation
Abílio Seca Teixeira	EDP (Energies of Portugal)
Afonso do Ó	UNL (University Nova de Lisboa)
Basílio Martins	EPAL (Portuguese Water Company)
Carina Arranja	FENAREG (National Federation of Irrigation Farmers of Portugal)
Cláudia Brandão	INAG/APA (National Water Authority, Ministry of Agriculture, Sea, Environment and Spatial Planning)
Gonçalo Leal	DGADR (General Directorate of Agriculture and Rural Development, Ministry of Agriculture, Sea, Environment and Spatial Planning)
João Fernandes	LNEC (National Laboratory of Civil Engineering, Ministry of Economy and Employment)
Lúcio do Rosário	CNCD-AFN/ICNF (National Commission of the United Nations Program to Combat Desertification - National Forest Authority, Ministry of Agriculture, Sea, Environment and Spatial Planning)
Luís Sá	ANPC (National Authority for Civil Protection, Ministry of Internal Administration)
Luís Simas	ERSAR (Regulatory Entity for Water and Waste, Ministry of Agriculture, Sea, Environment and Spatial Planning)
Patrícia Veloso	EDP (Energies of Portugal)
Pedro Rocha	ICNB/ICNF (Institute for Nature Conservancy and Biodiversity, Ministry of Agriculture, Sea, Environment and Spatial Planning)
Pedro Teiga	LPN (Union for Nature Protection) / UP (Oporto University)
Rui Cortes	UTAD (University of Trás-os-Montes and Alto Douro)
Teresa Viseu	LNEC (National Laboratory of Civil Engineering, Ministry of Economy and Employment)
Vanda Pires	IM (Meteorology Institute, Ministry of Education and Science)
Vítor Martins	DGS (General Directorate of Health, Ministry of Health)

Table B.3: Minutes of the Portuguese CSDF workshop

DATE:	30 th May 2012
VENUE:	CEABN, Institute of Agronomy, Lisbon
ORGANISERS:	ISA-CEABN
<p>Brief minutes</p> <p><i>Welcome and presentations</i></p> <p>ISA-CEABN team gives a brief presentation on the DROUGHT-R&SPI project, preliminary results of case study Portugal, goals and expected outcome from the workshop. Although the workshop agenda considers 2 drought episodes for discussion (2004-2006 and 1998-1999, see Annex I), the annexes of the agenda include also information on a third episode - 1991-1995, so that stakeholders could decide which episode to select between 1998-99 and 1991-95 as the second most important in terms of impacts and responses, for further analysis.</p> <p><i>Discussion on Case study preliminary results</i></p> <p>The discussion is initiated by ISA-CEABN Principal Investigator on a graph showing the SPI12 for the period 1981-2011 for the case study, in order to select the most important and recent drought events and particularly the second drought event for analysis: 1998-1999 or 1991-1995. The participants agree that the 1998-1999 drought had fewer impacts than the 1991-1995 drought, which was longer, and therefore the second drought event to be chosen for project analysis should be 1991-1995. This event is however considered as two separated events (1991-92 and 1994-95) in meteorological terms because 1993 was a wet year. On the other hand, it is considered as a single event in hydrological terms and in terms of impacts. It is also referred that there is almost no information on the 1998-99 drought episode. The year 2007 is also discussed because it shows a very low SPI12 (very dry year) but is not considered an important drought event since 2006 was a very wet year and therefore there were no impacts from the 2007-very low precipitation registered.</p> <p><i>Impacts and Vulnerability: discussion of the list of impacts</i></p> <p>The list of impacts and questions for discussion are presented to the audience for revision and comments. Impacts on soil quality and loss of soil productivity are suggested to be included in the list. Water supply reduction should be substituted by changes in water quality. Two impacts are criticized in terms of their details compared to the rest of the list. The impact “international conflicts” and “reservoir water eutrophication” are added to the list. Differences in impacts between rainfed and irrigated agriculture are discussed: crops are loss in rainfed agriculture, whereas there is a decrease of cultivated area in irrigated agriculture, being the first considered a more severe impact for farmers. Lack of fodder is also considered a more severe impact for livestock than lack of water. Drought impacts on biodiversity are also added to the list, namely: the strong decrease of ground-nesting birds (e.g. Circus pygargus), changes in the reproductive cycle of amphibious and loss of amphibious habitats. Conflicts between water users are referred as very important impacts. Health problems related to droughts are punctual, namely: blooms of cyanobacteria in reservoirs (that can cause problems if in contact with the skin or when ingested) and the increase of salmonella sp. in aquatic systems.</p> <p><i>Impacts and Vulnerability: discussion of vulnerability factors</i></p> <p>The list of vulnerability factors and questions for discussion are presented to the audience. Two impacts are selected for impact tee analysis: 1 – Reservoir conflicts and 2 – Loss of crops (rainfed agriculture).</p> <p><i>Evaluation and analysis of responses adopted</i></p> <p>The list of responses adopted during drought episodes 2004-2006, 1998-1999, and 1991-1995 and questions for discussion are presented to the audience. Responses are discussed in terms of implementation, efficiency and behavioural changes of individuals and entities. A SWOT analysis is used for past responses. Increased water pricing for urban water supply was not implemented after all, but was implemented and functioned very well for some irrigation perimeters in Algarve; law changes were a very efficient response.</p> <p>Workshop closure.</p>	
<p>Main discussion points – Results and recommendations</p> <p><i>A. Vulnerability to drought</i></p> <p>Vulnerability to drought in terms of public water supply was very much improved after the 1991-95 drought event. Therefore, during the 2004-2006 drought most people did not feel the lack of water in their houses since most regions of the case study were already provided with large reservoirs, with enough capacity for water provision during a prolonged (2-3 years) drought. Alternative water supply systems are common in some areas and are only intensified during the droughts where needed. The 2004-06 drought was also an opportunity for improvement since after this event many water supply entities started implementing contingency plans.</p>	

Monitoring is seen as the basis for drought management and efficient risk reduction. Data monitoring for drought management was initiated around 1991 when strong investments on monitoring began. However, budget for monitoring has been decreasing in the last years and today there is almost no investment on data monitoring, which is extremely important and needs financial and human resources.

The revision of the legal instrument “Convenção de Albufeira” is needed, as well as a legal definition of exploitation regimes for reservoirs with quantification of water uses to ensure ecological flows at international basins and improve mitigation/management of conflicts during droughts. The newly published River Basin Management Plans should include such exploitation regimes for reservoirs but do not.

B. Past impacts

Stakeholders considered that the most important drought impacts are conflicts, impacts on agriculture (particularly rainfed agriculture) and impacts on biodiversity.

In terms of biodiversity, land use changes and changes in agricultural practices in the last decades are referred to as important factors that may be contributing to magnify drought impacts on fauna (e.g. the alarming decrease of ground-nesting birds). However, there is a lack of monitoring data of drought impacts on biodiversity, which could be collected with low costs, and therefore there is almost no literature on these issues.

Impacts of air quality changes on public health began being monitored a few years ago but scientific studies do not show a relationship between changes in air quality (as a drought consequence) and health problems. It is also difficult to establish a relationship between diseases and water quality changes during droughts.

C. Evaluation of past responses

Stakeholders from water and energy Portuguese companies state that much investment has already been made to improve efficiency and reduce losses in water supply distribution networks and energy production. Investments made by 27 public water supply entities contributed to reduce losses from 19% to 12% in 7 years (2004-2010), which led to 10 million m³ of water saving. Although there are still distribution networks with 40% losses from caption to tap, after 2011 all entities will have to be regulated (what will improve efficiency and loss reduction). Farmer's changes in behaviour were not a consequence of sensitisation campaigns but instead a consequence of water scarcity and technical support/rural extension, which led to the implementation of water-saving irrigation systems.

D. Other issues

One of the stakeholders states that the case study Portugal is a difficult case study to analyse because it includes many different situations that are not homogeneous, from north to south, which should not be included in one single model.

Annex C: The Syros Workshop

Table C.1: *Agenda of the Syros CSDF workshop*

12:00	Welcome by Prof. D. Assimacopoulos
Session 1: Introduction	
12:10	Drought as a challenge for water management Prof. Dionysis Assimacopoulos, National Technical University of Athens
Session 2: Drought management in Syros island	
12:30	Past Drought Episodes, Impacts & Responses Dr. Eleni Kampragkou, NTUA
12:45	Roundtable discussion: Drought Management in Syros Island – Evaluation of Past Drought Responses Giorgos Vakondios, Municipal Enterprise for Water Supply and Sewerage of Syros Prof. Dionysis Assimacopoulos, NTUA
13:30	Lunch Break
14:15	Discussion continues
15:30	Closure

Table C.2: *List of stakeholders participating in the Syros CSDF workshop*

Name	Agency/ Organisation
Theodorou Yannis	Cyclades Chamber
Vakondios Georgios	Municipal Enterprise for Water Supply and Sewerage of Syros
Zouloufos Michalis	Municipality of Syros-Hermoupolis
Vouros Panagiotis	Region of South Aegean
Phoivi Grigoropoulou	Water Directorate of the Region of S. Aegean
Mpouchagier Vikentia	Water Directorate of the Region of S. Aegean
Palaiologou Anna	Agrotourism cooperative “To Kastri”
Solaris Georgos	Cyclades24.gr
Makrionitis Georgios	Vice Governor of the Region of S.Aegean
Poussaïos Georgos	Region of South Aegean
Ntoufexi Sofia	Water Directorate of the Region of S. Aegean
Drosos Athanasios	Region of South Aegean
Nokas-Zografos Ilias	Water Directorate of the Region of S. Aegean
Vekris Antonis	Municipal Enterprise for Water Supply and Sewerage of Syros
Roussos Nikos	Framers Association “Agros”
Kyriakopoulos Augoustinos	Municipality of Syros-Hermoupolis

Table C.3: Minutes of the Syros CSDF workshop

DATE:	17/07/2012
VENUE:	Conference Room of the Cyclades Chamber, Hermoupolis, Syros
ORGANISERS:	NTUA
<p>Brief minutes</p> <p>The Workshop included two sessions:</p> <ol style="list-style-type: none"> 1. Session 1 was introductory to the DROUGHT-R&SPI project and the Syros Case Study, emphasising on the challenges regarding drought management in Syros Island. 2. Session 2 focused on the results from the analyses undertaken so far for Syros and involved a group discussion on past drought management. Themes addressed were: <ul style="list-style-type: none"> • Vulnerability of Syros to drought; • Overview and assessment of existing practices for coping with drought; • Identification of elements that could improve drought preparedness and management in the island. <p>The discussion was initiated by Prof. Assimacopoulos who presented the “key messages” regarding drought management, as these emerged from interviews with local stakeholders. These messages served as the basis for the discussion. The main question addressed to the Workshop participants was whether Syros is vulnerable to drought. Each stakeholder stated their opinion on the issue.</p> <p>As a next step, a discussion on existing practices for coping with scarcity and drought in Syros was initiated. Stakeholders commented on the practices adopted so far and the social acceptance of any new measures such as water reuse.</p> <p>As part of the group discussion: (i) two impact trees were developed, one for the agricultural and one for the domestic sector, and (ii) a SWOT analysis was undertaken.</p>	
<p>Main discussion points – Results and recommendations</p> <p><i>A. Vulnerability to drought</i></p> <p>Syros Island is a semi-arid island facing scarcity problems. As a result, in case of drought, water problems intensify, with agriculture facing significant water deficit problems. Factors that frame vulnerability to drought are the:</p> <ul style="list-style-type: none"> • Intensive groundwater use that resulted to groundwater degradation; • Competing land uses (mainly between agriculture & tourism); • Limited water storage in cisterns; and • Lack of national or regional drought policy. <p><i>B. Past impacts</i></p> <p>Agriculture and domestic supply were identified as the sectors mainly affected by drought (recorded impacts: crop losses, increase of water supply cost,</p> <p><i>C. Evaluation of past responses</i></p> <p>The evaluation of past responses or practices leads to three best main practises that could improve water and drought management: (a) Desalination; (b) Water storage in cisterns; (c) Wastewater reuse.</p> <p><i>D. Other issues</i></p> <p>None</p>	

Annex D: The Zurich Workshop

Table D.1: *Agenda of the Swiss CSDF workshop*

9:25 – 9:45	Introduction to the Platform Project, State of research
9:45 – 10:15	Presentation of the platform for early recognition of Drought in Switzerland
10:15 – 11:35	Structured feedback in groups
11:35 – 12:15	Summary, Feed-back, Management and access to the platform, conclusion, next steps
12:15	End of the event, Common lunch

Table D.2: *List of stakeholders participating in the Switzerland CSDF workshop*

Name	Agency/ Organisation
Bregy, Georg	Swiss Vegetable Association
Conedera, Marco	Swiss Research Institute, Forest fire
Corti, Therry	SwissRe
Degen, Nadine	Farmers Association
Eberle, Konrad	Swiss Navigation Association
Holzkamper, Annelie	Swiss Research Institute Agroscope
Köppel, X.	AXPO
Reinhard, Michael	Federal Office for the Environment
Schild, Andreas	Federal Office for Agriculture
Schmocker-Fackel, Petra	Federal Office for the Environment
Willemse, Saskia	Meteoschweiz
Spirig, Christoph	Meteoschweiz
Pfaundler, Martin	Federal Office for the Environment
Aschwanden, Hugo	Federal Office for the Environment
Fry, Patricia	National Research Programm 61

Table D.3: Minutes of the Switzerland CSDF workshop

DATE:	5.9.12
VENUE:	ETH Zuerich
ORGANISERS:	M. Staehli, I. Seidl, K. Stahl, S. Kruse, M. Zappa, F. Fundel
<p>Brief minutes</p> <p>This workshop focused the prototype of an “Information platform on Drought”. This prototype was developed in a Swiss research project in which I. Seidl and K. Stahl (members of Drought R&SPI) are involved.</p> <p>At first, M. Staehli made brief presentation on drought research in Switzerland. Then, M. Zappa and F. Fundel presented the prototype of the information platform. After that, we organized the workshop following the method of “World-café”. We had three groups, each of which discussed on every of the following three topics: Layout/Structure of the platform (e.g. access, target group), Products (e.g. which data to include), Design (e.g. colors, pixel, presentation).</p>	
<p>Main discussion points – Results and recommendations</p> <p>The discussion focused on the platform.</p> <p><i>Discussion regarding Layout/structure of the platform:</i></p> <ul style="list-style-type: none"> • Important is to clarify the addressee; is it the association of the sector or the members of the sectors involved (e.g. farmers association or farmer) as this influences the degree of abstraction of the indicators presented and the kind of presentation. Decision has not been taken, but there is a tendency to address the associations. This would mean that it is their task to inform their members about the drought situation. Another solution would be to provide 2 kinds of access – one for public, one for “specialists from sectors” • Different sectors addressed might appreciate information when to water their fields etc. • Platform should also inform politicians and media • Platform should give links to information about other countries and how they deal with drought • The Platform should not warn, only inform; warning needs practical expertise and permanent attention • Include information about possible implications <p><i>Products</i></p> <ul style="list-style-type: none"> • Products have to be supplemented, at present too much on run-off • Consistency with data from other platform important • Long-term forecast helpful • Raw data is preferred by specialists, interpreted data by specialists • Include press articles, news-ticker • Interest by public: 1) present situation; 2) Prognosis, 3) Responses by government(s) <p><i>Design</i></p> <ul style="list-style-type: none"> • Platform should show catchments, not just maps • Provide explanations for data • Links to other platforms • Link of topical data and climatology is useful 	

Annex E: The Parma Workshop

Table E.1: *Agenda of the Parma CSDF workshop*

10:15	Welcome by Francesco Puma (Secretary of the hosting institution, Po river basin Authority)
Session 1: Introduction	
10:30	Objectives and content of the DROUGHT-R&SPI project Prof. Antonio Massarutto, UB-CERTeT
Session 2: Drought management in Po Basin	
10:45	Some preliminary results coming from the questionnaire survey realised in the Po River Basin Dr. Dario Musolino, UB-CERTeT
11:00	Roundtable discussion on Drought Management in Po River Basin Dr. Alessandro de Carli, UB-CERTeT
Session 3: Conclusions and SWOT Analysis	
12:45	SWOT Analysis Dr. Alessandro de Carli, UB-CERTeT
13:15	Closure

Table E.2: *List of stakeholders participating in the Parma CSDF workshop*

Name	Agency/ Organisation
Benati Marco	Confagricoltura
Bertoli Luigi	Public authority in charge of the management of the Como lake, Consorzio dell'Adda
Buizza Massimo	Public authority in charge of the management of the lake d'Iseo, Consorzio dell'Oglio
Duro Andrea	Presidency of the Council of Ministers, Civil Protection Department
Ghetti Alessandro	Coldiretti Emilia-Romagna
Magrini Sarah	Coldiretti Emilia-Romagna
Monacelli Giuseppina	ISPRA – Institute for Environmental Protection and Research
Pacicco Luca	INEA - National Institute of Agricultural Economics Research
Peri Piero	CIA Emilia-Romagna
Vergnani Mirella	Interregional Agency for the Po river
Zanetti Paola	Consortium for land reclamation Emilia Centrale, CER
Puma Francesco	Members of the Po river basin Authority
Picarelli Alessio	Members of the Po river basin Authority
Merli Cinzia	Members of the Po river basin Authority
Monticelli Marina	Members of the Po river basin Authority
Vezzani Claudia	Members of the Po river basin Authority
Farioli Christian	Members of the Po river basin Authority
Moroni Fernanda	Members of the Po river basin Authority
Bertolo Beatrice	Members of the Po river basin Authority
Musolino Dario	Members of UB-CERTeT
De Carli Alessandro	Members of UB-CERTeT
Massarutto Antonio	Members of UB-CERTeT
Senn Lanfranco	Members of UB-CERTeT
De Paoli Luigi	Members of UB-CERTeT

Table E.3: Minutes of the Parma CSDF workshop

DATE:	1 October 2012
VENUE:	Headquarter of the Po River Basin Authority
ORGANISERS:	UB-CERTeT
<p>Brief minutes</p> <p>The workshop lasted about 3 hours, from 10.15 to 13.15. After the welcome by the Secretary of the hosting institution (the Po river basin Authority), Francesco Puma, and after a short introduction of the objectives and the content of the DROUGHT-R&SPI project by Antonio Massarutto, Dario Musolino presented the preliminary results coming from the questionnaire survey realised in the Po basin, as part of the activities realised for Task 2.3. The title of the presentation was: "The evaluation of the drought management of the 2003 and 2006/07 drought events by the stakeholders: some preliminary results" ("La valutazione della gestione degli eventi siccitosi del 2003 e del 2006/07 da parte degli stakeholder: risultati preliminari"). The presentation addressed the following issues regarding drought management:</p> <ul style="list-style-type: none"> • Stakeholders participation and coordination; • Information and communication; • Ex post evaluation (Were measures evaluated? Which measures should have been evaluated?); • Implementation and outcomes of the measures (best and worst measures; other measures that could have been implemented; which drought events were managed better etc.). <p>Around 11.00, a discussion started, facilitated by Alessandro de Carli, which focused on three main points/questions:</p> <ul style="list-style-type: none"> • The outcomes of the questionnaire survey, regarding the evaluation of the responses to the past drought events in the Po basin (2003 and 2006/07); • The past and current vulnerability to drought of the Po river basin; • Identification of Strengths, Weaknesses, Opportunities, and Threats (SWOT Analysis) <p>The last half hour of the workshop was dedicated to summarize and summarise the main stakeholder reflections in the SWOT Analysis (also facilitated by Alessandro de Carli).</p>	

Annex F: Questionnaire on the evaluation of the 1st CSDF Workshop

Please complete your name and affiliation

Full Name:

Affiliation (Institution and position):.....

PART A: Evaluation of workshop processes

The following questions (1 – 4) concern the evaluation of processes followed during the Workshop.

Question 1

On a scale from 1-5 (1: the lowest mark; 5: the highest mark) please rate the level of efficiency of the processes followed during the Workshop.

	1	2	3	4	5
Introduction of project objectives, framework and expected impacts	<input type="checkbox"/>				
Presentation of the main issues of relevance to the project (drought hazard, vulnerability to drought, impacts and responses)	<input type="checkbox"/>				
Discussion on past impacts and current vulnerability to drought	<input type="checkbox"/>				
Discussion on past responses for drought risk reduction	<input type="checkbox"/>				

Please give us your opinion on how the related processes could have been improved.

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Question 2

On a scale from 1-5 (1: the lowest mark; 5: the highest mark) please rate the information provided during the Workshop on the following issues:

	1	2	3	4	5
Drought as a natural hazard	<input type="checkbox"/>				
Drought impacts	<input type="checkbox"/>				
Vulnerability to drought	<input type="checkbox"/>				
Responses for drought mitigation	<input type="checkbox"/>				

Question 3

Please indicate the topic(s) on which you would have liked to receive more information.

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Question 4

Please list the relevant topic(s), which have not been addressed in the Workshop, and that you consider essential to the CASE STUDY NAME.

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PART B: Expected Project Impact

With questions 5 – 10, we would like to have your view on the potential impacts of the DROUGHT-R&SPI project.

Question 5

On a scale of 1-5 (1: the lowest mark; 5: the highest mark) please rate the feasibility of achieving the project objectives:

	1	2	3	4	5
Improved understanding of drought as a natural hazard	<input type="checkbox"/>				
Analysis of current and future socio-economic and environmental impacts	<input type="checkbox"/>				
Analysis of factors that shape vulnerability to drought (vulnerability assessment)	<input type="checkbox"/>				
Improved methodology for monitoring, forecasting and early warning of droughts	<input type="checkbox"/>				
Assessment of options for drought risk mitigation	<input type="checkbox"/>				
Building of an operational science-policy interface	<input type="checkbox"/>				

Question 6

On a scale of 1-5 (1: the lowest mark; 5: the highest mark) please rate the foreseen/planned project activities with regard to the following:

	1	2	3	4	5
Bringing together stakeholders and researchers	<input type="checkbox"/>				
Disseminating research results	<input type="checkbox"/>				
Achieving a better understanding of drought risk in the Case Study regions	<input type="checkbox"/>				
Providing insight towards drought risk management	<input type="checkbox"/>				

Question 7

On a scale of 1-5 (1: the lowest mark; 5: the highest mark), please rate the level of planned engagement of project processes, activities and outputs, with different actors in the CASE STUDY NAME.

	1	2	3	4	5
Decision makers	<input type="checkbox"/>				
Technical community/Water professionals	<input type="checkbox"/>				
Local users	<input type="checkbox"/>				
Local authorities	<input type="checkbox"/>				

Question 8

In your opinion, which are the strong points or innovations of the DROUGHT-R&SPI project in comparison to other, similar projects and initiatives dealing with drought?

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Question 9

In your opinion, which are the main weaknesses of the DROUGHT-R&SPI project?

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Question 10

Please give us your comments and suggestions in relation to DROUGHT-R&SPI, focusing particularly on our Case Study for CASE STUDY NAME.

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Thank you very much for your time & input