The Futures of Agriculture

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Shaping French transdisciplinary research priorities for the Mediterranean

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Based on: "Partnership and Research in the Mediterranean" (PARME) forward-thinking workshop, B. HUBERT coordinator, ANR/Agropolis International, 2011

Daunting challenges in the Mediterranean region

Today, the Mediterranean region is facing enormous challenges such as climate change, economic globalization and demographic transition. These are having a profound impact on land use and disrupting the traditional social and economic equilibrium. They are also making societies and their environments more vulnerable through unprecedented overuse of natural resources, environmental degradation, increased migration, loss of local knowledge, and development of health problems related to changes in dietary patterns.

A key challenge for the future of the region is the development of a Euro-Mediterranean area that is tightly integrated both economically and politically. The research community is naturally called upon to help in addressing these major challenges. In a forward-looking vision for the next two decades, research, innovation and training have a vital role to play in encouraging shifts towards a desirable future.

A foresight approach to generate original answers

Aware of such a challenge, the French National Research Agency (ANR) decided to launch a forward-thinking process in order to identify new research and innovation priorities for the Mediterranean area for the next ten years.

The PARME process was developed according to specific requirements ANR put forward:

- Explore a new way to generate research ideas and priorities based on societal needs;
- Determine priorities and their interrelations along four thematic domains: health, agriculture and food, energy and water, and cultures and societies; and
- Emphasize cross-cutting issues and trans-disciplinary approaches to design research topics that require integrated contributions from different disciplines, and not the usual disciplinary-defined research topics.

To meet this initial demand, PARME was organized in four phases.

The implementation of the process was coordinated by Agropolis International. In order to cover the full range of scientific disciplines and competencies envisioned in the scope of PARME, 136 experts from ten Mediterranean countries participated. They were identified and selected according to a number of principles. Participants should:

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2www.agropolis.org
3The Mediterranean region covers the southern part of Europe from Spain to Greece, northern Africa from Morocco to Egypt, and the countries bordering the Eastern part of the Mediterranean sea
4www.agence-nationale-recherche.fr
Most of the experts were scientists or had a strong scientific background. Taking into account the objective, timeframe and means allocated to the process, involving other categories of participants was not feasible. Based on their competence, experts were divided into four thematic groups corresponding to the research fields previously identified and were given the assignment to generate ideas for new research priorities. In each group, several lead scientists were identified and responsible for ensuring that cross-cutting issues were identified and that there was an iterative process between the thematic groups and transversal synthesis.

The process took 18 months (2010-11) and included 15 workshops with 15-30 participants in each. Related expenses were about € 160,000, covered by the ANR; taking into account the time spent by experts (paid by their own institutions), the total cost is estimated at between 1.5 and € 2 million.

A foresight approach to generate original answers

The PARME process did not really enable new challenges to be identified; it focused on building consensus among participants on the most important features identified in previous studies.

The resulting common framework was built on a few major challenges. One deals with people: increasing and ageing populations, concentrated in cities and the coastal area, with continuing internal migration flows. The second challenge deals with the weakening of smallholder agriculture, due to increasing pressure on land and resources. The third is linked to deep and quick changes in food consumption patterns, leading to increased food-related diseases. The last challenge concerns water scarcities and threats to fragile ecosystems (e.g. lagoons, wetlands) due to urbanization, pollution and other factors. Emerging threats to health generated by growing pollution, changes in ways of life and climatic changes were also recognized as major drivers of change.

Emerging challenges, issues and research priorities

The PARME process identified research priorities that are not organized according to scientific disciplines; rather, they result from societal issues and/or questions. In this regard, the process identified four main research fields: (i) people and societies; (ii) land, resources and territories; (iii) energy; and (iv) agriculture, food and health. Each field is organized around a several key questions that give rise to series of research topics. To illustrate this, the box below illustrates the questions that should be investigated as priorities in the domain of agriculture, food and health.

To take the process the next step, the first question mentioned in the box, dealing with food security, gave rise to a series of research topics that should be investigated further, including: analyzing the dynamics of changing food demand in quantitative and qualitative terms; developing economic and regulatory tools to monitor production systems and reorient them toward more environment- and worker-friendly modes; and studying the regulatory mechanisms that may promote regional cooperation around the Mediterranean for ensuring food security.
**Impact of the process**

The most evident impact of the process concerns the prioritization of research. ANR, which requested the work, used the PARME outcomes as input for designing a series of calls for research project proposals. The first call, TRANSMED⁵, was launched in 2012, less than one year after the PARME final report was published; it is clearly oriented towards trans-disciplinary projects, as recommended and fully acknowledge the contribution of the PARME foresight as indicated below.

The impact of PARME on civil society in general and smallholder livelihoods in particular is not measurable at this stage, since the process sought to set research priorities. It is nevertheless worth noting that smallholders were taken into account while defining the research priorities, so that they should receive long-term benefits from the research projects carried out.

The final report has been widely distributed within the institutions of the participating experts and their partner institutions. It has been made public, and can be downloaded from the Agropolis and ANR websites; to date, it has been downloaded more than 5,500 times, demonstrating genuine interest for both the process and the results. It is thus expected that the research priorities identified could be used beyond their initial scope, leading to a wider impact than initially planned.

**Lessons learned**

The PARME process may be viewed as an experimental (and unusual) way to set up research priorities. As such, the analysis of the process itself brought forward some interesting lessons.

The first lesson is about dealing with a systemic and trans-disciplinary approach, which is often recommended but actually difficult to implement. In the PARME case, trans-disciplinary and systemic answers were facilitated by two elements: the geographic rather than thematic scope, encompassing various challenges and multiple domains; and the mobilization of a large number of participants coming from various cultural, scientific and disciplinary backgrounds. Broadening the field of work prevented the discussions between "specialists" from becoming too narrow. In fact, the diversity promoted the contribution of a multiplicity of competences around common trans-disciplinary and systemic solutions.

The second lesson is related to the use of foresight approaches. These are often associated with a scenario-building process, which requires gathering an enormous amount of data and analyzing key variables and their interrelation in great detail. In the PARME process, it was decided not to spend time on this rather heavy scenario-building process, but to take advantage of already existing work, which, in this case, was sufficient. This way to proceed did not prevent a common framework from being developed, based on major trends, potential ruptures and emerging issues.

Finally, the PARME process highlighted an important issue in addressing the future of agriculture and agricultural research in the Mediterranean: there is no unique farming system model to address current and future challenges. Solutions will be found in preserving, and even increasing, the diversity of farming systems (e.g. intensive irrigated agriculture, integrated periurban smallholdings, traditional food producing farms, export markets oriented units) and taking advantage of their complementarities to create a more resilient and sustainable agriculture that is able to meet the challenges of food security, health and adaptation to global changes.

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⁵http://www.agence-nationale-recherche.fr/programmes-de-recherche/appel-detail/transmed-etudes-trandisciplinaires-sur-l-avenir-de-la-mediterranee-2012/

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