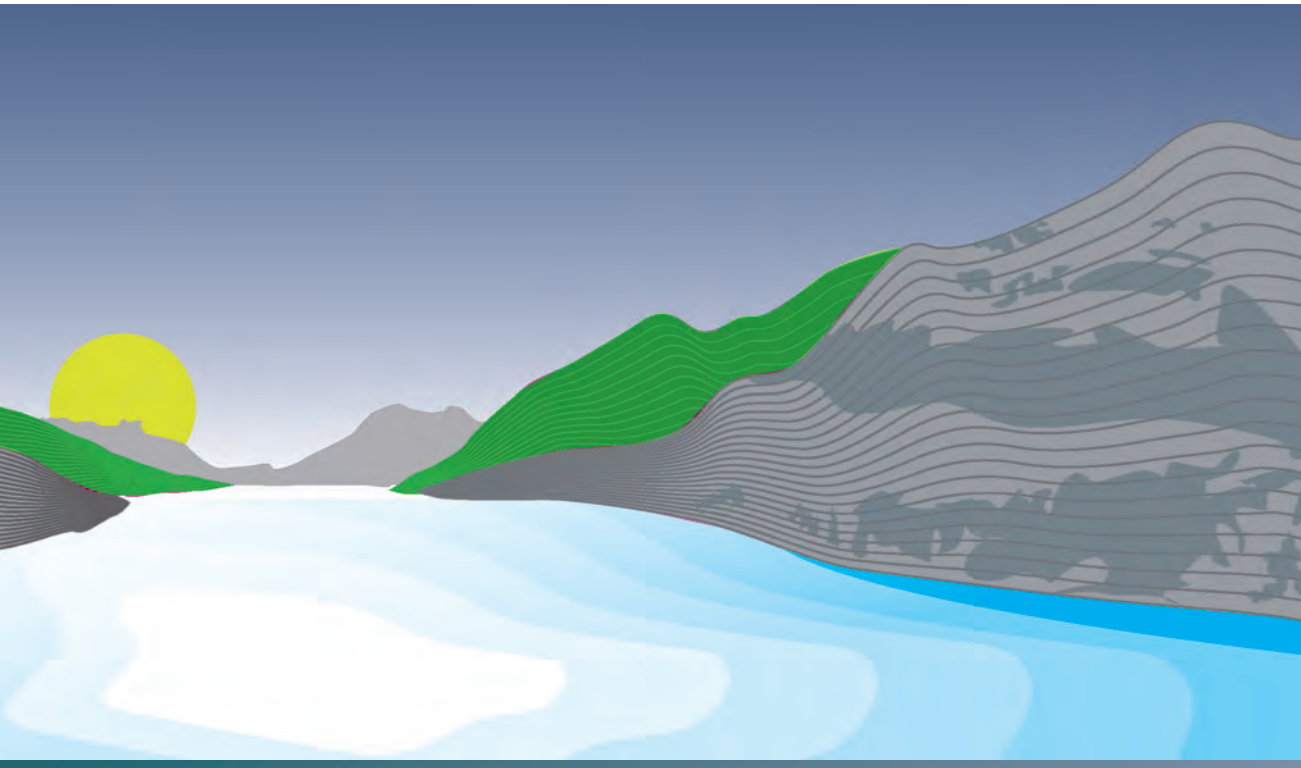

THE HANDBOOK ON WATER INFORMATION SYSTEMS

ADMINISTRATION, PROCESSING AND EXPLOITATION OF WATER-RELATED DATA

March 2018

INTERNATIONAL NETWORK OF BASIN ORGANIZATIONS

UNESCO
Organisation des Nations Unies pour l'éducation, la science et la culture

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Adaptation strategies are based not only on data related to water management but also on socio-economic information and health hazards. Socio-economic information should help describe social vulnerability (e.g. risk maps "weighted" by population density, climate-dependent socio-economic sectors, health infrastructure and services, coping capacities). Health hazards may include factors that affect water quality (e.g. concentration of chemicals in water) and food safety, extreme weather events and changing meteorological conditions.

Box 18: About the Collaborative Risk Informed Decision Analysis (CRIDA) methodology [57]

Over the last two decades, climate system science has achieved remarkable advances in monitoring, modelling and predicting weather and climate, providing valuable information for decision-making. Unfortunately, a significant gap persists between the information available and the actual uptake by stakeholders. While climate science is reaching maturity in terms of how results are provided thanks to the coordinated action of the IPCC, on the stakeholder side no such framework has yet matured. This has led to an abundance of publicly available data and information on the potential impacts of climate change, such as the CMIP5 global circulation model outputs [57], but a lack of expert knowledge on the user side has limited the use of this information to effectively develop and implement adaptation strategies to climate change at the local level. This mismatch needs to be addressed in order for vulnerable water-stressed communities to benefit from the foresight provided by climate science. To assess how climate change can further aggravate the effects of water-related hazards, specific tools need to be developed to support decision-makers, analyzing the probability of the occurrence of adverse events under climate change uncertainty.

A recent methodology developed is Collaborative Risk Informed Decision Analysis (CRIDA), which provides the framework for a bottom-up approach to include uncertain climate change information in decision-making. Case studies of this approach are currently under development and are available at http://agwaguide.org/casestudies/.

4.2.2 Case studies

Case study 28: France / Mapping the vulnerability of territories to climate change in the water sector in the Adour Garonne basin [58]

Models and scientific knowledge converge to predict that by 2050, climate change will generate major hydrological changes and will have significant repercussions on the water management and aquatic environments of the Adour-Garonne basin, including:

- A rise in sea levels
- An increase in annual temperature of about 2 °C.
- A decrease in annual rainfall of about 15% but an increase in extreme precipitation
- A rarefaction of snow in the mountains
- An increase in evapotranspiration of between + 10% and + 30%
- An average annual decline in discharge of between -20% and -40% with earlier, more severe and longer lower flow periods
- An increase in water temperatures
- Drier soils
- An increase in the risk of eutrophication,
- An evolution of both aquatic and terrestrial ecosystems involving a modification of vegetation, flora and fauna.

These impacts are already being felt today and are likely to cause a great deal of stress on low-water resources, a deterioration of water quality, a weakening of aquatic environments, and more frequent torrential floods. At the same time, the combination of global warming and demographic projections will increase the water needs of plants and human activities. The result may be limited

(Cont'd)

access to water for both drinking water and as an essential support for the economy (agricultural and industrial) in the basin. Everyone's access to water in quantity and quality is at stake.

In response to this challenge, in parallel with the SDAGE (designed to solve the current problems of water management), the Basin Committee of the Adour Garonne Basin Agency decided to initiate a plan for adapting to climate change in the field of water (PACC). The PACC anticipates these changes by imagining new measures to limit future water management problems. This plan is based on a study (mapping) of the territorial vulnerabilities to climate change in the water sector and ultimately proposes adaptation measures in the Adour Garonne basin and recommended actions at local level.

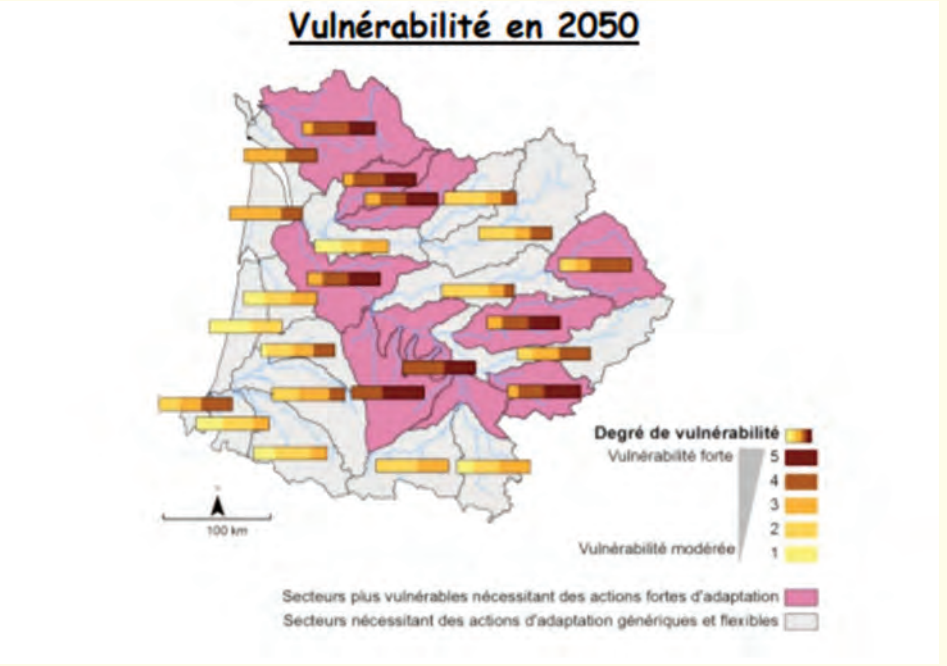

Figure 39: Example of a map showing the watershed's vulnerability to eutrophication