# A Guiding Toolkit for Increasing Climate Change Resilience

International Union for Conservation of Nature - Regional Office for West Asia

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Regional Office for West Asia
Sweifiyeh, Hasan Baker Al Azzazi Street, #20
Amman, Jordan
Tel: +962 (6) 5546912/3/4
Fax: +962 (6) 5546915
E-mail: westasia@iucn.org
www.iucn.org/publications

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**Occupied Palestinian Territories Team**: Sayel Wishahi and Majed Nasser

**Jordan Team**: Suhaib Khamaiseh and Mohammad al Faqeeh

**Egypt Team**: Dr Amr Abdel Mageed, Galal Marzouk and Bassem al Sayed

**Morocco Team**: Dr Lahcen Taiqui, Dr Mohamed Jabrane, Marcos Valderrabano and Abdelilah Tazi

**Lebanon Team**: Bassima Khatib, Tala Moukadam, Rita El-Hajj and Dalia Jawhary

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- MADA Association in Lebanon
- Palestine Hydrology Group in the Occupied Palestinian Territories
- Society for the Protection of Nature in Lebanon
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- IUCN - Global Water Programme

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# List of Acronyms

| | |
|---|---|
| AWO | Arab Women Organization in Jordan. |
| ACSAD | The Arab Center for the Studies of Arid Zones and Dry Lands. |
| BRDC | Badia Research and Development Center in Jordan. |
| CDI | Centre for Development and Innovation. |
| CEDARE | Centre for Environment and Development for the Arab Region and Europe in Egypt. |
| CEOSS | Coptic Evangelic Organization for Social Services in Egypt. |
| DIV-A | Diversity –Associates. |
| EMPOWERS | Euro-Med Participatory Water Resource Scenarios. |
| EU | European Union. |
| IUCN -ROWA | IUCN Regional Office for West Asia in Jordan. |
| IPCC | Intergovernmental Panel on Climate Change. |
| LAS | League of Arab States. |
| MADA | MADA Association in Lebanon. |
| MENA | Middle East and North Africa. |
| PHG | Palestine Hydrological Group in Ramallah, Occupied Palestinian Territories. |
| REWARD | Regional Water and Dry lands Program. |
| SEARCH | Social, Ecological & Agricultural Resilience in the Face of Climate Change project. |
| SPNL | Society for the Protection on Nature in Lebanon. |
| UAWC | Union of Agricultural Work Committees in Ramallah, Occupied Palestinian Territories. |
| UNDP | United Nations Development Programme. |
| UNEP | United Nations Environment Programme. |
| WANI | Water and Nature Initiative. |
| ATED | Talassemtane Association for Environment and Development. |
| AEU | Abdelmalek Essaâdi University. |

# 1. Introduction

The Intergovernmental Panel on Climate Change (IPCC) has asserted in its Fourth Assessment Report that the world is undoubtedly warming were temperatures increased by 0.3-0.6°C during the 19th century while the increase was between 0.2°C and 0.3°C during the past 40 years (since 1970). In addition, the IPCC predicts that, for the southern and eastern Mediterranean, warming over the 21st century will be larger than global annual mean warming – between 2.2-5.1°C according to a realistic emissions scenario (Scenario A1B). In the same period of time annual precipitation rates are likely to decrease 10% by 2020 and 20% by 2050 [1]. The report also provides a comprehensive analysis of how climate change is affecting natural and human systems. Concern is increasing about the likely implications of climate change on poverty, economic growth, ecosystem services, livelihood opportunities and overall human development.

This same concern is also emphasized by UNEP et al. (2012) by stressing that climate change is expected to have impacts, which may vary in space and time, on the well-being of different segments of society. These impacts are expected to be higher on the most vulnerable, women and children, the poorest and the disadvantaged, as well as on natural systems. At the same time, the water and agriculture sectors, being the two main sectors responsible for food production in the region, are expected to be impacted by these changes at the basin, sub-basin, national and sub-national levels. According to the Human Development Report (produced in 2009 by UNDP), different model projections indicated that by 2080, agricultural potential could be boosted by 8% in developed countries resulting from a longer growing season, while developing countries could see a decrease of 9% which might seriously affect food security in most of the developing countries including the MENA countries [2].

Accordingly, there is widespread agreement that business as usual scenario is no longer valid as an option and that there is a need to revise existing policies, laws and strategies at national, sub-national and local levels in an integrated and participatory manner to be more climate change sensitive. This will ultimately require the development and strengthening of the current institutional setup, improve the governance system and enable a more transparent and participatory decision making process, whereby the interests of all relevant stakeholders are properly addressed, to ensure that the adaptive capacity of both social and ecological systems is improved under various climate change scenarios.

There is no doubt that theory is less challenging than practice and that implementation of these requirements will be confronted with the harsh reality of resistance to change at the individual, institutional and governance levels. However, no matter how large and complex the challenges are, they need to be dealt with in a manner that will turn them into opportunities to work for the benefit of the social and ecological systems, and not standing as obstacles that may undermine their capacity to adapt and rebuild when necessary, e.g., to become more resilient systems.

1 IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

2 UNEP, CEDARE, ACSAD and Arabian Gulf University (2012), Vulnerability Assessment of Freshwater Resources to Climate Change; Implications for Shared Water Resources in the West Asia Region.

In this respect, the EU funded SEARCH project "Social, Ecological and Agricultural Resilience in the Face of Climate Change" is one of the good practical examples on how to strengthen the resilience of social and ecological systems through learning and piloting practices with the full participation of all the relevant stakeholders including policy makers, government practitioners, civil society, environmental groups, women, citizens, and other representatives in five countries of the Southern and Eastern Mediterranean Region, namely Jordan, Occupied Palestinian Territories, Lebanon, Egypt and Morocco.

### The Project

SEARCH is a three year (2011 - 2013) regional project led by the International Union for the Conservation of Nature – Regional Office for West Asia and implemented in partnership with ten organizations (CEDARE, PHG, AWO, CEOSS, UAWC, BDRC, SPNL, MADA Association, Abdelmalik Essadi University, IUCN MED and ATED) from the five countries mentioned above and is supported by the IUCN Global Water Program in Switzerland and the Centre for Development and Innovation (CDI) - Wageningen in the Netherlands.

The objective of the project is to increase social and ecological resilience in watershed ecosystems of the Mediterranean Region in the face of climate and other drivers of change. Among the results that the project aims to accomplish is joint development and application of practical tools and guidelines (i.e. the toolkit) with policy makers to contribute to regional, (sub-)national and sector strategies and plans for climate change adaptation, water resources management, poverty reduction and economic development.

Moreover, it aims at answering the question of how resilience can be applied in practice and how to define resilience such that it addresses the complex situation in the MENA region.

To address the project aims mentioned above, the current report is structured in a way that the first part describes the toolkit and its practical use to guide relevant stakeholders in developing resilient plans while the second part summarizing the resilience framework adopted by SEARCH and how the resilience framework components have been assessed using various methodologies and tools listed in the toolkit to develop resilient plans and strategies at national and sub-national level and finally, the third part summarizes the conclusions, recommendations and challenges for scaling up and wide use of this toolkit.

# 2. The Toolkit

## 2.1 The Aim and Scope of the Toolkit

The aim of the toolkit is to provide guidance and recommendations on how to develop climate change resilient strategies and plans at national, sub-national and local levels. The scope, however, is more specifically to delineate and share the participatory methodologies and approaches tested by the project partners to integrate climate change risks into local and national plans, policies and strategies in the region. More importantly, the toolkit will describe the main challenges that faced the development and adaptation of such plans and recommends practical means to address them.

Effectively, this Toolkit aspires to support all those involved in the design of measurable, verifiable, and reportable resilience initiatives in the four major sectors of Agriculture, Water, Ecological and Social by providing step-by-step guidance on the process. As such, it seeks to answer the following question:

**What are the basic participatory steps in assessing climate risks and vulnerable systems and developing adaptation options?**

## 2.2 Main Sources of information Used in Developing the Toolkit

1. SEARCH project documents such as:

- Country reports and case studies developed by the project partners
- Policy papers developed by the project partners
- Various practical methodologies and tools adopted by the partners in a number of projects implemented in the region such as EMPOWERS and the REWARD Programme.
- Various training and capacity building materials used in improving partners' knowledge on vulnerability assessment and related climate change adaptation and resilience building methodologies.

2. Other toolkits developed by other organizations which address similar issues related to climate change adaptation.
3. IUCN river basin management experience in Latin America, Africa and Asia through the Water and Nature Initiative (WANI)[3].

## 2.3. Audience

The target audience of this toolkit are all those concerned with practical approaches for tackling the complex theme of resilience. It is particularly relevant for those who want to initiate and facilitate change processes to improve local climate change resilience and national adaptation strategies and may include, but is not limited to, planners, decision makers, civil society, academia, environmentalists, social groups and end users. We believe that, as long as people leading the process have a high level of technical and facilitation capacity, this toolkit will help to achieve change. Of course, a framework or a toolkit cannot achieve anything by itself and is only useful in the hands of committed people with relevant skills.

Promoting increased resilience to the impacts of climate change is closely intertwined with development choices and actions that cover a variety of sectors, such as energy, agriculture, health, water, and infrastructure. This toolkit provides actors with a set of tools and guidelines for using, wholly or partially, a resilience framework

3 "WANI." Web. 1 Jan. 2014. http://www.waterandnature.org/

to integrate climate change in development plans and adaptation of local and national strategies and activities for four major sectors (Agriculture, Water, Social and Ecological).

In particular, this Toolkit can be used to:

- Conduct stakeholder analysis and gather data on views and perceptions of local communities,
- Identify causes and effects of climate change impacts,
- Assess vulnerabilities and resilience of social and ecological systems,
- Prioritize adaption options and develop climate resilient plans,
- Provide a solid knowledge base for decision making,
- Link theory with practice, research with application.

### 2.4. Toolkit Logic

The toolkit provides a logical set of processes and tools which, if followed by relevant actors, will lead to practical outputs in the form of resilience strategies, plans and activities, and to improved communication and decision-making about climate change resilience in the selected sectors. However, this toolkit is just a means to help realize the desired state of climate change resilience. Particularly, it requires the presence of dreamers, believers and practitioners who act sequentially but cumulatively to make the positive change. The role of each one of those may be described as follows:

1. **Dreamers** (or planners, visionaries) are those who can initiate the logic for change, and usually include high-level decision makers and government officials who serve as ambassadors for mainstreaming climate change within national strategies;
2. **Believers** or the champions of the resilience building process (the Facilitation Team) are those who take on the role of advocating and guiding intermediate- and local level stakeholders through a structured process of learning and participatory adaptation planning toward the integration of resilience considerations into adaptation planning at national, intermediate and local levels;
3. **Practitioners** at the local level are those who will transform theoretical knowledge into practical implementation plans on the ground through testing and piloting of various tools and methodologies and choose the most practical and successful ones that lead to developing more resilient plans.

Mainstreaming adaptation into policy processes focuses on integrating adaptation issues into ongoing policy processes such as a national development plan or a sector strategy. Such efforts are based on country-specific evidence, including impact, vulnerability and adaptation assessments, socio-economic analysis, and demonstration projects.

### 2.5. Why Another Toolkit: The Added Value

There are several toolkits and guidelines developed for mainstreaming climate change adaptation into development planning, assessing the cost and benefits of adaptation options, or tools for determining vulnerability to climate change impacts and adaptation approaches such as the following:

- CARE – Community-Based Adaptation Toolkit[4]
- World Bank – Guidance notes on integrating adaptation into development projects[5]

4 "The Toolkit for Community-Based Adaptation." Web. 1 Jan. 2014. <http://www.careclimatechange.org/tk/cba/en/>.

5 "Publications." World Bank and Documents. Web. 1 Jan. 2014. <http://www.worldbank.org/reference/?lang=en>.

- Integrating climate change adaptation into secure livelihoods[6]
- UNDP – Toolkit for designing adaptation initiatives[7]
- Africa Adapt[8]

A more comprehensive list of different tools and toolkits used by practitioners in their work on adaptation has been compiled by Oxfam and Pennsylvania State University (Annex 1). All these tools and toolkits share a similar sequence of simple but essential steps whereby a problem is defined along with its causes, actors are identified, a response is articulated along with key barriers, activities are designed that overcome these barriers, and reviewed to ensure that results are met or the desired state is reached.

Some components of this toolkit are adapted from well-proven methodologies in the fields of project management, business management and rural development, and they build on the guidelines on stakeholder dialogue and concerted action for effective water governance developed by EMPOWERS.[9]

What has been missing from other toolkits and guidelines on adaptation initiatives is a clear description of how each step is made up of flows of activities with inputs, outputs and capacities associated and how all these processes gradually contribute to building resilience. Much of the current focus on resilience has been highly conceptual and has addressed issues at a large scale.

This toolkit is designed for use in the process of planning and dialogue within and between local, intermediate and national levels: in other words, a process involving more than one village or town in dialogue, and supported by intermediate and national level stakeholders who are in turn involved in their own planning processes. However, elements of the toolkit are appropriate for use in stand-alone activities within a single municipality, district, governorate, or region.[a]

The main added value of this toolkit is that it provides practical tools for guiding various practitioners, planners and decision makers in integrating climate change risks not only in national strategies but also in the strategies and plans at local level and also at watershed level. It clearly demonstrates the flows of activities under each practical step and shows how these different steps are interlinked to deliver integrated and more resilient climate change adaptation plans.

### 2.6. Toolkit Setup

The toolkit is a compilation of tools and methodologies used to integrate the components of the resilience framework into local and national strategies in a full stakeholder participatory manner allowing greater resilience of the local community toward climate and other global changes.

Experience in using participatory methodologies developed from previous work under earlier projects such as EMPOWERS and the REWARD Programme, encouraged the SEARCH team to consider customizing and using these methodologies to meet the objective of the Project. As a result, partners decided to consider the Participatory Planning Cycle (PPC) as the main engine for improving local capacities to integrate climate change resilience within sectoral, local and national plans (Figure 1).

6 Aid, Christian Aid, and Richard Ewbank. INTEGRATING CLIMATE CHANGE ADAPTATION INTO SECURE LIVELIHOODS. : , 2010. Print.

7 Toolkit in aid of adaptation initiatives. : UNDP Bureau of Development Policy, 2009. web.

8 "Le Partage des Connaissancespour l'adaption aux changements climatiques." Africa Adapt. Web. 1 Jan. 2014. <http://www.africa-adapt.net>.

9 http://www.project.empowers.info/page/3344

a By intermediate levels, we mean that layer of governance (government, institutions and civil society bodies) that function below national level but above local level. In various countries, these intermediate levels are known as provinces, regions, districts or governorates. By local we mean village, town and community levels.

**Figure 1: Modified Participatory Planning Cycle (PPC)**


In practice, SEARCH adopted the PPC by modifying the six steps of the management cycle and modified them to suite the objective of SEARCH project as shown (Figure 1).

The idea of the cycle reflects the reality that increasing the resilience of a system is about a continuous process of organization, participation, experimentation, adaptation and learning. This makes it possible to test appropriate technology, to find locally appropriate solutions and create a culture of good governance at the same time.

The PPC is also a flexible framework that enables stakeholder participation and dialogue among all levels including national, governorate and finally, local community and end users. The concept of stakeholder dialogue is considered a key step in improving the system's adaptive capacity and resilience to various types of change including climate change. Ensuring effective stakeholder dialogue requires good and transparent facilitation by well-trained facilitation teams. Each team requires time, skill and perseverance to build relationships with stakeholders, increase awareness and overcome resistance to change. Stakeholder representatives who are actively involved in stakeholder platforms have to build constructive relationships with other stakeholders, many of whom may have limited confidence in dialogue or limited capacity to engage in it.

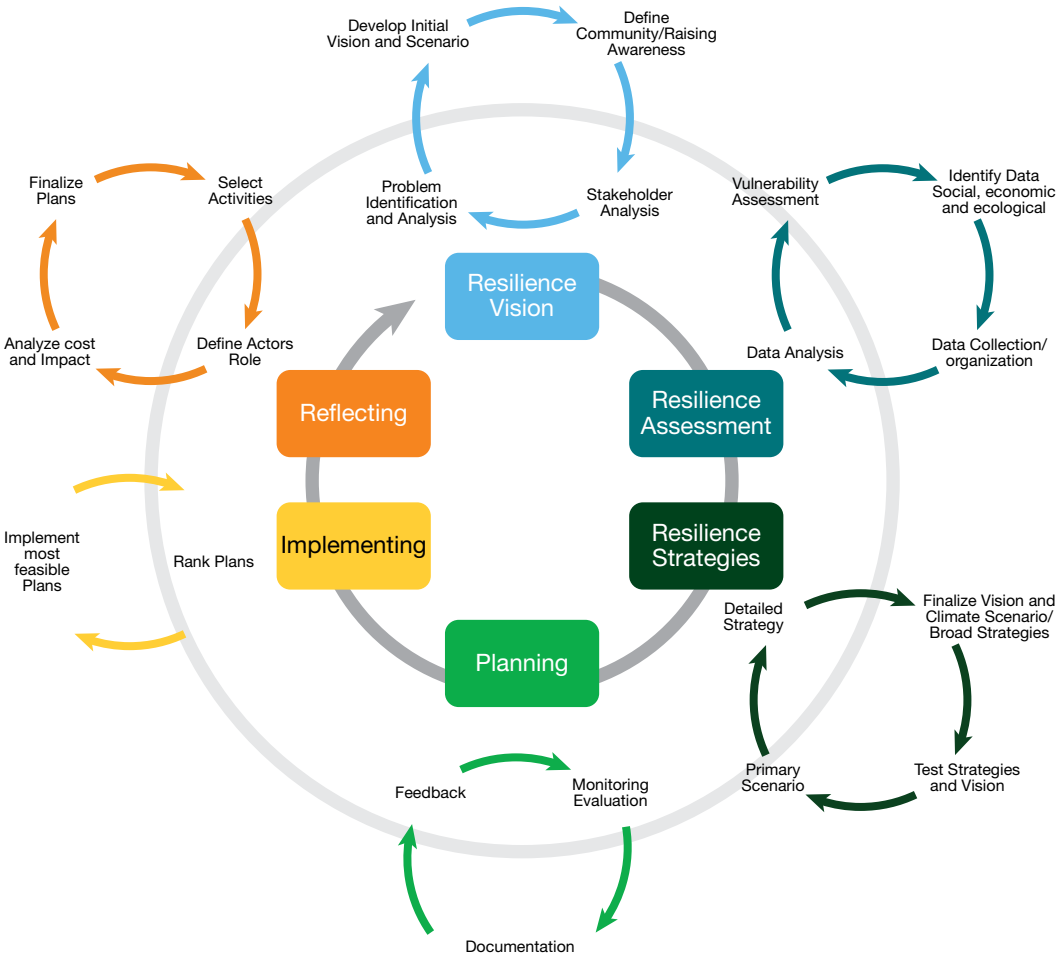
To facilitate common adoption of the PPC by various SEARCH partners, each step was further expanded into sub steps. The structure and setup of the expanded PPC provides different types of operational linkages to the resilience components within its main and sub-steps, which are shown in Figure 2. For example, the first two steps provide for setting up the initial vision and exploring the system's diversity, capacity, vulnerability, organization and governance. The subsequent steps provide for the exploration of adaptive capacity of the system as well as for joint learning by doing and feedback. Furthermore, the PPC tackles the problem of uncertainty (and uncertain conditions) by incorporating scenario building into relevant phases of the PPC, especially through linking adaptation strategies with on-the-ground planning and implementation through assessing adaptive capacity in a resilience sense.

Scenario building is a method of working between the visioning and strategizing phases rather than a phase in its own within the PPC and it is used more than once in the cycle as a vital tool to identify what strategies reduce vulnerability and increase adaptive capacity. At the same time, it provides a basis for prioritising adaptation strategies and implementation of most relevant plans that best address the identified initial vision on the system's resilience.

### 2.7. Toolkit Application

The various tools and methodologies described in the toolkit are presented in such a way that they clearly define inputs and outputs from each step and sub step in the extended participatory

**Figure 2: Extended Participatory Planning Cycle**




planning cycle. However, it is good to mention that the so extended PPC shows the process of how the toolkit works, i.e. the steps followed to reach the final anticipated outcomes but it does not show the tools and methodologies used to implement each sub step or how the resilience framework is integrated into it.

Using the tools set forth will demonstrate how this toolkit works and how it is used to help guide users. However, when using the toolkit, it should be noted that the overall setup, which means both the process and the tools and methodologies, can be used to develop resilient plans at whatever intended spatial scale. Accordingly, users are encouraged to:

1. Firstly understand its process and how it works and adjust it to their local conditions; then,
2. Decide on what relevant tools to adopt for conducting further analysis and planning activities by trying to answer the following sample questions:
   - What information do you want to obtain?
   - Do you have the expertise and capacity to implement the tool correctly and analyze results?
   - Do participants have the capacities to implement the tool correctly, collect accurate information, analyse it and interpret it?
   - How much will it cost?
   - What are the time requirements?
   - What are the human resources needed?
   - What kind of training is needed?
   - Does the tool help you build stronger relationships with the community?
   - Does it encourage participation?
3. Adopt the most relevant tools

## 2.8. Toolkit Structure

The main tools and methodologies that were practically applied by the SEARCH project partners to develop climate change resilient plans are:

### Toolkit Structure

| PPC Step | Examples of Used Tools and Methods |
|---|---|
| **STEP 1** Resilience Vision | 1. Situation analysis-RIDA<br>2. RAAKS and PRA<br>3. Problem Tree |
| **STEP 2** Resilience Assessment | 1. CRiSTAL. 2. CVCA 3. Ecological Vulnerability<br>4. Sustainable Livelihood Approach<br>5. Vulnerability Mapping |
| **STEP 3** Resilience Strategy Development | 1. Analysis and Refinement of Vision and Scenario workshop<br>2. Scenario Building workshop<br>3. Finalization of Detailed Strategy (worshop) |
| **STEP 4** Planning | 1. Planning Workshop<br>2. Prioritization and Ranking<br>3. Action Plans Development |
| **STEP 5** Implementation | 1. Pilot and Demonstration Projects<br>2. Accountability and Rights Analysis |
| **STEP 6** Reflection | 1. Multilevel, multi stakeholder Platform Creation<br>2. Process Documentation<br>3. Information and Knowledge management including communication<br>4. M&E and feed back |

### 2.8.1 Developing Initial Vision and Understanding the System

| | |
|---|---|
| **Step 1** Developing Initial Vision and Understanding the System | 1. Situation analysis - RIDA<br>2. RAAKS and PRA<br>3. Problem Tree |

#### 2.8.1.1 Context

The visioning phase of the extended PPC starts by asking stakeholders to develop a precise and shared initial vision statement of how a society sees itself to be at some point in the future in a context of climate change. The visioning phase is important because it takes the various actors out of their day-to-day problem-solving realities into medium-term and long-term thinking of the effects of their day-to-day actions.

#### 2.8.1.2 The outputs

Following to the determination of the initial vision, stakeholders conduct a thorough situation analysis in order to:

- Define the system and delineate its boundaries. This would include a basic description of the characteristics of the system such as the basin area, topography, geomorphology, geology, climate, water sources, land cover, land use and population, including change with time, jurisdictions, roads, canals and other infrastructure, etc.
- Understand its larger biophysical, socioeconomic, and administrative context influencing assessment and implementation of resilience;
- Analyse and understand the interrelationships between the different factors that would be integrated in the planning process;
- Build a quantitative and qualitative baseline of the conditions of people and ecosystems which can be used as a reference to monitor the change in the future;
- Define the stakeholders' rights, mandates and/or interests in the resources and their management in the target area;
- Analyse the state and condition of resources and people, including identification of trends and pressures;
- Identify major problems and issues related to resources and people that may influence resource availability and people's adaptive capacity.
- This analysis should ideally be reviewed and revisited during the various phases of the P to modify and improve the initial vision and assumptions in light of the data gathered and analyses undertaken.

#### 2.8.1.3 Tools to Understand the System

**Resource and Capacity Assessment Tool - RIDA[10]**

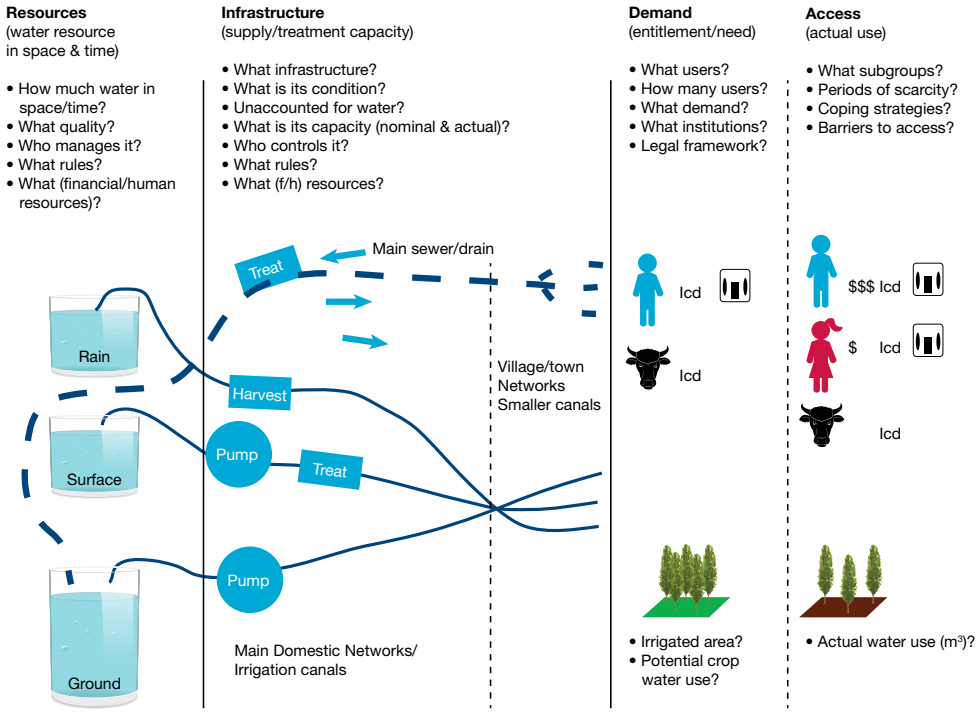
**Why RIDA?**

The Resource, Infrastructure, Demand and Access (RIDA) methodology is a simple framework that links water supply infrastructure and institutions to people's demands and helps to structure collection and analysis of information. In addition, RIDA is used to assess the water situation in the target system and help define the related sets of institutions, boundaries and other characteristics of the three RIDA components, namely resources, infrastructure and users. It also can be used in an integrated water management context to structure stakeholder dialogue, data analysis and modelling. Figure 3 shows the main steps undertaken and issues analysed under the RIDA assessment.

As figure 3 clearly illustrates, this tool is quite simple and straightforward, and helps draw a clearer picture on what the resources, the infrastructure and water uses and users are in our target system. In addition RIDA is a framework to

10 http://www.project.empowers.info/page/3341

**Figure 3: An illustration of a RIDA assessment preparation with relevant questions for each part of the assessment**




structure water resource assessments and it deals with different scales and boundaries.

## Tool Outputs

The main outputs that can be obtained from the RIDA assessment can be listed as follows:

- Description of the resource status, both from the quantity and quality point of view
- Description of the infrastructure conditions
- List of the main potential economic, social, natural, governance and institutional constraints that may likely influence the system capacity to adapt to various changes
- List of potential stakeholders within the system and their roles

The outputs from this tool or assessment methodology will be used as input for further analysis by other tools used in this toolkit. For example, the next tool will further analyse the stakeholders identified by RIDA to further consolidate the analysis and to make sure that common goals and visions are adopted by all and that the role and interest of each one is represented.

## Stakeholder Analysis Tools - PRA & RAAKS

### Why PRA and RAAKS?

Participatory Rapid Appraisal (PRA) and Rapid Appraisal of Agricultural Knowledge Systems (RAAKS) were adopted by SEARCH partners because both methods are based on stakeholder

participation and adopt bottom-up planning by enabling development practitioners, government officials, and local people to work together to build confidence and to develop context-appropriate plans.

Stakeholder participation is not an objective itself; rather, it is a process through which decisions are made in a democratic and more sustainable way. The main objective of stakeholder participation is to ensure that decisions are based on sound evidence and they are influenced by the views of those affected by such decisions. The key advantages of stakeholder participation can be listed as follows:

1. Making use of the experience and knowledge of stakeholders and thus improve the quality of the plans and policies developed;
2. Plans and policies will acquire public support and they will be more committed to their implementation;
3. It creates more transparent and creative decision making;
4. It raises the awareness of the issues and builds the capacity of the stakeholders involved in the process;
5. It reduces the misunderstandings among the different actors and ensures more effective implementation;
6. It creates accountability and ownership among the beneficiaries.

According to the characteristics described above, stakeholder participation is an innovative social change process. The challenge, however, is to learn to create the conditions needed for such innovation to occur; conditions that enable people not only to develop new ideas but also to learn to make use of each other's ideas. Thus, it is an outcome of a mutual learning process among large number of autonomous actors who are willing to consider:

- Positive transformation in the currently adopted practices; and
- Adjusting long-held beliefs that might have guided people through difficult times for many years.

It is with this in mind that the two methodologies have been used and applied. However, PRA is rather a general methodology that assumes the participation of all members of the local community and is implemented at a much smaller scale, while RAAKS is more systematic as it uses more quantitative tools to develop a more structured analysis of the stakeholders, their roles, relations and power.

Therefore, it is obvious that PRA is used at the beginning of the process to bring stakeholders together to let them communicate, share local knowledge and to build confidence among them. This in turn would enable local people to make their own appraisal, analysis, and plans. In another words, it shifts the role of planning and decision-making, traditionally taken by government institutions and development agencies (a top-down approach), to the target group or the community itself.[11] Moreover, PRA also helps understand the specific qualitative differences as well as the social opinions and attitudes of various actors in the local community.

The learning-by-doing and teamwork spirit of PRA requires transparent procedures. For that reason, a series of open meetings (an initial open meeting, final meeting, and follow-up meeting) generally frame the sequence of PRA activities. Other tools common in PRA are semi-structured interviews, focus-group discussions, preference ranking, mapping and modelling, seasonal and historical diagramming, etc.

11 "PARTICIPATORY RURAL APPRAISAL." Rapid rural appraisal, participatory rural appraisal and aquaculture. Web. 1 Jan. 2014. <http://www.fao.org/docrep/006/w2352e/W2352E06.htm>.

This method is characterized by flexibility, triple observation and participation.[12] First, PRA uses a variety of tools that the local community members can learn easily with little cost and, second, what is most important about PRA is that it is based on learning from the inhabitants of the local community.

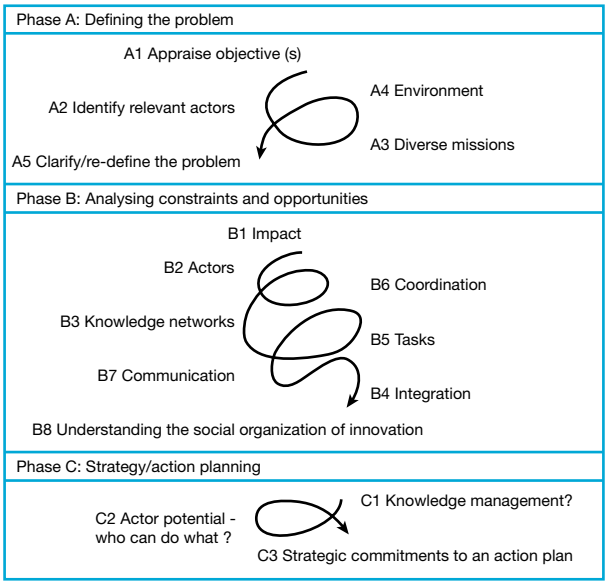
Contrary to all other kinds of methodologies, PRA is carried out inside the local community by the participation of all its members. Participation starts directly after defining the subject and the tools, and goes on till the final analysis of the data. Efforts are exerted to encourage the participation of representatives of the different sectors, especially those who will use the results. However, one of its limitations is that it is an effective tool when applied on rural and nomad communities that have more harmony in knowledge, values and doctrines; more than when it is applied in more complicated urban areas[13] or in watersheds.

This is why the RAAKS methodology which is an actor participation oriented methodology is introduced to further ensure that this limitation will not hinder the mutual learning and the actual reflection of stakeholders interest in the planning process at local community level as well as at watershed or even national level. Moreover, it includes systematic and interrelated tools that help perform detailed analysis of the system including

the stakeholders, their roles and interests and their relation to the system being analysed. Such analysis will lead to more detailed understanding of the stakeholder setup and will help in defining

**Figure 4: RAAKS Methodology Setup**

**Source: Royal Tropical Institute Netherlands, 1997**




12 "Participatory Rapid Appraisal "2009" ." . IUCN. Web. 1 Jan. 2014. <http://cmsdata.iucn.org/downloads/azraq_pra_english.pdf>.

13 "Participatory Rapid Appraisal "2009" IUCN. Web. 1 Jan. 2014. <http://cmsdata.iucn.org/downloads/azraq_pra_english.pdf>.

common stakeholder interests and networking potentials that can be utilized to realize the desired change. A summary of the RAAKS methodology, its setup and its various tools is shown in Figure 4.

As can be noticed from Figure 4 the RAAKS methodology of a three phase analysis with each phase and its distinctive tools. The output from the previous phase is used as input to the successive phase (e.g. output from phase 1 is an input to phase 2, etc.). Although these tools are interlinked and more than one tool can be used simultaneously to perform the analysis and cross check information, only the tools that were most relevant to the project objective have been adopted by the SEARCH partners. However, users of this toolkit are encouraged to look into the more detailed tools included within the RAAKS methodology and adopt the ones that best meet their interest.

The main RAAKS tools used by SEARCH partners to define the stakeholders, their roles, relations, coordination and potential future roles can be presented as follows:

**A2. Define Actors**

| Guiding Questions | Form of Output Presentation |
|---|---|
| • Which actors play a significant role in technological innovation, policymaking, research, or exchange or utilization of new or existing knowledge? Why and how?<br>• Who else could make an important contribution? Why and how?<br>• What do the various actors contribute? Is there a difference between mandatory and 'de facto' contributions? Why?<br>• Which actors can be seen as key actors? Why?<br>• What subsets of actors can be distinguished? | |

| System actors | Do you see this person/ organization as a key actor? (yes/ no) | Why or why not? |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |

## B2. Actor analysis

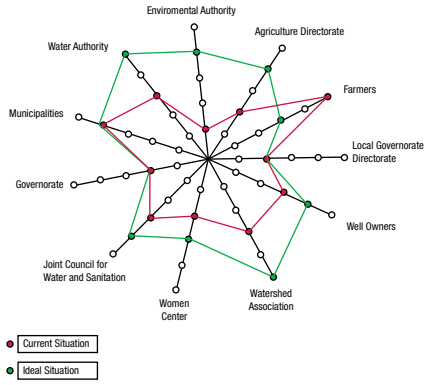
### Guiding Questions

- Define characteristics of each actor and their relevance
- What primary activities are carried out by individual key actors?
- What resources are controlled by each key actor?
- How would you describe each key actor in terms of organizational capacity?
- How does each key actor define their primary function and mandate?
- To what extent do the key actors consider themselves part of a system? Do they recognize that they and other actors are mutually dependent? With whom?

### Form of Output Presentation

| Actor | Primary activity | Position in the system | Impact on system perfor-mance |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

- Does the actor have policies related to their role in the knowledge system? Are these formally established and agreed upon? With whom?
- To what extent do the key actors know what other actors have to offer with
- respect to knowledge, skills and technology/ resources?




Values increase from closer to farther away from the centre of the spider web. 1 near the centre and 5 at the outer edge.

## B4. Linkage and Relation Analysis

### Guiding Questions

- What type of link exist among actors? Dose this link implies communication alone or control?
- What contacts are there among actors?
- How relevant are they (frequency intensity value)?
- Is the linkage one-way or two-way?
- What clusters of SH can be identified

### Form of Output Presentation

| | Stakeholder | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Farmers | 1- | 2+ | 2+ | 1+ | 2- | + - | 2+ | 2+ | 2- | 2+ | .... |
| 2 | Agriculture Directorate | 2+ | 2- | 2+ | 1+ | 2- | 2+ | 2+ | 2+ | 2+ | .... | .... |
| 3 | Environmental Directorate | 2+ | 2- | 2- | 1- | 2+ | 2+ | 2+ | 2+ | .... | .... | .... |
| 4 | Water Authority | 2+ | 2+ | 2+ | 1- | 2+ | 2+ | 2+ | .... | .... | .... | .... |
| 5 | Municipalities | 2+ | 1+ | 2+ | 2+ | 2+ | 2+ | .... | .... | .... | .... | .... |
| 6 | Governorate | 2+ | 1+ | + - | 2+ | 2- | .... | .... | .... | .... | .... | .... |
| 7 | Joint Council for Water & Sanitation | 2+ | 1- | + - | 2+ | .... | .... | .... | .... | .... | .... | .... |
| 8 | Women Centre | 1+ | 1- | 2+ | .... | .... | .... | .... | .... | .... | .... | .... |
| 9 | Watershed Association | 1+ | 2+ | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 10 | Well Owners | 1- | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 11 | Local Governorate Directorate | | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |

The matrix shows linkage relations between related primary or key actors. The symbol + refers to having a relation, - refers to an absence of a relation, 1 refers to unimportant relation and the symbol 2 refers to having an important relation.

## B5. Task analysis sheet

### Guiding Questions

- A task analysis can be used in discussing which additional tasks will be needed to have the system function better. It can also be used to sum up this information. Further, a task analysis can be:
- Which tasks/functions are performed by which actors?
- What activities do the actors carry out in the process of performing these tasks? How effective is this?
- What gaps are there between tasks? Is there some overlapping?
- Do the tasks/functions that are carried out match actors' expectations for the system?
- Is there a coordinated effort among the most relevant actors to integrate their tasks?
- What factors within the system have a positive or negative influence on task performance?

### Form of Output Presentation

| Actor | T1 | T2 | T3 |
|---|---|---|---|
| X | x | | |
| Y | | x | |
| Z | x | x | |

T= Task

| B6. Communication Analysis Exercise | B8. Understanding the social organization of the system |
|---|---|
| **Guiding Questions** | **Guiding Questions** |
| • Identification of social and cultural differences among actors as well as differences in their knowledge and perceptions.<br>• Identification of constraints and opportunities related to communication among the actor<br>• Do the actors have similar or different opinions on the nature of the problem, and on the objective to be achieved by the knowledge system?<br>• Do the worldviews, ways of reasoning, social circumstances; languages and/or ideologies of the actors differ?<br>• How do these differences influence communication among actors and/or between actors and prime movers? | • Constraints and opportunities<br>• What convergences, resource coalitions and communication networks can be identified? Include often-forgotten groups e.g. women's networks.<br>• What are some possible constraints to the optimal functioning of the knowledge system? Why are these important? Give arguments!<br>• What are the objectives of the most important actors in the knowledge system? Is there some agreement on a shared objective? Are there marked differences in the objectives of women and men, or between other often-forgotten groups and other stakeholders?<br>• What are the three most important problems the actors will have to deal with before it will be possible to speak of an optimally functioning knowledge system? Why?<br>• Is the team getting the information it need, including information about "forgotten" stakeholders?<br>• Should any additional actors be included in the interviews, workshops and so forth? |

### Tool Outputs

The main outputs that can be obtained from this analysis can be listed as follows:

1. A detailed list of key stakeholders identified
2. Detailed understanding of the various roles, power and interests of key stakeholders
3. Clear relations and communication among stakeholders are defined
4. Potential convergence and divergence issues among various stakeholders are identified
5. Potential coalitions and alliances among stakeholders are identified

Following to identifying the key stakeholders and their roles and interests, they are then engaged in analysing the problems they think they are most relevant to the system with the help of the facilitation team as explained further under the next tool, the problem tree analysis.

### Problem Identification and Analysis Tools: Problem Tree

The problem tree is a flow diagram which shows the relations between different aspects of a particular issue or problem. It can help to build a picture of the major problems facing a community, a watershed or a system. From there, stakeholders can look for the root causes of the problem and its effects that need to be addressed in order to reduce vulnerability.

Problem tree analysis helps to find solutions by mapping out the anatomy of cause and effect around an issue in a similar way to a Mind Map[14], but with more structure. This brings several advantages:

- The problem can be broken down into manageable and definable chunks. This enables a clearer prioritisation of factors and helps focus objectives;
- There is more understanding of the problem and of its often interconnected and even contradictory causes. This is often the first step in finding win-win solutions;
- It identifies the constituent issues and arguments, and can help establish who and what the political actors and processes are at each stage;
- It can help establish whether further information, evidence or resources are needed to make a strong case, or build a convincing solution;
- Present issues - rather than apparent, future or past issues - are dealt with and identified;
- The process of analysis often helps build a shared sense of understanding, purpose and action.

14 "Mind mapping survey." The mindmappingorg Blog RSS. Web. 1 Jan. 2014. <http://www.mind-mapping.org/blog/2014/02/the-biggerplate-survey-what-can-we-learn/>.

The analysis is usually conducted in smaller key stakeholder groups and each one is asked to list the major problems he / she thinks are mostly affecting the system by writing each problem in one card. The cards are then collected and stakeholders let to discuss the problems, arrange and re-arrange similar ones under the same groups. Stakeholders then agree on which problems can be considered as root cause and which one are effects. Time should be taken to allow participants to explain their feelings and reasoning until reaching consensus about the arrangements. Once consensus is reached, then the problem tree is constructed where the bottom reflects the root cause of the problems and the top are the main effects as shown in figure 5.

The Problem tree is closely linked to the Objectives tree, another key tool well used by development agencies. The Problem tree can be converted into an objectives tree by rephrasing each of the problems into positive desirable outcomes - as if the problem had already been treated. In this way, root causes and consequences are turned into root solutions, and key project or influencing entry points are quickly established. These objectives may well be worded as objectives for change.

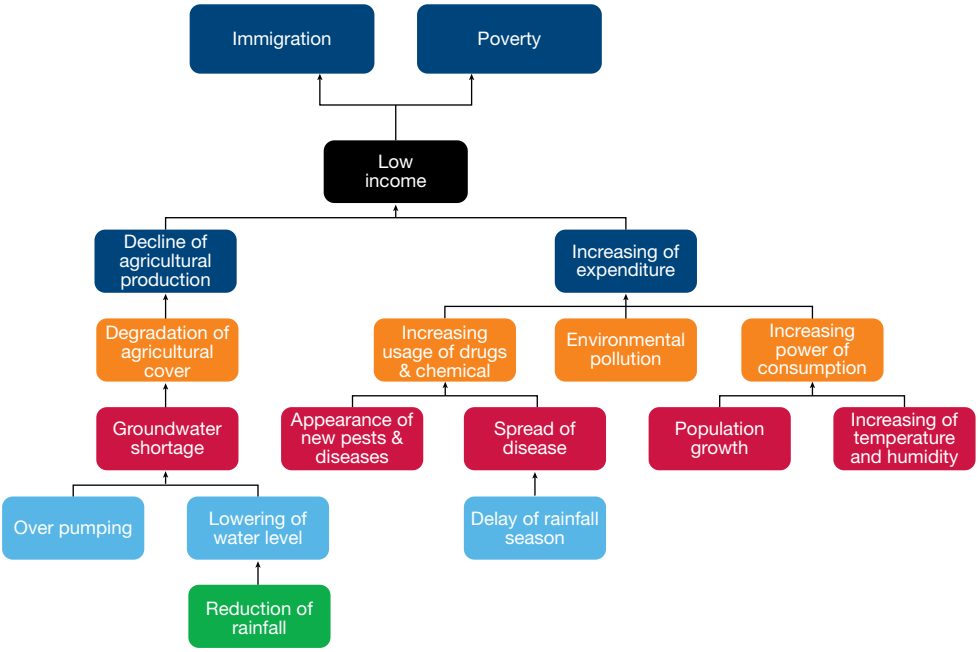
### Tool Output

The main output from this analysis is that the main root causes and effects related to the problems are identified and considered in the development of adaptation strategies.

### 2.8.1.4 The challenge

Visioning helps stakeholders think beyond the day-to-day reality of problem solving, and to imagine an achievable medium to a long-term future for which they can plan – typically 5-15 years ahead at local level, and 10-25 years ahead for the intermediate level. It may prove useful to differentiate between short, medium and long-term visions each with their own target date for achievement.

**Figure 5: Problem tree of Marj Sanour watershed, Occupied Palestinian Territories**




A key challenge for effective visioning is that the exercise has normally been conducted without integrating different governance levels, or inclusion of relevant actors. This has resulted in great disparities between local and national adaptation strategies. Basin level strategies have been developed without considering local vulnerabilities and capacities. In fact, building a vision under a basin-wide approach continues to be a major challenge for adaptive planning processes. This is a problem that has led to disconnected strategies, and to weak or fragmented planning and implementation of adaptation measures.

In the context of resilience building, it is crucial that the process produces a vision that is shared and owned by all stakeholders, including the more marginalized. Local and intermediate level visions should also inform, and be informed by national and intermediate level policy and strategies; it is vital that there is consistency across visions created at different spatial scales. A governorate-level vision will be different to a vision developed for a village, but there needs to be mutual consistency and compatibility between the visions if conflicts are to be avoided.

To be useful for strategic planning, a vision must be more than an unattainable wish list. Visions should be rooted in an understanding of trends in water supply and demand, and of how potential risks and constraints might make it difficult to achieve a vision. In searching for a preliminary common vision, the biggest challenge is to raise awareness and enthusiasm for the process.

### 2.8.2 Vulnerability Assessment

| | |
|---|---|
| **Step 2** Vulnerability Assessment | 1. CRiSTAL<br>2. CVCA<br>3. Ecological Vulnerability<br>4. Sustainable Livelihood Approach.<br>5. Vulnerability Mapping |

#### 2.8.2.1 Context

The purpose of the assessment phase is to collect good quality information to help establish a clear baseline of the social, ecological and technical conditions of the system and to create a common information base that should be fully accessible to all stakeholders in order to enable them to make more informed and more balanced decision.

The objectives of the assessment phase are to:

- Carry out a vulnerability (and adaptive capacity) assessment for the area of interest;
- Establish a common information base that can be used as a basis for reaching consensus on problem analysis and solution identification;
- Ensure that stakeholders have access to climate change and water-related information in a form appropriate to their level of knowledge;
- Identify myths and misconceptions that might exist on the causes, scale and severity of climate change and water-related problems;
- Identify opportunities for solving these problems as well as constraints and risks.

#### 2.8.2.2 The Outputs

The main outputs from the assessment phase are likely to include:

- An information base to support stakeholder dialogue and to improve the quality of outputs from the strategising and planning steps. The system will contain key institutional, societal, and physical information relating to water resources and water services;
- List of stakeholders who are actively involved in linked platforms and who have resolved potential conflicts over information about causes of problems and opportunities for solving problems;
- A summary report that presents the information held in the information base in a way that is accessible and comprehensible to non-specialists.

#### 2.8.2.3 Vulnerability Assessment Tools

**Community-based Risk Screening – Adaptation and Livelihoods (CRiSTAL) Tool**

CRiSTAL[15] is a screening tool designed to help project designers and managers integrate risk reduction and climate change adaptation into community-level projects. It helps project designers and managers to:

1. Understand the links between livelihoods and climate in their project areas;
2. Identify livelihood resources which are most important to climate adaptation;
3. Identify and prioritize climate risks that their projects might address;
4. Assess a project's impact on community-level adaptive capacity; and
5. Make project adjustments to improve its impact on adaptive capacity and reduce the vulnerability of communities to climate change.

CRiSTAL seeks to systematically assess the impacts of a project on some of the local determinants of vulnerability and exposure, so that project planners and managers can design activities that foster climate adaptation.

15 Developed by IISD, IUCN and SEI, " CRiSTAL." Home. IUCN, Web. 1 Jan. 2014. <http://www.iisd.org/cristaltool/>.

Outputs from CRiSTAL help to assess vulnerability and livelihood profiles, and can also be used to assist in project modification. CRiSTAL has been structured around four framing questions divided into two modules and four sets of questions:

Module 1- Synthesising information on climate and livelihoods.

Q1: What is the climate context?

Q2: What is the livelihood context?

Module 2- Planning and managing projects for adaptation

Q3: What are the impacts of project activities on livelihood resources that are vulnerable to current climate hazards/are important to local coping strategies?

Q4: How can project activities be adjusted to reduce vulnerability and enhance adaptive capacity?

The information obtained is then entered into a series of excel sheets and used to assess the resources that are influenced by climate hazards and those resources important to coping strategies. The influence of project activities (or alternative coping strategy) on resources is also assessed. Consequently, project activities are adjusted to reduce impacts on hazard and ensure their sustainability with climate change.

### Tool Outputs

The main outputs from this tool are:

- Series of adaptation activities which are meant to improve communities adaptive capacity to deal with climate change impacts are identified.
- The barriers and synergies to implementing activities are defined.
- Risks are screened and livelihood viability is assessed in a way that helps define the resilience of a community or a watershed (see Table 1).

### Climate Vulnerability and Capacity Analysis Tool (CVCA)

(CVCA)[b] provides a framework for analyzing vulnerability and capacity to adapt to climate change at the community level. The CVCA also prioritizes local knowledge on climate risk and adaptation strategies and contains a series of tools and processes on how to gather information such as rain calendars, hazard maps and questionnaires. The objective is to analyze vulnerability and adaptive capacity at community level as well as to combine community knowledge and scientific data to improve understanding about local impacts of climate change.

In other words, the CVCA has been developed to facilitate analysis of vulnerability and adaptive capacity by members of communities themselves. In doing this, it applies participatory values, processes and methods, to enable local people to articulate and enhance their own knowledge and understanding, and to plan action. The overall aim is to gather and analyze information to design climate change adaptation initiatives, to integrate climate change adaptation into livelihoods and natural resource management programmes, and to provide practical evidence for advocacy. In addition to data collection at different levels, other important steps for applying the CVCA methodology are to validate the analysis, present the findings, and incorporate feedback from stakeholders as well as documentation and dissemination.

The CVCA handbook provides the various tools and a series of guiding questions to analyse the climate change information at national, local government/community, and household/individual

b Sponsored by CARE International

**Table 1: Vulnerability assessment of the Marj Sanour watershed, Occupied Palestinian Territories**

| Affected area/ sector | Event (hazards) | Vulnerability Assessment of the watershed | | | |
|---|---|---|---|---|---|
| | | Exposure | Degree of Sensitivity of the System | Degree of the adaptive capacity | Vulnerability of the area |
| Downstream area | Flood | High-As a closed watershed, runoff water from hilly areas drains to and accumulates in the downstream area. | High-The downstream area is very sensitive to flood. | Low-Suggested adaptation measures can only upgrade the system partially, and these options are costly. | High |
| Water sources | Drought | High-Groundwater that forms the main water source is directly affected by the amount of precipitation. | High-Summer water needs already greater than production, and groundwater abstraction faced by many regulatory problems. | Medium-There is an ability to regulate groundwater exploitation. Some upgrade measures adopted by now but are not enough. | High |
| Plantation area and infrastructure | Frost wave | Medium-The area suffers repeatedly from frost wave in winter months causing severe impacts on the area. | Medium-Impacts magnitude and affected areas change from year to year. | Low- Some upgrades already adopted, but need modifications. Negative impacts mostly limited to some crops. | Medium |
| | Wind storm | Medium-Unpredicted windstorms mostly cause damage of crops, and infrastructure. | Medium-There is an ability to upgrade the system by improving the system itself, but it is considered costly for some people. | Medium-Some modifications can be implemented to reduce the impacts. | Medium |

levels. The analytical tools include guidance on secondary research from existing sources (i.e. those that are not field data), institutional mapping (i.e. who is doing what and where), policy analysis (what policies are relevant to climate change), or key informant interviews using guiding questions. The participatory tools contained in CVCA range from hazard mapping and seasonal and rain calendars to historical timelines and vulnerability matrix.

### Ecological Vulnerability Assessment Tool

In the context of natural fluctuating climatic conditions that occurred during a long period of time, Mediterranean species developed the ability to adapt to prevailing climatic constraints through the "normal" evolving mechanism of biological adaptation. Studies from the Mediterranean region show that the current tree flora is made up of very resilient old taxa that have already experienced many abrupt and intense climate changes in the past, being able to maintain quite stable populations through periods during which climatic conditions have changed. However, current climatic changes are occurring in a very fast pace (drastic detected temperatures increase and rainfall patterns variations), so quickly that they are putting the species biological adaptation processes at risk. In addition, the plodding effects of climate change are exacerbated by anthropogenic pressures on forest resources (namely through overgrazing activities, abusive wood logging, intended forest fires and uncontrolled urban sprawl); hence increasing their vulnerability.

One of the methods or tools to assess ecological vulnerability of a system is the transect method which is simply an observational survey through a cross section of the system to identify and collect relevant information on the system. For example, if a forest is considered the system at stake, their identified health, composition, vitality and specific richness will help establish a main understanding about the forest resilience. For example, an assessment of this kind can be closely related to the monitoring of key pests/diseases capable of attacking specific tree species in stress conditions. Pests and diseases are easily monitored once key indicator insects or other microbial species are identified. Vulnerability is thus assessed and computed through evaluation of a number of specific onsite indicators.

Climate change vulnerability indicators have been developed at the species, habitat or ecosystem level alike, and across the different components of vulnerability. Examples for sensitivity include physiological factors, community structure and ecosystem processes respectively. Examples for adaptive capacity include dispersal potential of species, permeability of the landscape, and redundancy and response diversity of the ecosystem's functional groups, respectively.

Indices and scorecards have also been developed to assess the vulnerability of habitat such as the Habitat Climate Change Vulnerability Index (HCCVI)[16] or other systems that use a number of criteria related to expected response or vulnerability of species in a questionnaire to provide a framework for assessing vulnerability to climate change.

Outputs of the ecological assessments are sometimes fed into a vulnerability matrix (Table 2 shows example from Lebanon) that is utilised to assess the inherent resilience of the ecosystem to the natural as well as anthropogenic stress factors identified. The level of the anthropogenic interaction or pressure on natural ecosystems can be determined through the current level of exploitation of natural resources by sector (grazing, logging,

16 "Climate Smart Conservation ." Home - National Wildlife Federation. National Wildlife Federation, n.d. Web. 1 Jan. 2014. <http://www.nwf.org/>.

**Table 2: Vulnerability matrix of ecological assessment, case from Lebanon**

| KARMCHBAT | Climatic factors | | Anthropogenic factors | | | | Other | | |
|---|---|---|---|---|---|---|---|---|---|
| Stress factor | Decreased Precipitation | Increased temperature | Grazing | Logging | Hunting | Agriculture and urban expansion | Soil erosion | Forest fire | Phytopathology |
| Exposure | M | M | H | M | M | L | L | L | M |
| Sensitivity | L | M | H | H | M | M | H | L | H |
| Impact | M | M | H | M | M | M | L | L | M |
| Adaptive capacity | M | M | L | M | L | L | M | H | M |
| Vulnerability | M | M | H | M | M | M | M | L | M |
| Resilience | M | M | L | M | M | M | M | H | M |

hunting, MAPs harvesting, recreation, beekeeping, etc.). The main uses and benefits generated out of natural resources exploitation, namely forest goods and services, can be assessed by resorting to an ecological close-ended questionnaire[c]. The link to the social side of the vulnerability assessment is thus established.

The first two columns encompass the current and forecasted exposure to climate change and their likely effects on ecosystem-specific processes respectively. Analyses of direct effects consider climate forecasts themselves, and their likely implications for increasing ecosystem stress, changing dynamic processes such as wildfire or hydrological regime; and for changing species composition.

The four columns in the middle (anthropogenic factors) encompass predisposing conditions affecting ecological resilience. Analyses of indirect effects consider human alterations to characteristic patterns and processes, such as landscape fragmentation, effects of invasive species, or human alterations to dynamic processes. Here, these human alterations are considered independent of climate change, but once identified, have some potential interactions with forecasted climate change.

The 'adaptive capacity' row encompasses natural characteristics that affect the potential for ecological resilience in light of climate change. Analyses of adaptive capacity for climate change consider the inherent variability in climate regime or geophysical features that characterize the distribution of a given ecosystem or community. They also consider aspects of natural species composition, such as the relative diversity within groups of species that provide functional roles, or the relative vulnerabilities of individual species that provide "keystone" functions.[17]

### Sustainable Livelihoods Approach (SLA)

The Sustainable Livelihoods Approach was adopted by SEARCH project partners in order to better understand and analyse livelihoods in a context of vulnerability. For example to understand the vulnerability of people to climate change or the loss of ecosystem services, in combination with other threats. The strength of a given livelihood is not only measured by its productive outcomes, but equally by its resilience to shocks, seasonal changes and trends.

c Type of questionnaires that respondents are choosing from predefined list of answers (a, b, c, ..etc).

17 "NatureServe Network Directory." Web. 1 Jan. 2014. <https://connect.natureserve.org/sites/default/files/documents/>.

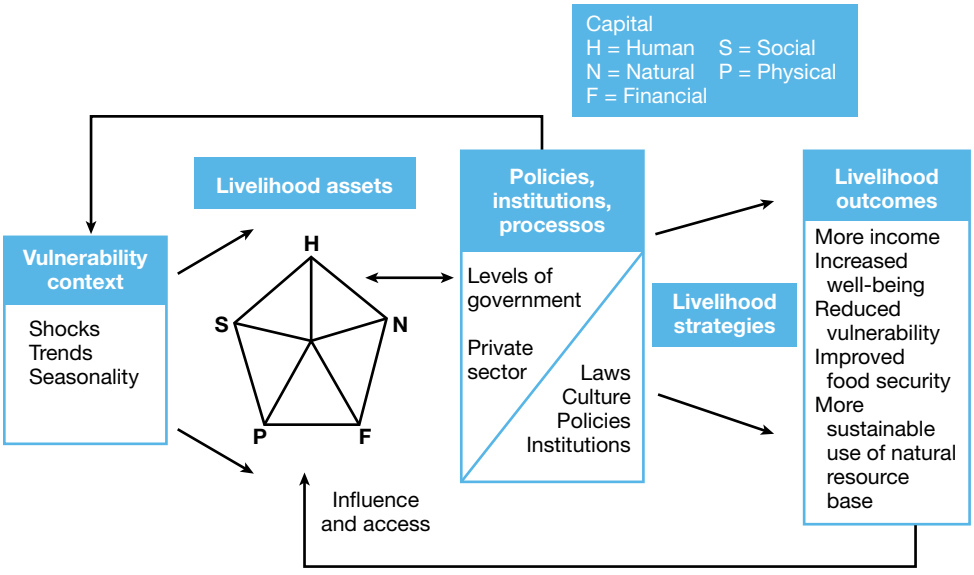
SLA has two main components:

1. The first component is a set of principles to guide action to address and overcome poverty. These principles include:

- **Be people-centred.** SLA begins by analysing people's livelihoods and how they change over time. The people themselves actively participate throughout the project cycle.
- **Be holistic.** SLA acknowledges that people adopt many strategies to secure their livelihoods, and that many actors are involved; for example the private sector, ministries, community-based organizations and international organizations.
- **Be dynamic.** SLA seeks to understand the dynamic nature of livelihoods and what influences them.
- **Build on strengths.** SLA builds on people's perceived strengths and opportunities rather than focusing on their problems and needs. It supports existing livelihood strategies.
- **Promote micro-macro links.** SLA examines the influence of policies and institutions on livelihood options and highlights the need for policies to be informed by insights from the local level and by the priorities of the poor.
- **Encourage broad partnerships.** SLA counts on broad partnerships drawing on both the public and private sectors.
- **Aim for sustainability.** Sustainability is important if poverty reduction is to be lasting.

2. The second component is a framework that helps in understanding the complexities of poverty. The main SLA framework components and their interlinks are presented in schematic form shown in Figure 6.

**Figure 6: Livelihood Asset Components**



It is good to mention that SLA does not work in a linear manner and does not attempt to provide an exact representation of reality. Rather, it seeks to provide a way of thinking about the livelihoods of poor people that will stimulate debate and reflection about the many factors that affect livelihoods, the way they interact and their relative importance within a particular setting.

This will help in identifying more effective ways to support livelihoods, and reduce poverty, and consequently build resilience.

As can be seen from Figure 6, the five categories of livelihood assets are presented in web net structure to emphasize the interrelation of these assets and their necessity for the pursuit of positive livelihood outcomes. These five assets can be summarized as follows:

**Table 3: Livelihood assets and sensitivity components, case from Lebanon**

| | High temperature and low precipitation | | |
|---|---|---|---|
| **Livelihood Assets** | **Andaket** | **Aydamoun/ Karmchbaat** | **Qoubyat** |
| **Human Capital** | | | |
| Education Level | High | Medium | High |
| Poverty Level | Low | High | Low |
| Income | Medium | Low | Medium |
| Access to Health Services | Medium | Medium | High |
| Awareness Level | Medium | Low | Medium |
| **Natural Capital** | | | |
| Dependency on Agriculture | Low | High | Low |
| Dependency on Water Resources | High | High | High |
| Dependency on Livestock | Low | High | Low |
| Dependency on the Forest | High | High | Medium |
| **Physical Capital** | | | |
| Ownership of House | Yes | Yes | Yes |
| Ownership of Land | Yes | Yes | Yes |
| Presence on Vehicles | Yes | Yes | Yes |
| Presence of House Electronics | Yes | Yes | Yes |
| **Social Capital** | | | |
| Participation in the House | High | High | High |
| Membership in Local Societies | High | Medium | High |
| **Financial Capital** | | | |
| Dependency on Retirement | High | Medium | High |
| Dependency on Employment Salary | High | Medium | High |
| Trade | High | High | High |

- Human capital (i.e. the amount and quality of knowledge and labor available in a household)
- Natural capital (i.e. the quality and quantity of natural resources, ranging from fisheries to air quality)
- Financial capital (i.e. savings and regular inflows of money)
- Physical capital (i.e. the infrastructure, tools, and equipment used for increasing productivity)
- Social capital (i.e. social resources, including networks for cooperation, mutual trust, and support)

The shape of the web net is used to show schematically the variation in people's access to assets. The idea is that the centre point of the net, where the lines meet, represents zero access to assets while the outer perimeter represents maximum access to assets. On this basis different shaped web nets can be drawn for different communities or social groups within communities.

A livelihood sensitivity matrix can be developed for assessing how assets, activities and livelihood types are sensitive to different exposures. The livelihood assets can also be used to assess the sensitivity component of the community's vulnerability to climate change as shown in Table 3, example from Lebanon.

### Tool Outputs

The main outputs from this assessment can be summarized as follows:

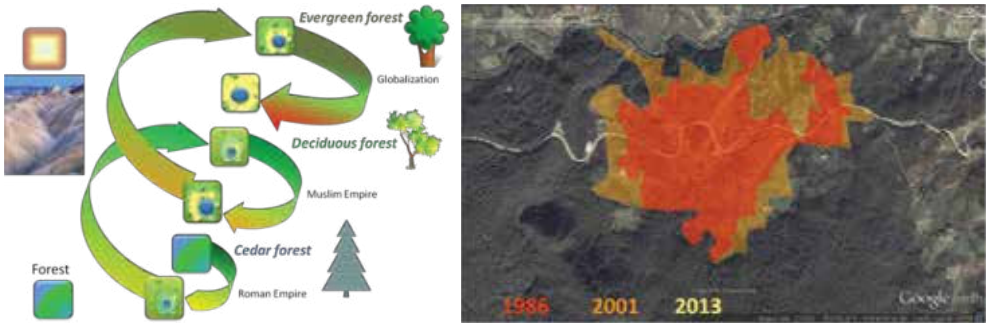
1. A detailed list of the available system assets and the main factors (institutional, cultural, legal, etc) influencing (positively or negatively) access to resources.
2. List of the main stress factors that may influence system's vulnerability and adaptive capacity.

### Time series analysis and modelling

Analyses of the indirect climate change vulnerability consider human alterations to characteristic patterns and processes of ecosystems. These analyses also include a temporal dimension, considering both legacies of past land use along with current conditions. Some factors that influence future water supply and demand are more predictable (e.g. population increase) than others (e.g. climate change).

**Time series** analysis can be used to predict rates of change or the probability of future events based on an analysis of past trends and events.

**Figure 7: System description and spatio temporal dynamics in the Oued El Kebir watershed, Morocco: historic forest evolution and trend in agricultural extension**



Time series analysis is an important tool that can be used to support and improve scenario building, strategy development and planning.

**Models** can be hugely complex or they can be very simple. Complex models are often characterised by the fact that they take a long time to develop, are based on complicated maths, require a lot of input data and can only be run on powerful computers. In contrast, a simple model can be set up quickly by someone with a basic knowledge of maths using, for example, spreadsheet software and readily available information.

In the climate change adaptation context, a model is a mathematical representation of a dynamic system or process which may be biophysical, societal or – as in the case of a watershed – some combination of the two. A model comprises a number of variables which are defined to represent the inputs, outputs and internal states of the system or process, and a set of equations and inequalities describing interactions between these variables.

If a model is to be used to make predictions concerning the future behaviour of a system or individual variables that are part of that system, then it must provide a representation of the system within acceptable levels of uncertainty. Models invariably simplify systems and inevitably prove inadequate in some respects. Moreover, almost all models are based to some extent on empirical relationships and their accuracy is dependent on the quality of information that was used to derive the relationship.

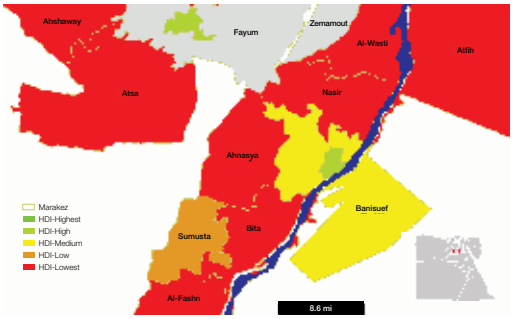
### Vulnerability Mapping Tool

The tool was used to identify and map the areas that are most vulnerable to climate change impacts, especially the populated areas. It was realized by SEARCH partners that A vulnerability mapping is very useful in providing information that can lead to develop a resilience strategy and adaptation plans for the most affected population and hence to reduce risk. It can also be a useful tool to better inform decision-makers and the public about areas of potential risk. Vulnerability mapping includes gathering time series data (both historic and recent) on various aspects of the study area at national and sub-national level. Gathered data may include, but not limited to geographic, socio-economic topographic, population densities, housing conditions, per capita GDP, land use/ land cover, poverty index, climate variations, historical disasters including wind storms, floods, landslides, droughts, sea level rise, etc.

Figure 8, shows an example from Egypt of a map on Human Development Index (HDI) layer for Beni-Suef District. The HDI is a composite statistic of life expectancy, education, and income indices used to rank areas into tiers of human development as one layer of the vulnerability. The vulnerability data was categorized in three categories, namely exposure, sensitivity, and adaptive capacity. Data were then overlaid in a customized on-line geographic Information System application to calculate the most vulnerable areas according to the IPCC criteria and definition identified.

It can be noticed from the map that areas marked with red colour shows the lowest HDI ranked areas.

**Figure 8: Vulnerability Map of Egypt**



#### 2.8.2.4 The Challenge

The main challenge of the assessment phase is to develop a common information base that is acceptable to all the stakeholders. Without good quality information, stakeholder dialogue is uninformed and stakeholders have no basis to challenge factually incorrect and biased positions. Effective planning is near to impossible if stakeholders are working with their own different information.

Important challenges of this phase include establishing systems of managing climate change and water-related information that make information freely accessible to stakeholders and reaching a common understanding amongst all of the key political and institutional processes that determine climate change adaptation decision-making. Promoting frank stakeholder dialogue on factors that influence adaptation but are ignored because they are too sensitive (e.g. corruption, political interference) is also critical. Dispelling myths and misconceptions on the causes, scale and severity, of climate change and water-related problems can be hard to achieve but is nonetheless necessary. The capacity and confidence of local level stakeholders should be built, so that they can engage effectively in stakeholder dialogue on complex topics related to climate change vulnerabilities and adaptation strategies.

### 2.8.3 Adaptation Strategy Development

| | |
|---|---|
| **Step 3** Adaptation Strategy Development | 1. Analysis and Refinement of Vision and Scenario (workshop)<br>2. Scenario Building (workshop)<br>3. Finalization of Detailed Strategy (workshop) |

#### 2.8.3.1 Context

A strategy is a medium- to long-term planning framework through which specific adaptation policies and measures may be chosen and subsequently implemented. Over time, an effective strategy leads to achievement of the vision. As the third phase of the PPC, the aim of the strategising phase is for stakeholders to decide on a broad range of practical actions that can be taken to achieve their vision under a range of possible future scenarios.

The objectives of the strategising phase are for stakeholders to:

- Reach consensus on a comprehensive resilience vision and a set of scenarios against which strategies to achieve the vision can be assessed;
- Use the information from the assessing phase to evaluate the viability, risks and potential negative trade-offs associated with the vision and strategies;
- Reach consensus on a single preferred strategy to be used in the planning phase.

#### 2.8.3.2 The Outputs

The main outputs from the strategising phase are likely to include:

- A detailed resilience vision that has the support of all stakeholders, is consistent with national and regional adaptation policies and recognises biophysical societal constraints on water supply and demand;
- A set of narrative scenarios based on important and uncertain factors that affect watershed resilience but are outside of the control of key stakeholders;
- A strategy or set of adaptation strategies for achieving the vision, with a high level of stakeholder ownership and able to be used as the basis for detailed planning;
- Overall for phase 1 to 3, a local adaptation strategy document for the area of interest, consisting of a vision, key data from assessments, scenarios and an agreed strategy.

### 2.8.3.3 Strategising Tools

The main tools and approaches used to develop the adaptation strategies can be summarized as follows:

#### Analysis and Refinement of Vision and Scenarios (Workshop)

A workshop is organized for all key stakeholders to refine and analyse the adopted initial vision in the light of the information obtained from the situation analysis and the updated problem tree defined under step 1 of this toolkit.

After the vision is refined and the main problems influencing the realization of the vision is listed, these problems are then categorized in terms of their importance and uncertainty of occurrence in influencing the realization of the vision using the scenario matrix shown in figure 9 (example below from Palestine).

This categorization will then be used to develop the scenarios. Usually, the worst case scenarios are considered for further analysis in order to make sure that the vision is realized under these difficult scenarios. The factors located under the more uncertain and more important category are considered the worst case scenarios. Combination of these factors will be used to define scenarios as explained below.

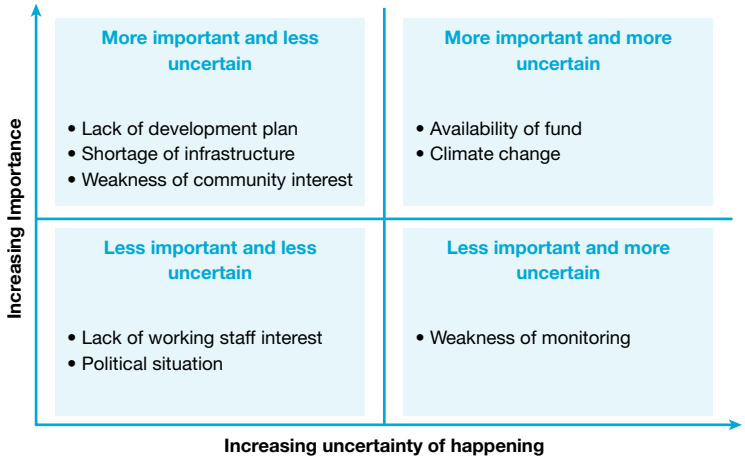
#### Scenario Building

A scenario is a consistent description of a possible future situation, a story about the way the world might turn out tomorrow. Developing a set of narrative scenarios helps to identify possible pathways (strategies) towards a shared vision of the future, based on current trends together with knowledge of the sources of greatest uncertainty in those trends. A scenario is not a specific forecast of the future, but a plausible description of what might happen. It is a story based on analysis and understanding of current historic trends and events.

Scenario building will assist stakeholders to:

- generate a range of plausible descriptions of the conditions that might exist at some time in the future.

**Figure 9: Categorizing factors influencing the realization of vision**



- improve strategy development capacity by making stakeholders more aware of uncertainties, risks and constraints.
- switch mindsets from only one possible future towards thinking about a number of possible alternatives.

This results in development of strategies that take better account of and mitigate future uncertainty and risk. The most robust strategies achieve the vision under most scenarios. However, under some scenarios there is no realistic strategy and the vision must be adjusted (see figure 9 below).

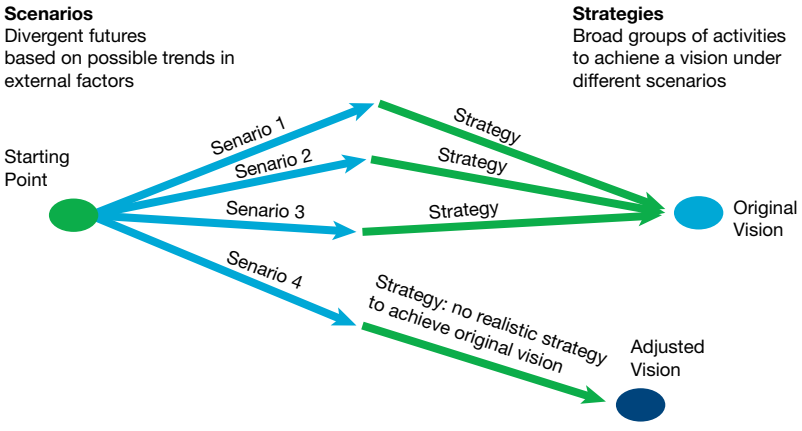
Usually, a good practice in defining scenarios is to use a combination of factors placed under the more uncertain and more important segment of categorization chart defined under 2.8.3.3 above by the stakeholders. To avoid making large number of scenarios, stakeholders are advised to minimize the factors that should be placed under this category or if the factors are too many then to choose the most critical two - three factors to derive the possible scenarios that can result from their combination. Based on probability theory, the possible scenarios that can be derived from 2 of 3 factors will be in the range of 4 - 9 scenarios. . In the above example shown in figure 9, the number of scenarios that can be considered are four and the most critical ones that can be considered to develop detailed strategies under them are those highlighted:

- Funding is not available and high climate change uncertainty
- Funding is not available and low climate change uncertainty
- Funding available and high climate change uncertainty
- Funding available and low climate change uncertainty

### Tool Output

The output from this tool will be the identification of the scenarios that need to be considered for further analysis and for developing relevant adaptation strategies that will ensure the realization of the vision.

**Figure 10: Scenario Development**



**Finalisation of Detailed Strategy (Workshop)**
A stakeholder workshop is organized to develop a more detailed strategy and to identify a series of adaption measures that will help realize the vision. This should result in a preferred strategy (or a set of adaption strategies) able to achieve the vision in the most probable scenario(s), and preferably in all of them (Table 4 shows example from Egypt – excerpt).

At this stage in the strategising phase, stakeholders will have finally reached consensus

**Table 4: Strategies that achieve the vision under various scenarios, case from Egypt**

| Activities | Scenarios | | |
|---|---|---|---|
| | S1 | S2 | S3 |
| Mobilizing community resources to adapt to climate change. | √ | | √ |
| Involving private sector in the activities to adapt to climate change. | √ | | √ |
| Establishing partnerships with donors in order to fund projects that strengthen farmers to adapt to climate change. | √ | | √ |
| Projects to manage solid and liquid wastes in all villages of the district. | | √ | √ |
| Producing bio fertilizers using agricultural wastes. | √ | √ | √ |
| Follow the Crop rotation (which organizes the process of cultivating). | √ | √ | √ |
| Provision of crop varieties adapt to the effects of climate change (high temperature and water shortage). | √ | √ | √ |
| Preventing encroachment on agricultural land. | √ | √ | √ |
| Laser leveling. | √ | √ | √ |
| Developing new varieties of crops, high production and provision of these crops in the agricultural cooperative associations. | √ | √ | √ |
| Soil improving. | √ | √ | √ |
| Windbreaks in the areas near desert. | √ | √ | √ |
| Apply balanced fertilizing programs to face climate change impacts. | √ | √ | √ |
| Distribution of accredited seeds and crops. | √ | √ | √ |
| Recycling of agricultural wastes. | √ | √ | √ |
| Cultivating Moringa tree rather than decorative plants in order to benefit from the economic, nutrition and health value and rationalize water consumption. | √ | √ | √ |
| Raising awareness and train farmers on adapt to climate change, through farm management, appropriate cultivation time, agricultural processes including plowing, irrigating, fertilizing and combat pests and diseases. | √ | √ | √ |
| NGOs do follow-up and monitoring of climate change and the exchange of data with the stakeholders in order to be analyzed and develop solutions. | √ | √ | √ |

on a comprehensive resilience vision and, after analysis against a set of scenarios, a certain resilience strategy will then be followed for implementing the actions that will likely improve resilience. Different strategies can be developed and designed under each component of the resilience framework, namely diversity, sustainable infrastructure and technology, adaptive governance and self-organisation and learning. Together, these components build the resilience strategy, i.e. a strategy that aims at reducing the vulnerability and increasing the adaptive capacity of the area.

### Tool Output

The output will be a list of strategies that will be adopted and the list of necessary actions that can be implemented to ensure the realization of system resilience under the scenarios considered.

### 2.8.3.4 The challenge

The main challenge in developing adaption strategies is to take full account of the inevitable uncertainty that relates to any decision. Water resources and demand come with inherent uncertainty and variability and this has long-term implications. To ensure that activities in the strategising phase develop into a high quality process and outputs, it is essential that information that was collected during the assessment phase is widely available in appropriate formats. Information prepared during the assessment phase should be circulated well in advance of the first strategising activities. In preparing for this phase, ensure once again that all stakeholders are aware of what is happening, and understand the crucial nature of this phase in identifying a medium-term strategy that has direct implications for them. Special attention is required to ensure that the poorest and most marginalised members of the community are involved.

Strategising is a complex process that requires active facilitation to achieve good results.

Participants should be supported in working through the logic of their suggestions and in re-formulating them if necessary. If advanced tools such as modelling and cost-benefit analysis are used, this should not be done during workshops, and the results should be presented in an appropriate format.

### 2.8.4 Planning

| | |
|---|---|
| **Step 4**<br>Planning | 1. Planning Workshop.<br>2. Proioritization and Ranking.<br>3. Action Plan Development |

### 2.8.4.1 Context

A plan is a coherent set of decisions relating to the proper use of resources that leads to achievement of objectives. A plan includes an explicit statement of the methods to be used, costs, responsibilities, schedules of activities and agreed targets. Planning is a final preparatory step for turning a strategy into reality, preparing in detail for implementation. The first step in the planning phase is to develop a list of activities related to the chosen strategy and to identify stakeholders for each activity.

The aim of the planning phase is to select priority activities from the agreed strategy, to develop high quality plans for implementing them, and to ensure sufficient funding for their implementation.

The objectives of the planning phase are:

- Come to an agreed prioritisation and scheduling of the different activities that make up the strategy, and that taken together will achieve the resilience vision;
- Develop action plans and identify and secure funding;
- Maintain a sense of stakeholder ownership for the larger process while focussing on specific actions.

#### 2.8.4.2 The Outputs

The main outputs from the planning phase are likely to include:

- Detailed work and financial plans for specific activities within the resilience strategy;
- Agreement on the roles and responsibilities of stakeholders and other actors;
- Agreement on institutional arrangements for managing and maintaining new infrastructure.

#### 2.8.4.3 Planning Tools

The methodology for carrying out the planning activities in this phase is proposed below:

#### Planning workshop(s)

Stakeholder Planning workshops are organized to identify the main interventions and their implementation tools needed to address the problems identified under the preferred resilience plan. Stakeholders are asked to develop full list of projects and relevant stakeholders who might be involved or might influence the project implementation as shown in Table 5, example from Jordan. This list will be used as the basis for prioritization and ranking of the most relevant projects as discussed in 4.2.2 below.

#### Prioritisation and Ranking

Choice and decision-making lie at the heart of adaptive governance. Maintaining confidence in how choices are made – particularly in the objectivity and transparency of decision making – is critical to maintaining high levels of stakeholder buy-in. Given the inherently political nature of climate change adaptation, tools and methods that help stakeholders make the process clearer and less subjective can be very useful in increasing transparency and acceptability. Some useful tools may include:

#### 1. Ranking Tool

The ranking tool is a relatively simple yet powerful method for making choices, particularly between a range of possible options emerging, for example, from a strategy development process. A ranking exercise can range from very simple to quite complex. While offering the potential to make decisions more open and transparent, ranking (like other tools) is of course still open to manipulation, particularly by the person facilitating the exercise or by dominating members of a group. Furthermore, deciding how to prioritize and separate the high priority projects from lower priority projects can be daunting. Since emotions often run high when making these kinds of decisions, a structured and objective approach can be helpful in achieving consensus among various stakeholders.

#### 2. Prioritization Matrix

Using a prioritization matrix is a proven technique for making tough decisions in an objective way. A prioritization matrix is a simple tool that provides a way to sort a diverse set of items into an order of importance. It also identifies their relative importance by deriving a numerical value for the priority of each item. The matrix provides a means for ranking projects (or project requests) based on criteria that are determined to be important. This enables a facilitation team and stakeholder group to see clearly which projects are the most important to focus on first, and which, if any, could be put on hold or discontinued.

A prioritization matrix supports structured decision-making in the following ways:

- Helps prioritize complex or unclear issues when there are multiple criteria for determining importance;
- Provides a quick and easy, yet consistent, method for evaluating options;
- Takes some of the emotion out of the process;
- Quantifies the decision with numeric rankings;

**Table 5: Proposed interventions, tools for their implementation and stakeholders involved, case from Jordan**

| Sustainable Technical interventions | Implementation tools | Relevant Stakeholder |
|---|---|---|
| Connect houses to the sewage network to prevent pollution of the ground water | Waste water management project | Ministry of Water and Irrigation, Water Authority |
| Monitoring system for the wells that are used by factories, farms, and quarries | Monitoring Program for industrial and agricultural water | Ministry of Water and Irrigation (MOWI), Water Authority, Ministry of Environment (MOEnv), Ministry of health (MOH) |
| Grey water reuse (mainly kitchen) | Supported and funded project | MOEnv, MOH, JOHUD, Royal Scientific Society (RSS) |
| Rehabilitation of the Local springs | Springs development project | Ministry of Agriculture, Ministry of Water and Irrigation, Ministry of Interior |
| Improve Soil properties and compost fertilizers | Prepare local projects | Ministry of Agriculture, Universities, Public and private research centres, Local community societies, NGOs |
| Use of modern irrigation system | Through projects | Ministry of Agriculture, Universities Public and private research centres, NGOs |
| Rain water harvesting | Cisterns drilling or building cement reservoir to harvest rainwater | Water Authority, CBOs through revolving funds' system, Ministry of Agriculture, Agricultural Credit Corporation(ACC) Universities |
| Introducing animal production system (fish , bees, goat) | Community Revolving funds | Agricultural Credit Corporation, Ministry of planning, Donors |
| Use of green houses | Community Revolving funds | ACC, Ministry of Agriculture, Donors |
| Providing farmers with agricultural tools to decrease the financial cost (Agr.inputs ) | Community Revolving funds | ACC, MOA, Donors |

**Table 5: (continued)**

| Sustainable Technical interventions | Implementation tools | Relevant Stakeholder |
|---|---|---|
| Introducing food processing and an appropriate marketing system | Community Revolving funds | CBOs, Donors |
| Minimizing the pollution that is caused by the sewage pipe | Zarqa river basin rehabilitation project | Water Authority and Donors |
| Pavement of the local roads to minimize air pollution | Internal and external roads pavement project | Ministry of municipalities and public works, Donors |
| Make use of alternative renewable energy resources (solar water heaters) | Community Revolving funds | Ministry of Energy , local CBOs, Donors |
| Eradication of insects , rodents, and wild dogs | Insect and rodents eradication campaigns | Municipalities |
| Establish local society that represents the local community | Establishment of cooperative and voluntary societies | Charity societies union, Ministry of Social Development |
| Establish circulated financial system to create new job opportunities | Community Revolving funds | Ministry of Planning, Cooperative Organizations, Donors |
| Establishing gardens and planting trees on river banks | Plantation Projects | Ministry of Municipalities, Ministry of Environment, Donors |

- Is adaptable for many priority-setting needs (projects, services, personal, etc.);
- When used with a group of stakeholders, it facilitates reaching agreement on priorities and key issues;
- Establishes a platform for conversations about what is important.

Creating and using a prioritization matrix involves four simple steps:

### 1. Determine your criteria and rating scale.

There are two components involved in rating the projects on your "to do" list: criteria for assessing importance, and a rating scale.

The first step is to determine the factors you will use to assess the importance of each project. Choose factors that will clearly differentiate important from unimportant projects – these are your criteria. A group of 6-12 criteria is typical. Example criteria might include the cost and likely impact of interventions, the impacts of interventions on the most vulnerable and least resilient, etc.

Then, for each criteria, establish a rating scale (e.g., 1 to 5, where 1 is the lowest and 5 is the highest ) to use in assessing how well a particular project satisfies that criteria. To ensure consistent use of the rating scale, provide some details to define how the criteria should be applied.

### 2. Create the matrix.

List your criteria down the left column and the weight and names of potential projects across the top, as shown in the table.

| Weight | | | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Criteria | | Rating Scale | Project1 | Project2 | Project3 | Project4 |
| Social | Job creation | 1 | | | | |
| | Health impact | | | | | |
| Economical | Expected Revenue | 2 | | | | |
| | Cost | | | | | |
| Environmental | Pollution | 3 | | | | |
| | Preserving | 4 | | | | |
| Technical | Technology | 5 | | | | |

### 3. Work in teams to score projects.

Review each project and rate the project on each of the criteria. If participant numbers allow, it is helpful to work in teams and to arrange for each project to be evaluated by two different teams. Benefits of this approach include:

- Working in teams can produce more objective results, since differing perspectives can be considered during the rating process;
- When there are many projects to evaluate, dividing them among multiple teams can speed up the task;
- Insights into how clearly your criteria are defined can be gained if each project is scored by two teams.

It is always a good idea to go through the process with the whole group for a couple of projects to help establish a common understanding of the process and to ensure a good comprehension of the criteria and their meaning. Be sure to also provide resources and links to enable team members to make an informed evaluation.

### 4. Discuss results and prioritize your list.

After projects have been scored, it's time to have a general discussion to compare notes on results and develop a master list of prioritized projects that everyone agrees upon. Note that the rating scores are an excellent way to begin discussions, yet still allow room for adjustment as needed. Remember that the prioritization matrix itself is just a tool, and the people scoring projects are using their best judgment. Upon review, the whole group may decide that a project needs to move up or down in priority, despite the score it received. These types of adjustments are expected and help fine-tune the priority list.

As a final step, a team may decide to establish groupings or clusters of projects based on natural breaks in scoring, for example high, medium and low priority as shown in Table 6, example from Lebanon.

**Table 6: Ranking of projects in terms of priorities, case from Lebanon**

| Project | Need of local communities | Constraints | Budget estimate (USD) | Source of financing | Duration | Responsibility | Priority |
|---|---|---|---|---|---|---|---|
| Rehabilitation of old water tanks and installation and/or maintenance of water networks for irrigation in the Aydamoun village | High | Availability of funds from municipal contribution<br>Unstable security situation in the overall region | 28,000 | SEARCH | 6 months | SPNL | 1 |
| Promote alternative income generating activities to upgrade livelihoods in Aydamoun | Medium | Limited awareness and knowledge of the locals<br>Unstable security situation in the overall region<br>Availability of funds to provide training, activities and utensils/tools | 20,000 | Fundraising | 2 years | SPNL | 2 |
| Develop a rotational grazing program for Aydamoun and Qobayat forests | Medium | Persistence of ingrained (ancestral) unsustainable overgrazing practices<br>Rivalries between shepherds<br>Absence of adequate grazing infrastructure | 35,000 | Fundraising | 1 year | Mada | 3 |
| Develop and implement a forest management plan for Aydamoun and Qobayat to control forest fire events | Low | Ingrained unsustainable overgrazing habits<br>Landownership concern<br>Lack of technical forestry experts specialized in traditional sylviculture practices<br>Unstable political situation and conflicts amongst stakeholders | 25,000 | Fundraising | 18 months | Mada | 4 |

### Action Plan Development

Following the prioritisation and planning workshops, a smaller group works to develop action plans and funding proposals. This group should be small enough to work effectively but at the same time remain representative. Ideally, it should contain members of representative organisations such as CBOs, as well as stakeholders and technical support staff where required.

During the preparation of the detailed plans, it is important to identify and address sustainability issues, particularly relating to capacity development. It is also important to ensure that there is transparency with regard to the financial plans and tendering processes. All stakeholders should have access to financial information and to cost-benefit value-for-money analysis. If relevant, steps should also be taken at this stage to minimise the likelihood that potential benefits are captured by elites.

### Tool Output

The main output from this tool is that background ideas and materials for detailed plans as well as detailed project descriptions is developed. These include project-specific goals, objectives, activities, expected outputs, key stakeholders, roles and responsibilities, budgets and funding requirements.

### 2.8.4.4 The challenge

Planning is particularly challenging because of the level of precision and detail required in making realistic plans that can be implemented. Skills are required for fund-raising and specialist knowledge is needed for project implementation. Moreover, what has been until this point a cohesive process involving all stakeholders starts to cater for specific sub-groups creating relative winners and losers. A key challenge is therefore to maintain the broader process of dialogue while producing high-quality project plans and getting them funded.

Preparation for this step consists primarily of ensuring that there is clarity about the preferred strategy, and that the relevant specialist skills are available for drawing up, costing and evaluating the activities that make up the resilience strategy.

## 2.8.5 Implementation

| | |
|---|---|
| **Step 5**<br>Implementation | 1. Pilot and Demonstration Projects<br>2. Accountability and Rights Analysis |

### 2.8.5.1 Context

Implementation entails the execution of plans while actions are monitored for quality control, and dialogue and information sharing with stakeholders is maintained. It is where visions and plans developed that have been refined during previous phases should begin to become a reality. Implementation is the phase where plans are put into effect, where key infrastructure is strengthened and where new ways of working are introduced through pilot and demonstration projects. The aim is to achieve the objectives of the resilience strategy, with a focus on effectiveness, cost-efficiency and quality.

The objectives of the implementation phase are:

- To manage the implementation of the activities identified and planned for in previous phases in an effective, cost-efficient and high-quality way;
- To ensure that new infrastructure, new institutions and new sources of livelihoods are sustainable in every respect;
- To ensure that any unforeseen conflicts that might arise during this stage are resolved;
- To ensure transparency with regard to finances;
- To ensure that potential benefits of enhanced resilience are not captured by elites at the expense of vulnerable groups.

### 2.8.5.2 The Outputs

The main outputs from the implementation phase are likely to include:

- Pilot and demonstration projects carried out within budget to a high quality and in accordance with agreed plans;
- Clear agreements and understandings about roles, responsibilities and ownership of projects;
- Results from monitoring and evaluation that support reflection and learning.

### 2.8.5.3 Implementation Tools

A small, representative implementation team should be identified from stakeholders groups directly involved in the work. This group should be small enough to enable effective decision-making, but large enough to ensure that affected stakeholders are kept up to date on progress. This is particularly important in addressing the problems and making remedial decisions.

Activities where stakeholders' involvement is particularly appropriate include:

- Monitoring and evaluation (M&E), quality control and capacity development to ensure sustainability of resilience building;
- Ensuring that relevant outputs of M&E are fed into learning and reflection within the process of achieving the resilience vision;
- Troubleshooting and conflict resolution where necessary;
- Communication and awareness-raising about activities and about the links between adaptation activities and the wider resilience vision.

A process for carrying out the activities in the implementation phase is proposed below:

### Pilot and Demonstration Projects

During the implementation phase, planning is complemented by pilot actions demonstrating results that address local to national priorities. Resilience-specific demonstrations use learning-by-doing to innovate and adapt climate change adaptation actions, tools and technologies. Concrete results and lessons learned are fed back in the next phase, to build confidence and anchor basin and national policies and planning in knowledge of what works and what does not work.

### Accountability and rights analysis

The principle of accountability is an emerging issue and lies at the heart of genuine partnership among duty bearers (government agencies) and right holders (citizens,.) in climate change adaptation. . Accountability works both ways where duty bearers should be primarily accountable toward those who are vulnerable to climate change impacts and affected by them while the right holders, mainly citizens, are accountable toward sustainable use of resources and protecting the overall interest of the system which they are part of.

Many organisations working in international aid and development are now committing themselves to a 'rights-based' approach. This tends to encompass human rights (i.e. those that are generally accepted through international agreements) and other rights that an agency believes should be accepted as human rights. In such contexts, the language of rights may be used vaguely, with a risk of causing confusion. Security against disasters, that add up to a large part of climate change impacts, is not generally regarded as a right although it is addressed in some international codes, usually indirectly. The idea of a 'right to safety' is being discussed in some circles.

In the context of this toolkit, the notion of "accountability" is used in the sense of taking responsibility for one's own behaviour and actions,

at the same time being able to account for the effects of such behaviour and actions to others.[18] It has to be emphasized that accountability, just as other measures for natural resource management, has to be defined at all levels from local farmers and target groups up to national governments and donor agencies. In the implementation phase of the PPC, the emphasis is given to accountability of local people for resilience strategy activities, towards themselves and their community, as well as to accountability of intermediate level organizations and their staff to programmes and approaches that enable local people to assume their responsibilities toward these resilience-building activities.

The term denotes first of all an intrinsic and personal value and it is certainly not restricted to its mere financial meaning as in book-keeping. Accountability is important when assessing the degree that local people in communities (groups and individuals) are willing and able to participate responsibly for the management of their local natural environment.

Ownership, and as a consequence accountability, will only be assumed by individuals or local community groups when these perceive the benefits, have access and control over resources, have the knowledge and capacities to implement them, have the organizational strength to realize these activities as well as the claim-making power to make sure that these conditions can be fulfilled or maintained. In-depth social analysis is needed to assess if such conditions are in place (or not).

The accountability and rights analysis is done by looking at the necessary pre-conditions mentioned above and represented in Table 7 below. The table specifically address gender and different wealth and power groups to ensure that also the most vulnerable have their equitable share in resilience building activities and can exercise control and ownership over it.

This is done to analyse the extent to which people as individuals or groups take responsibility for what they do themselves and the extent to which they are willing to account these acts to other and themselves. This can be measured by specific actions and measures stakeholders and partners take to roll out the resilience strategy and by the formal and informal rules and regulations that people agree and abide to which set the boundary for the interventions.

### Tool Output

The main output from the accountability analysis is to develop the institutional and legal enabling environment to empower people from participating responsibly in the management and use of local natural resources in the face of climate change.

One method is to identify proxy indicators for the extent that local people can assume accountability for and ownership of sustainable adaptation measures. The results of such assessment provide important clues as to why ownership is taken or not, and give pointers for priority actions and advocacy.

### 2.8.5.4 The challenge

Implementation brings a new set of challenges to ensure high-quality work, transparent financial arrangements, effective capacity development and all the aspects of good project management. Day-to-day control of implementation is likely to be with specialist agencies or companies as most of the work will be carried out by community leaders and government staff of the associated key stakeholders. The role of the facilitation team is to ensure that stakeholder involvement and a focus on the vulnerable continue (so that benefits are

18 Laban, P., 1994. Accountability, an indispensable condition for sustainable natural resource management. In: Proceedings International Symposium on Systems-oriented Research in Agriculture and Rural Development. CIRAD-SAR, Montpellier.

not captured by elites), and that lessons learned during implementation are incorporated into the Participatory Planning Cycle.

A number of actions need to be taken before work can begin to implement the detailed action plan. These include:

- Scheduling activities and identifying potential bottlenecks;

**Table 7: Accountability and Rights analysis matrix**

| Pre-Conditions for Success or Failure of accountability at the community level | Ok | Mid | Slight | Low |
|---|---|---|---|---|
| Awareness / Capacities & knowledge | Local community has capacity & skills to adapt to climate change | People are aware of problem & have the ability to rank priorities | Local community is aware of the available resources with capacities to identify problems | Local community is aware and have knowledge of their natural situation |
| Benefits | Take into consideration the needs of various social groups | Understanding the different interest & rights of various social groups "farmers, women, poor" | Address rights and interest of others in the community | Identify individual interest (benefits, revenue) regarding natural resources |
| Access Rights and Control | Group accountability to government authorities for respecting their rights toward natural resources | Local community accountability towards respect for the right of different social groups "farmers, women poor" | Rights and roles of different community groups are addressed | Dominant groups have access according to rights |
| Community Leadership | Responsible leadership activities accepted by local community | Organized groups can promote voluntary work & advocate rights | Identify Potential Groups to promote a collective work "voluntary work" | Address individual leaders among local community |
| Group process | Organized groups have the ability and capacity to claim benefits | Consider social diversity within organized groups | Identify various social group in forming organized groups | Organized group include dominant sector only |

- Ensuring that mechanisms exist to handle unforeseen problems or conflicts;
- Establishing a monitoring and evaluation (M&E) framework, linked to the reflecting phase.

The facilitation team is unlikely to lead these activities, although it should remain involved and support the overall process.

### 2.8.6 Reflection

| | |
|---|---|
| **Step 6** Reflection | 1. Multilevel, multi stakeholder Platform Creation.<br>2. Process Documentation<br>3. Information and Knowledge management including communication.<br>4. M&E and feed back |

#### 2.8.6.1 Context

Reflection refers to the practice of evaluating progress during and after all the stages of the planning cycle. Reflection is essential for benchmarking climate change adaptation measures that are successful, and eliminating those that are not. In particular, reflection should be conducted with a view towards strengthening policy and legal frameworks at the national and sub-national levels. It involves monitoring and evaluating results about the stage key stakeholders are in the process of adaptation, and where they want to go (i.e. making adjustments, or re-visioning). In this way, reflection prepares for the future by providing critical information required to make adjustments in order to stay on course towards building resilience.

Monitoring should be used to validate decisions made during the planning phase. It is particularly important to regularly monitor factors related to chosen scenarios to identify whether they are indeed most likely. If validated, the existing strategy can continue to be followed. On the other hand, where factors point to an alternative scenario it may be necessary to return to and update the strategy. Identification of critical environmental factors beyond the immediate influence of the stakeholders, and of key trends that are taken into consideration during the development of scenario also need to be monitored with a view towards re-validating or updating the various scenarios, if necessary.

The aim of the reflecting phase is to take time out of processes for explicit learning and sharing; in other words, to build an effective process of continuous reflection and learning from experience into the participatory planning cycle and hence into the day to day application of climate change adaptation.

The objectives of the reflection phase are:

- To build capacity for reflection and learning into stakeholders platforms, and into interactions between platforms at local and intermediate levels;
- To institute process documentation activities to support learning;
- To create a framework for information and knowledge management, and for communications that support learning.

#### 2.8.6.2 The Outputs

The main outputs from the reflection phase are likely to include:

- Active participation of stakeholders in learning and reflection;
- A clear mechanism for information exchange between key stakeholders is developed;
- Monitoring framework showing progress towards achievement of the resilience vision, including quantitative and qualitative indicators is developed.
- A process documentation folder is created

### 2.8.6.3 Reflection Tools

Allowing space for structured and unstructured learning throughout the whole participatory planning cycle is essential. This can be created in the form of brief reflection periods at the end of each major activity (workshops, etc.), aided by process documentation highlighting the changes and exploring some of the reasons behind them.

Learning should be supported by key indicators as discussed in the previous section. However, care should be taken to ensure that monitoring is light and appropriate to the needs of the local stakeholders, rather than designed to meet the needs of outside agencies.

Sharing and comparing experiences between practitioners or stakeholders with similar interests and activities (for example between village CBOs) can be a powerful tool for reflection and can be supported by benchmarking. In the same time sharing experiences and structured learning between practitioners and believers with proper feed back to the dreamers (i.e. village and governorate to national level) is also essential. This needs to be mainstreamed into the wider process of communication and information flow between platforms at different levels.

Te ensure a better reflections on lessons learnt and best practice in integrating climate change resilience into the national, sub-national and local plans, it is important that those who take part in learning, reflecting and feedback activities have a sufficiently powerful representative functions within the stakeholder institution from which they are drawn, so that results and conclusions are fed back by practitioners and acted on by believers and adopted by dreamers to lead the change in resilience-specific climate change adaptation. In the absence of such communication process, learning is likely to remain at the level of individuals only and will not bring in any benefit for the entire system at stake.

A process for carrying out the activities in the reflection phase is proposed below:

#### Multi-level, multi-stakeholder platform creation

The first step in the reflection phase is to develop committees at the national level (steering/advisory committee), at the governorate/watershed level (the pilot projects' steering committees) and at the local community level (the management committee in each targeted community) to establish an effective and sustainable communication platform among all relevant stakeholders (i.e. government agencies, NGOs and end users) at the same level or among different levels (national, watershed/ governorate and community). This is therefore to create a base for a sustainable and institutionalized dialogue to share the experiences to reach concerted action concerning related problems and collective planning as well as establishing clear outlines for future cooperation and coordination.

The mix of practitioners and believers within the setup of national steering committees can be instrumental in the advocacy and scaling-up, of the resilience approaches developed and tested, to other governorates and at the national level. For this scaling up process to be effective, the necessary institutional and policy arrangements should be in place to enable the feedback to relevant planning bodies (dreamers) and the dissemination of results at the national level. Furthermore, institutional frameworks at practitioners' levels in the pilot watersheds/communities can be strengthened by building the capacities of the watershed/local committees' members and CBO members to adopt the approach described in this Toolkit and implement the resilience strategies in cooperation with other stakeholders.

### Process documentation

Many project, programmes and adaptation processes accumulate documentation that focuses on factual and measurable outcomes and accentuates the positive impacts of an intervention for an outside audience. By contrast, process documentation records and supports the process itself, like this very Toolkit. In particular, it looks at the change process through the eyes of those involved in it, reflecting their diverging points of view. It is not about "selling" a success story, but about monitoring a process of change and development. Process documentation is more about capturing the "how" of implementation processes than the "what" of process impact.

In particular, it aims at capturing the perceptions of stakeholders, and the changes in these perceptions as the process develops. Process documentation is particularly necessary in projects that have aspirations for social change such as resilience building. Furthermore, perceptions of different stakeholders are valued equally, from farmers and women groups to irrigation scheme managers and crop scientists. This information is then used to support reflection and learning so as to improve the process. In essence, it helps those looking at the process from outside to understand the changes in knowledge, attitudes, and behaviours that were necessary to achieve the results.

### Information and knowledge management including communications

In order to disseminate results and lessons from piloting and testing the locally prioritized actions for climate change resilience, it is important to identify and develop information and knowledge management processes and procedures, including good and frequent communication between levels. This includes promoting application of project results related to the development and adaptation strategies of the various countries at local to national to sub-national levels, including relevant sector strategies. Communication links with networks should be established to exchange information and lessons learnt and to share documented processes, learning lessons and valuable knowledge at all levels in the region.

The work done would be lost without any serious efforts to document and publish results. In that sense, this Toolkit captures and brings to broader audience the learning, insights, and new knowledge acquired in the course of the SEARCH project as part of a dissemination strategy. Dissemination Strategy can be devised to formalize how information and outcomes are disseminated and to whom. It will therefore identify dissemination material and relevant stakeholders, list routes of communication and media, and provide a framework and schedule for dissemination. This is to ensure a continued and formalized flow of information to stakeholders in order to increase and maintain stakeholder interest and awareness of the projects in the region.

### M&E and Feedback

In the context of this toolkit, monitoring is the process whereby information about adaptation measures in project activities is collected, checked and analysed in order to ensure that they are building resilience as intended and being implemented correctly.

Monitoring is an ongoing process. Evaluation is a more periodic exercise which assesses whether project objectives are being met, often against criteria of effectiveness and efficiency, including whether the attributes of resilience are being strengthened. Monitoring is also the basis of learning and adaptation as lessons learned from effective monitoring allow future changes to be identified. Monitoring can collect both hard data (whether or not livelihoods are more diverse

or sustainable infrastructure is working) and/or qualitative data (whether people are more knowledgeable about climate change and its impacts or behaviour and governance structures are changing).

Monitoring has a crucial role in the PPC. When stakeholders take certain actions to achieve their resilience vision, it is essential to monitor and assess the consequences. Are the desired impacts of enhanced resilience being achieved? If so, can the approach be replicated elsewhere? If not, can remedial actions be taken – or should the activity be stopped?

The identification of the right indicators is central to monitoring whether a resilience strategy activity is having a desired effect. A monitoring framework should be designed for each significant action aimed at building resilience to allow progress and success to be monitored, but also comparison across countries and watersheds. Some potential common indicators focussing on the attributes of adaptive capacity are the following:

- Percentage of local budget going towards projects
- Percentage of governmental contribution to projects
- Land ownership and quality
- Integrated land use planning
- Technical experience available
- Percentage of natural infrastructure
- Use of local (traditional) knowledge
- Number and types of CBOs (Presence & Representation)
- Facilitation and Leadership
- Cooperation between local organisations (Equity)
- Communication between local and national levels (Legitimacy)
- Cross-scale institutions
- Accountability
- Coordination between governmental organisations (Overlapping responsibilities)
- Support of community education
- Learning from crises

#### 2.8.6.4 The challenge

The challenge is to build a habit of reflection, learning and adaptation into all activities in the participatory planning cycle. This translates into persuading busy people to take time out from their day to day tasks to reflect in structured way based upon their experiences, and ensuring that this reflection leads to real changes in how things are done.

Monitoring and learning frameworks are always seen as a “good idea” but are often ignored and downgraded in importance as resources and focus shifts to “doing things”. The most important issue is therefore to create a desire for learning and a feeling among stakeholders that, by creating mechanisms for learning and sharing lessons, they can improve their own lives – be it as receivers or providers of adaptation measures.

Learning is an important part of the wider empowerment and sustainability agenda set by the resilience framework of this toolkit. Involving poor and marginalised people in this process is particularly challenging as they often have the least time and resources to attend meetings and take part in the necessary processes for reflection and learning.

# 3. SEARCH Resilience Framework

## 3.1. Defining Resilience

The main challenge to answering the question of how resilience can be applied in practice was how to define resilience such that it addresses the complex situation in the MENA region. The intent was to work with stakeholders in demonstration projects to undertake joint learning on how building resilience works in the real world. Therefore, after a number of national and regional workshops, learning sessions and pilot actions organized by partners with the full participation of stakeholders, a definition of resilience was developed that best represents the situation in the region. Following to this extensive work, the definition of resilience that has been adopted is as follows:

**"A watershed system's capacity to absorb, manage, and adapt to social and health, agricultural, and ecological changes (or stressors) while still maintaining its essential structure, feedbacks, and functionality."**

The definition of resilience in SEARCH is based on the definition of resilience developed by the IPCC in 2008, which states the following:

**"The ability of social and ecological system to absorb disturbances while maintaining the same basic structure and functioning. The capacity for self – organization and the capacity to adapt to stress and change".**

However, the logic for choosing the watershed as the geographic unit for developing resilience adaptation plans under SEARCH is the fact that watersheds are a closer reflection of real systems and they are often complex social-ecological systems that reflect natural behaviour, responses and feedbacks under various stressors, including natural stresses(e.g., climate change) as well as human induced, as shown in Figure 11.

## 3.2. Resilience Framework

The adopted climate change resilience framework was adjusted around the original concept developed by the IUCN Global Water Programme.[19] This framework includes four main integrated resilience themes, namely Diversity, Self-organization and adaptive governance, Learning, and Sustainable infrastructure and technology. Four other cross-cutting elements are included, i.e. Participation, Information sharing, Gender and Coordination which are necessary to ensure the well-functioning of the resilience framework as shown in Figure 12.

The four main components of resilience framework can be elaborated further as follows:

- **Diversity** – of the economy, livelihoods and nature. Diverse markets, industry or farming systems, for example, give people the alternatives they need to be adaptive. Biodiversity ensures the availability of ecosystem services needed to buffer climate impacts – such as storage of water in upper-watershed forests – and sustain life and productivity.
- **Sustainable Infrastructure and Technology** – portfolios that combine both engineered and 'natural infrastructure', as well as adaptable and sustainable technologies for their management that reduce vulnerabilities. This includes engineering expertise

19 Smith , Mark , and Stefano Barchiesi. "Environment as infrastructure – Resilience to climate change impacts on water through investments in nature." . IUCN , Web. 1 Jan. 2014. <http://cmsdata.iucn.org/downloads/iucn_environment_as_infrastructure_1.pdf>.

## SEARCH Resilience Framework

**Figure 11: Watershed Social and Ecological Functions and Stressors**

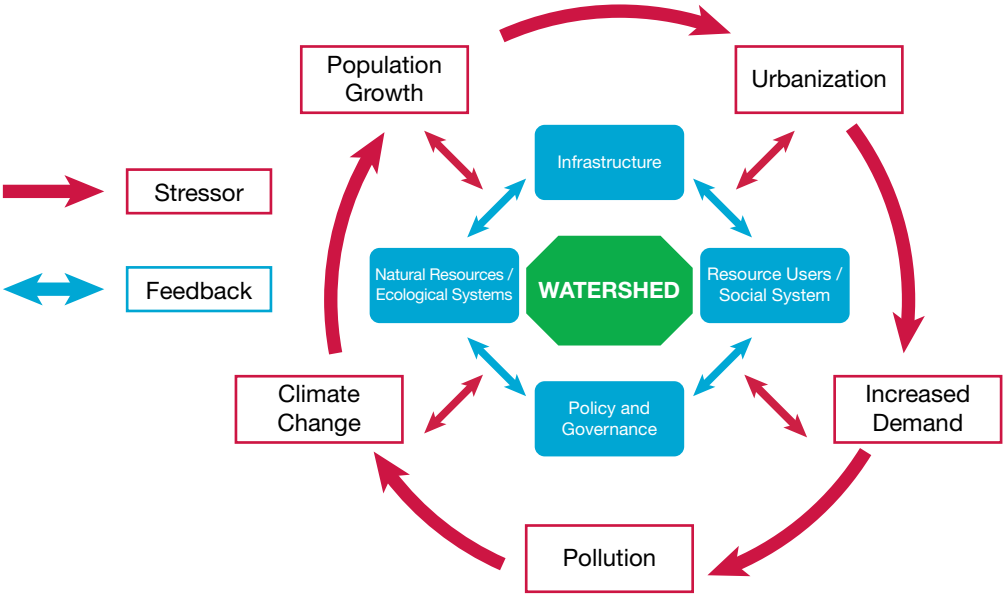
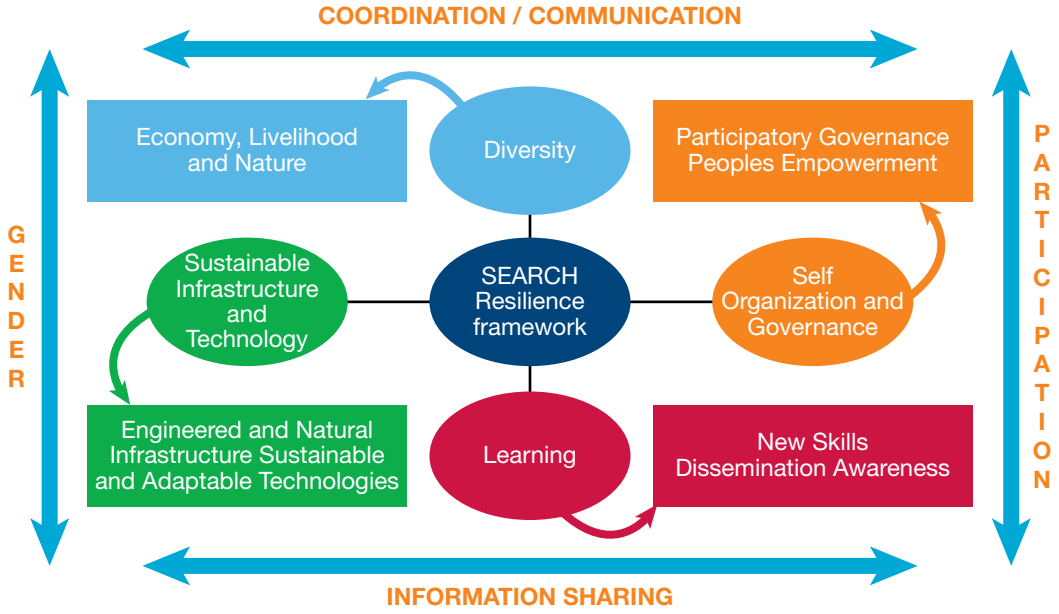



**Figure 12: SEARCH Resilience Framework**



and responses as well as infrastructure management (for example, application of 'environmental flows' to allocate river flows within the limits of availability). Added to conventional infrastructure portfolios should be planning and investment in natural infrastructure such as wetlands, floodplains and mangroves that store water, lower flood peaks or protect coastal communities.

- **Self-organization and Adaptive Governance** – self-organization is a critical characteristic of resilient and highly adaptive systems that is developed in practice through participatory governance and empowerment of people in adaptive institutions. This is often summarized as adaptive governance, an evolving concept analysing the social, economical, and institutional dimensions of governance modes that are needed for building resilience in the concerned Social Ecological System (SES). Whilst resilience has somewhat different meaning in social and ecological context, the SES approach holds that social and ecological systems are linked through feedback mechanisms, and that both display resilience and complexity.[20] A SES consists of a bio-geo-physical unit (i.e. the Watershed) and its associated social actors and institutions. Social-ecological systems are complex and adaptive and delimited by spatial or functional boundaries surrounding particular ecosystems and their problem context.[21]
- **Learning**– ensuring that individuals and institutions can use new skills and technologies needed to adapt and make effective use of better climate information and adaptation strategies as they become available.

Nonetheless, defining the resilience framework and its content was just the first step in the process of developing practical resilient adaptation plans in the region. The real challenge was how to assess the resilience by using the relevant tools and methodologies listed in the toolkit and link it to the resilience framework components in order to improve the decision-making process regarding the implementation of resilience framework and improvement of existing adaptive capacities at national and local levels under uncertain conditions, through joint learning and piloting with the stakeholders.

The main tools used in the toolkit and their relevance to the SEARCH resilience framework are summarized in Figure 12.

### 3.3. Resilience assessment

Resilience does not seem to be easily measurable as a property of the system due to its numerous facets (and the fact that change may be too slow to detect). Nevertheless, to improve the decision-making process regarding the implementation of a resilience framework and improvement of existing adaptive capacities, a decision support model was developed. SEARCH findings provide a new empirical approach to evaluating actual resilience and predicting improvements for the future. In a way, this model proposes an approach to the management assessment of resilience with the main aim of increasing system's diversity, self-organisation, learning, and use of sustainable technologies. The methodology is based on qualitative multi-attribute modelling supported by the DEXi[22] software (all details about software are in DEXi manual[23]). The final goal for the designed tool is to help monitoring and assessment of

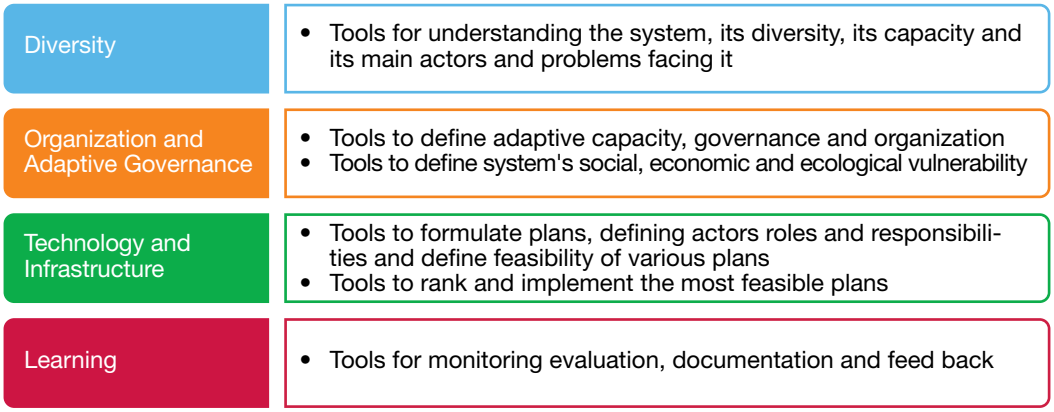
20 Berkes, F., Colding, J., and Folke, C. (2003) Navigating social–ecological systems: building resilience for complexity and change. Cambridge University Press, Cambridge, UK.

21 Glaser, M., Krause, G., Ratter, B., and Welp, M. (2008) Human-Nature-Interaction in the Anthropogenic. Potential of Social-Ecological Systems Analysis. [Website], Available from: <http://www.dg-humanoekologie.de/pdf/DGH-Mitteilungen/GAIA200801_77_80.pdf>

22 DEXi Version 3.02 Program for multi-attribute decision making, Copyright 1999e2009. Developed in collaboration: Jozef Stefan Institute, Ljubljana, Faculty of Organisational Sciences, Kranj and Ministry of Education, Science Sport of the Republic of Slovenia. Available free of charge at: http://kt.ijs.si/MarkoBohanec/dexi.html.

23 Bohanec M., 2008. http://kt.ijs.si/MarkoBohanec/pub/DEXiManual30r.pdf.

**Figure 13: SEARCH Resilience Framework Components and Relevant Tools Used in the Toolkit**




resilience by identifying and characterizing positive change (a shift in resilience) when this occurs. The proposed framework also seems to allow for both consistency and flexibility. The model has been tested in the case study of Morocco.

### 3.3.1 Model structure

With an aim to operationalising the Resilience Framework, a carrousel exercise was carried out in a regional workshop held in Tangier in September 2011 where all partners of the project worked to answer the following question for each component of the Resilience Framework: what would the key criteria be to measure resilience? For 12 elements corresponding to the four components of resilience framework, more than 70 attributes were suggested by the workshop. Some of the overlap both within and across the components has been cleared and some of the terms and definitions changed according to the most recent language used in tools such as the Vulnerability Assessments or the Accountability analyses. Finally, 14 attributes representing the weakness of the system (used to assess vulnerability in the project sites and for different sectors) and 16 attributes related to adaptive capacity and the strength of the system properties were selected.

These 30 attributes constitutes the actual inputs of the model. These terminal attributes are aggregated to form the different elements of the resilience components, with the exception of two elements, namely Innovation (Infrastructure and Technology) and Capacity (Self-Organization), which have no selected attributes but were integrated as terminal nodes at their hierarchical level.

In total, the integrated rule-based model consists of 47 hierarchically structured attributes (Figure 13). Terminal nodes of the hierarchy represent input attributes. They are aggregated through several levels of aggregate attributes into the root attribute, which represents the overall resilience level of the system. All attributes are qualitative and can take discrete and symbolic values represented by words. In our model, we used a maximum five-grade value scale (“very high”, “high”, “medium”, “low”, “very low”) adjusted to every specific attribute (Figure 13). The aggregation of attributes up the tree is defined by decision rules from basic attributes (terminal nodes) towards the output (root node). For each attribute that aggregates other attributes in the model, stakeholders define a table that specifies the value of the former attribute for

all combinations of values of the latter attributes. DEXi offers the possibility of simultaneous graphical comparison of attributes between different alternatives of times.

### 3.3.2 Model results

For the purpose of the resilience assessment, the state of input attributes has been qualitatively estimated by country team at the beginning of the project and after finalizing the project cycle. Nine input attributes have changed due to SEARCH in Moroccan pilot site and leading to some changes in the components of of the resilience framework (Figure 14):

1. increase of government contribution (through funds of Morocco's Green Plan)
2. increase in sources of income (improvement of tree fruits and aromatic herbs plantation)
3. promotion of integrated land use planning (elaboration of a toolkit to integrate climate change and land use planning in municipal development plans)
4. partial improvement of domestic water supply (domestic rainwater harvesting)
5. increase in technical experience available (through trainings on aromatic herbs planting and through construction of rainwater harvesting systems)
6. shift of number and type of CBOs from present to active (increase of number of CBOs by creation of one association of farmers and two groups of women, empowerment of one agricultural cooperative of women).
7. introduction of a process of facilitation and leadership that was absent (through a technical team grouping key stakeholders working with communities, CBOs, municipalities and others)
8. enhancement of cooperation between local organizations (equity)
9. empowerment of capacity (training of farmers, introduction of new agricultural practices, publication of several documents as learning tools, exchange of information, facilitation of group processes)

Components of Resilience that have changed were Diversity (from very low to medium) mainly because of a slight increase of sources of income of livelihoods, Sustainable Infrastructure (from low to medium) due to the introduction of a rainwater harvesting technique and improvement of technical experience available, and Self-organisation (from low to medium) at local and intermediate levels (Figure 15). The overall resilience shift has been from "very low" to "low".

**Figure 14: Model structure and scale values of attributes. Column at the right indicate normalized average weight.**

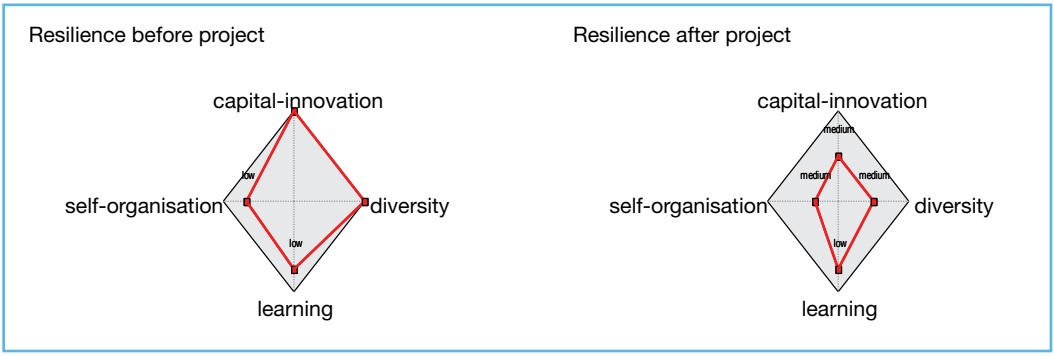
| Attribute | Scale | Glob.norm. |
|---|---|---|
| **resilience** | ***very high***; ***high***; medium; **low**; **very low** | |
| ├**diversity** | ***very high***; ***high***; medium; **low**; **very low** | 23 |
| ├**economic services** | ***very high***; high; medium; low; **very low** | 6 |
| ├gdp | ***increase***; constant; **decrease** | 1 |
| ├income | ***suffisant***; insuffisant; **zero** | 1 |
| ├health services | ***developped***; available; **not available** | 1 |
| ├percentage local budget | ***high***; medium; **low** | 2 |
| └government contribution | ***high***; medium; **low** | 0 |
| ├**livelihoods** | ***very high***; ***high***; medium; **low**; **very low** | 8 |
| ├stability of income | ***stable***; fragile; **instable** | 2 |
| ├poverty level | **high**; medium; ***low*** | 3 |
| ├sources of income | ***diversified***; medium; **limited** | 2 |
| └migration rates | ***immigration***; zero; **emigration** | 0 |
| └**natural services** | ***very high***; ***high***; medium; **low**; **very low** | 10 |
| ├water resources | ***abundant***; available; **scarcity** | 3 |
| ├deforestation/desertification | **high**; medium; ***zero*** | 1 |
| ├land ownership & quality | ***equitable-productive***; equi-marginal; not equi-productive; **not equi-marginal** | 1 |
| ├natural cover | ***high***; medium; **low** | 2 |
| ├species | ***high richness***; medium; **poor** | 2 |
| └integrated land use planning | ***present***; **absent** | 1 |
| ├**Sustainable Infrastructure** | ***high***; medium; **low** | 20 |
| ├**built capital** | ***high***; medium; **low** | 7 |
| ├domestic water supply | ***generalized***; partial; **absent** | 3 |
| ├wastewater facilities | ***available***; **not available** | 2 |
| ├energy services | ***electricity***; petrol; **wood** | 2 |
| └techn. exp. available | ***high***; medium; **low** | 1 |
| ├**natural capital** | ***high***; medium; **low** | 7 |
| ├natural infrastructure | ***high connectivity***; medium connecctivity; **low connectivity** | 3 |
| └use of local knowledge | ***high***; medium; **low** | 3 |
| └innovation | ***high***; medium; **low** | 7 |
| ├**self-organisation** | ***high***; medium; **low**; **very low** | 31 |
| ├**local level** | ***high***; medium; **low** | 10 |
| ├n & type of CBOs | ***active***; present; **absent** | 5 |
| └facilitation & leadership | ***active***; present; **absent** | 5 |
| ├**intermediate level** | ***high***; medium; **low** | 11 |
| ├equity | ***high***; medium; **low** | 6 |
| └legitimacy | ***high***; medium; **low** | 6 |
| └**national level** | ***high***; medium; **low** | 10 |
| ├cross-scale institutions | ***active***; present; **absent** | 2 |
| ├accountability | ***high***; medium; **low** | 4 |
| └coordination GOs | ***high***; medium; **low** | 4 |
| └**learning** | ***very high***; ***high***; medium; **low**; **very low** | 26 |
| ├**awareness** | ***high***; medium; **low** | 9 |
| └support of community education | ***high***; medium; **low** | 9 |
| ├**learning per se** | ***high***; medium; **low** | 9 |
| └learning from crises | ***high***; medium; **low** | 9 |
| └capacity | ***high***; medium; **low** | 9 |

## Figure 15: Evaluation results of resilience before and after the project

**Evaluation results**

| Attribute | Resilience before project | Resilience after project |
|---|---|---|
| **resilience** | very low | low |
| ├**diversity** | very low | medium |
| │ ├**economic services** | very low | very low |
| │ │ ├gdp | constant | constant |
| │ │ ├income | insuffisant | insuffisant |
| │ │ ├health services | not available | not available |
| │ │ ├percentage local budget | low | low |
| │ │ └government contribution | low | medium |
| │ ├**livelihoods** | low | medium |
| │ │ ├stability of income | fragile | fragile |
| │ │ ├poverty level | medium | medium |
| │ │ ├sources of income | limited | medium |
| │ │ └migration rates | zero | zero |
| │ └**natural services** | *high* | *high* |
| │ ├water resources | available | available |
| │ ├deforestation/desertification | medium | medium |
| │ ├land ownership & quality | not equi-productive | not equi-productive |
| │ ├natural cover | medium | medium |
| │ ├species | *high richness* | *high richness* |
| │ └integrated land use planning | absent | *present* |
| ├**capital-innovation** | low | medium |
| │ ├**built capital** | low | medium |
| │ │ ├domestic water supply | absent | partial |
| │ │ ├wastewater facilities | not available | not available |
| │ │ ├energy services | *electricity* | *electricity* |
| │ │ └techn. exp. available | low | medium |
| │ ├**natural capital** | medium | medium |
| │ │ ├natural infrastructure | medium connecctivity | medium connecctivity |
| │ │ └use of local knowledge | medium | medium |
| │ └innovation | medium | medium |
| ├**self-organisation** | low | medium |
| │ ├**local level** | low | *high* |
| │ │ ├n & type of CBOs | present | *active* |
| │ │ └facilitation & leadership | absent | present |
| │ ├**intermediate level** | low | medium |
| │ │ ├equity | low | medium |
| │ │ └legitimacy | medium | medium |
| │ └**national level** | medium | medium |
| │ ├cross-scale institutions | present | present |
| │ ├accountability | medium | medium |
| │ └coordination GOs | medium | medium |
| └**learning** | low | low |
| ├**awareness** | medium | medium |
| │ └support of community education | medium | medium |
| ├**learning per se** | low | low |
| │ └learning from crises | low | low |
| └capacity | low | medium |

**Figure 16: Overall resilience shift in pilot site of Morocco**



# 4. Conclusions and Next steps – Meeting the Scaling-up Challenge

To build climate resilience at the country or basin level, policy makers must figure out how to integrate success stories from local level project implementation into more strategic planning instruments at broader scales. This remains one of the crucial challenges of adaptation. Adaptation based solely on prioritisation of discrete actions – for example on infrastructure, institutions, or ecosystems – may lead to missed opportunities to build resilience towards a dynamically changing climate, where uncertainty and unknowns are expanding. This is where adaptive governance capacity – that is, the ability to apply adaptation measures in practice from community to national and basin scale – is key. In turn, adaptive governance capacity is the result of a host of assets such as local knowledge, access to resources, leadership, mobilisation, and financing.

At the project level, there are many examples of successful climate change adaptation. However, while these small-scale initiatives have resulted in positive changes at the community level, they have also resulted in piece-meal implementation of adaptation strategies at the national and sub-national levels. Though there have been great strides towards individual instances of adaptation, overall practice depicts a lack of clear strategy at the basin level to address climate change challenges. When attempting to catalyse and institutionalise change in extremely complex systems, there is always a risk of oversimplification through theoretical approaches. However, there are some key elements that are inherent to water and climate governance, particularly resilience.

This section will present some of the common challenges met by the facilitation teams in the different SEARCH project participating countries. In the spirit of continuous improvement, this section will also provide some recommendations, from successful local experiences aimed at national and regional authorities and platforms on how to build governance frameworks for climate change adaptation from a resilience perspective.

The main challenges and recommendations can be summarized as follows:

### 4.1. Engaging leaders to support and communicate the process

The Reflection step has explained how securing support from key political and other leaders and the need for national and regional adaptation coalitions is crucial for building resilience. For example, the minister of water resources, the head of the water authority, elected councilors and leaders of businesses and non-governmental organizations can play a critical role in defining and communicating the set of core values that will guide adaptation and catalyze the process.

The core values of the resilience building process should feature prominently in the coalition's communications. These values ought to be identified early on and should be consistent with the core values of established climate change adaptation. Defining these core values will be an essential part of creating the political buy-in from key interest groups within the coalition.

As the resilience building process continues, the role of political leaders and other key figures will be to repeat and pay explicit attention to the core values in order to guide further policies, strategies and actions. The leaders involved should articulate

a clear message in order to instill the core values and communicate their perspectives with the public. As well as political figures, well-known entertainers, celebrities and business leaders can all play a role within the resilience building process.

Leaders will need to communicate a sense of urgency and enthusiasm throughout the resilience building process. A communication style that is open and confronts issues in a straightforward manner will be needed. Given the large uncertainties, some de-politicizing of the issues will be required to encourage people to become involved in finding the most suitable adaptation measures. Given the multi-stakeholder nature of adaptation, a number of leaders from different societal groups will be needed to communicate effectively on adaptation.

Once some successful adaptation approaches and measures have been developed, leaders can slowly but surely lead the diffusion process. Good communication to the appropriate target audiences will again be needed. Small-scale events, such as presentations and demonstrations to practitioners, are often effective as a catalyst for further action. These national adaptation coalitions will need to devote time and energy to developing appropriate slogans, catchphrases, and other key messages that confirm core values and best practice. Leaders involved in the adaptation process should encourage public enthusiasm and recognition for the innovative climate adaptation actions being undertaken.

### 4.2. Building capacity for replicating the process

Resilience is a relatively new issue for the climate change and water sector. Generally, there is a lack of awareness throughout the sector and the general public of the concept and its application. Success in applying resilience building approaches therefore depends greatly on the initial determination to 'get started'. The role of dreamers and believers is very crucial. In this regard, raising awareness about the conditions of vulnerability and the best interests of the community is critical.

Gaps in capacities needed among both believers and practitioners to be identified and addressed early on. Capacities need to be built amongst those various actors to design and implement resilience measures widely. The training of lawyers, technical staff, NGO members and policy-makers may therefore be necessary. It is also important to empower and educate politicians to better understand the societal costs of not working on resilience. A failure to invest in capacity building will imply the continued mismanagement of climate change impacts.

Capacity building strategies are however required to catalyze actions. An effective capacity building strategy will incorporate several elements, including training courses, an assessment framework, the trial application of methods, visits to pilot and demonstration sites, and technical workshops. Once a minimal level of awareness and knowledge is established, further support will be needed in the form of technical back-stopping, research, a national database, networking and communications.

### 4.3. Kick-starting adaptation by catalysing innovation

National adaptation coalitions can play a key role in catalyzing innovation as well. They can create opportunities for innovation and develop into an effective network of innovators or dreamers working to climate change adaptation. Encouraging innovative, entrepreneurial behavior could be a main task of the coalitions. This means creating an environment where believers and practitioners are encouraged to experiment with small-scale innovations that make incremental improvements on present practice. Ensuring widespread

recognition of those championing innovation by the dreamers or planners at national level would also help the cause of adaptation.

Coalitions can foster innovation by establishing small "path-finding" teams that bring together a variety of actors. The role of these teams would be to identify innovative or cutting-edge practices used by water users and managers, and to work with these people in identifying further initiatives.

Innovation often thrives where an open exchange of ideas and even "random interactions" between people and organizations are encouraged. Creating both formal and informal opportunities for practitioners to communicate and share ideas about their latest innovative projects or initiatives would contribute to this.

Using loosely-coupled project teams in a flexible manner is known to be an extremely effective way to identify innovative solutions. Organizational fluidity will be essential in establishing and maintaining coalitions that would generate effective communication within and between existing government, business and societal structures. To develop this, a mechanism will be required to encourage less formal and hopefully more creative and innovative activities outside of the mainstream. Small grants funds can be used to achieve this. Such activities should be linked to an overall learning strategy that fosters feedback amongst participants. Disseminating information on lessons learned from unsuccessful efforts will also be a part of this process.

Maintaining the momentum will remain a challenge throughout the process. Therefore, focusing on a "results-first" approach that expedites innovative, tangible actions appears to be most desirable. During the early stages of the adaptation process, believers and coalitions could focus on stimulating lower risk ideas (as per scenario building step as described in the assessment phase) that can achieve clear results in the short term. In this way they can develop the confidence and momentum needed among the practitioners to mainstream innovative thinking among a wider group of actors.

It can be clearly concluded that for climate change resilience to be integrated properly within the national plans and strategies the logic of this toolkit needs to be followed adequately. Such logic is based on the integration of all relevant stakeholders, including dreamers, believers and practitioners in planning process from its early stages and the clear integrity and interlink among the outputs and flows resulted from each step in the participatory planning cycle. Using the various tools listed in this toolkit will only provide guidance for the users to enable them from indentifying the main climate risks and resilience and how they can develop recommendations to integrate such resilience within national plans and strategies.

# REFERENCES


1. "CRiSTAL." Home. IUCN, Web. 1 Jan. 2014. <http://www.iisd.org/cristaltool/>.
2. "Climate Smart Conservation ." Home - National Wildlife Federation. National Wildlife Federation, n.d. Web. 1 Jan. 2014. <http://www.nwf.org/>.
3. "Habitat Climate Change Vulnerability Index." . Web. 1 Jan. 2014. <https://connect.natureserve.org/publications/hccvi>.
4. "Le Partage des Connaissancespour l'adaption aux changements climatiques." Africa Adapt. Web. 1 Jan. 2014. <http://www.africa-adapt.net>.
5. "Mind mapping survey." The mindmappingorg Blog RSS. Web. 1 Jan. 2014. <http://www.mind-mapping.org/blog/2014/02/the-biggerplate-survey-what-can-we-learn/>.
6. Smith , Mark , and Stefano Barchiesi. "Environment as infrastructure – Resilience to climate change impacts on water through investments in nature." . IUCN , Web. 1 Jan. 2014. <http://cmsdata.iucn.org/downloads/iucn_environment_as_infrastructure_1.pdf>.
7. "NatureServe Network Directory." Web. 1 Jan. 2014. <https://connect.natureserve.org/sites/default/files/documents/>.
8. "Participatory Rapid Appraisal "2009" ." . IUCN. Web. 1 Jan. 2014. <http://cmsdata.iucn.org/downloads/azraq_pra_english.pdf>.
9. "PARTICIPATORY RURAL APPRAISAL." Rapid rural appraisal, participatory rural appraisal and aquaculture. Web. 1 Jan. 2014. <http://www.fao.org/docrep/006/w2352e/W2352E06.htm>.
10. "Publications." World Bank and Documents. Web. 1 Jan. 2014. <http://www.worldbank.org/reference/?lang=en>.
11. "The Toolkit for Community-Based Adaptation." Web. 1 Jan. 2014. <http://www.careclimatechange.org/tk/cba/en/>.
12. "WANI." Web. 1 Jan. 2014. http://www.waterandnature.org/
13. Aid, Christian Aid, and Richard Ewbank. INTEGRATING CLIMATE CHANGE ADAPTATION INTO SECURE LIVELIHOODS. : , 2010. Print.
14. Berkes, F., Colding, J., and Folke, C. (2003) Navigating social–ecological systems: building resilience for complexity and change. Cambridge University Press, Cambridge, UK.
15. Bohanec M., 2008. http://kt.ijs.si/MarkoBohanec/pub/DEXiManual30r.pdf.
16. DEXi Version 3.02 Program for multi-attribute decision making, Copyright 1999e2009. Developed in collaboration: Jozef Stefan Institute, Ljubljana, Faculty of Organisational Sciences, Kranj and Ministry of Education, Science Sport of the Republic of Slovenia. Available free of charge at: http://kt.ijs.si/MarkoBohanec/dexi.html.
17. DGH-Mitteilungen/GAIA200801_77_80.pdf>
18. Glaser, M., Krause, G., Ratter, B., and Welp, M. (2008) Human-Nature-Interaction in the Anthropogenic. Potential of Social-Ecological Systems Analysis. [Website], Available from: <http://www.dg-humanoekologie.de/pdf/
19. IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment
20. Laban, P., 1994. Accountability, an indispensable condition for sustainable natural resource management. In: Proceedings International Symposium on Systems-oriented Research in Agriculture and Rural Development. CIRAD-SAR, Montpellier.
21. Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.
22. Royal Tropical Institute, 1997, Networking for innovation - A participatory actor-oriented methodology, Netherlands.
23. Toolkit in aid of adaptation initiatives. : UNDP Bureau of Development Policy, 2009. Print.
24. UNDP, 2009: Human Development Report: Overcoming barriers - Human mobility and development
25. Moriarty, Patrick. The EMPOWERS approach to water governance: guidelines, methods and tools. Amman: INWRDAM, 2007. Print.

## Annex

### Annex 1: List of Existing Tools and Toolkits

| Adaption Tools | Sponsor | Scale/ Location | Frame-work | Methods | Learning | Final Outcome | Other Notes |
|---|---|---|---|---|---|---|---|
| **Climate Vulnerability and Capacity Assessment (CVCA)** - Vulnerability and Adaptation Assessment Toolkit | CARE International | Community-focus, multi-scalar assessment | Organized around four categories of 'enabling factors': climate-resilient livelihoods, DRR, local capacity development, underlying causes of vulnerability. | Secondary research, policy analysis, key informant interviews, participatory methods at the community/ household level | Makes an explicit statement and emphasis on learning by creating a dialogue across scales and with multiple stakeholders | Inform and strengthen adaptation planning processes by providing context-specific information | Conducted separately for men and women |
| **Community-based Risk Screening Tool - Adaptation and Livelihoods (CRISTAL)** - Project assessment and decision support tool | InterCooperation | Community | 2 modules - synthesizing information and planning and managing projects. | Possible methods include stakeholder consultations, participatory workshops, site visits, document review, Internet research, and interviews. | Does not include a specific component of learning, but instead serves as an evaluation and decision making tool for project planners and partners. | Devises adjustments to improve how projects impact the livelihood resources important to adaptation or suggest projects that better reduce climate risks. | Excel program, requires computer data entry |
| **Climate Change and Environmental Degradation Risk and Adaptation Assessment (CEDRA)** - Project assessment and decision support tool, aid in access to information | TearFund | Southern NGOs | Identify hazards from community and science info., prioritize hazards, select appropriate adaptation options, consider new projects, monitor and evaluate | Scientific information assessment, points of contact for information, Tools from PADR, matrix assessment, process completed through report | Experiential learning and social learning integral to the tool, some mention of an iterative process | Modified and newly agreed adaptation activities, improved understanding of climate change context and relation to environmental degradation | Unique emphasis on how NGOs understand climate change to assist their communities |

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| Adaption Tools | Sponsor | Scale/ Location | Frame-work | Methods | Learning | Final Outcome | Other Notes |
|---|---|---|---|---|---|---|---|
| **Adaptive Capacity** Benchmark-ing -Assess organi-zational capacities & change strategies | EU, ES-PACE | Organi-zations, Western Europe | Based on 6 response levels (ex. stakeholder responsive, efficient manage-ment) and 9 pathways for change (ex. leadership, awareness) | Document review and interviews, variations on inter-views like card sorting | Learning as a pathway for change, possibilities for trans-formational learning as an outcome | Recom-mendations for organiza-tional im-provement and climate change ac-tion plans | Provides examples of metrics and baselines for change |
| **Child-ori-ented Participa-tory Risk Assess-ment & Planning (COPRAP)** - Risk as-sessment, strengths & weaknesses | Asian Disaster Prepared-ness Center (ADPC) | Children | Series of possible methods, no clear framework | 6 new tools - 'Make me a Portrait' 'Dangerous Things'; 'My Needs Be-fore, During and After the Flood'; 'Our Sug-gestions to Those in Authority.' | No learning component included | Devise risk reduction solutions pertinent to children | - |
| **Systemic Approach to Rural Devel-opment (SARD)** - Livelihood assess-ment, plan-ning, project assessment | Swiss Agency for Develop-ment and Cooperation | Community/ Local Gov-ernment | 3-levels: household livelihoods, typology of households & relation-ships with other stake-holders, landscape and local history | Mapping, household typology, access to services, power/con-flict analysis, outcome mapping, vision devel-opment, planning | Social learn-ing process identified, iterative framework | Vision statement, Assist in the design and re-orienta-tion of de-velopment interven-tions | Well ex-plained and comprehen-sive toolkit |

## Annex

| Adaption Tools | Sponsor | Scale/ Location | Frame-work | Methods | Learning | Final Outcome | Other Notes |
|---|---|---|---|---|---|---|---|
| **Partic-ipatory Vulnera-bility As-sessment (PVA)** - Vulnerability assessment tool | ActionAid | Multi-level (community, district, national) | 3 phases - preparation, analytical framework, multi-lev-elled analysis | Tools vary per level: PRA tools in the community, interview emphasis at other levels, recordings &video, not detailed since based on another tool (RE-FLECT) | No explicit learning component | Reveals causes of vulnerability, increases effective-ness of emergency and de-velopment activities | Promotes international level feed-back |
| **Partic-ipatory Capacities & Vulnera-bilities As-sessment (PCVA)** - Vulnerability and coping assessment | Oxfam | Community | Capac-ity and vulnerability assessment with partici-patory rural appraisal - per-ceptions, coping, response, develop-ment | Participatory rural ap-praisal tools (mapping, matrices, ranking, Venn dia-gram, etc) | Social learn-ing process identified | Information presented to govern-ment and other stake-holders, strategic planning (proposals), advocacy tool | Good facili-tation input |
| **Communi-ty-based Disaster Risk Man-agement (CBDRM)** - Risk assessment and man-agement develop-ment | Asian Disaster Prepared-ness Center (ADPC) | Community | 7 step process - selection, rapport building, as-sessment, planning, organiza-tion, imple-mentation, monitoring/ evaluation | Participatory rural ap-praisal tools (mapping, matrices, ranking, etc), secondary sources, visioning/ planning, social network analysis | Small mention of social learn-ing qualities, emphasis on risk communi-cation | Creation of Community Disaster Risk Man-agement Organization (CDMO) and imple-mentation of manage-ment plan | Emphasis on risk communi-cation and gender |

## Annex

| Adaption Tools | Sponsor | Scale/ Location | Frame-work | Methods | Learning | Final Outcome | Other Notes |
|---|---|---|---|---|---|---|---|
| **Partic-ipatory Assess-ment of Di-saster Risk (PADR)** - Vulnerability and capac-ity assess-ment, action planning | Tearfund | Community | Key steps: preparation, hazard as-sessment, vulnerability assess-ment, capacity assess-ment, key informant interviews, action planning | Participatory rural ap-praisal tools (mapping, matrices, ranking, Venn dia-gram, etc), modified sustainable livelihoods approach (assets) | Social learn-ing process identified | Action plan-ning and advocacy | Mention climate change & HIV/AIDS utility |
| **Weath-ering the Storm** - Risk assess-ment and planning | Disaster Mitiga-tion for Sustainable Livelihoods Programme | Informal settlements | 3 Phases - preparatory ground-work (1-2 months), risk as-sessment (3-5 days), generate disaster risk reduction plans | Aerial pho-tography, secondary sources, rapid appraisal tools, risk man-agement capacities matrix, | Social learn-ing process identified | Integrated disaster risk man-agement - strategic planning | Great explanation of methods with pic-tures |
| **Livelihood Assess-ment Tool-kit (LAT)** - coping/ response strategies, impact, | IFO, FAO | Commu-nity-focus, multi-scalar assessment | 3 steps: Livelihood Baseline (LB); an Initial Livelihood Impact Ap-praisal (ILIA), Detailed Livelihood Assessment (DLA) | Secondary sources, qualitative/ statistical information, participa-tory rural appraisal tools, | No learning component included | Each step informs the next leading to various plans and actions within the pre- or post- disas-ter context | Compre-hensive in scale of analysis and inclusion of statistical information |

Source: http://weadapt.org/knowledge-base/adaptation-decision-making/participatory-tools-to-aid-adaptation

**INTERNATIONAL UNION**
**FOR CONSERVATION OF NATURE**
Regional Office For West Asia (ROWA)
Sweifiyeh - Hasan Baker Al Azazi St. #20
P.O. Box 942230
Amman 11194
www.iucn.org/westasia
Twitter: @iucnrowa
Facebook: IUCNROWA