

# Publishable Summary

## First Section (project context and main objectives)

There is a compelling need for research to play a significant role for the future, in meeting the challenges of increased demand for food balanced against the need to deliver other ecosystem services. If this role is to be fulfilled, outreach and translation of research for innovation must be drastically enhanced.

Many EU and nationally funded research projects in the fields of agriculture and forestry provide excellent scientific results but outreach into practice remains limited. The VALERIE project responds to the challenge of boosting innovation by facilitating the uptake of knowledge, and its integration into field practices, through the following activities:

- develop and implement a method to drive innovation - in case studies with stakeholder communities - through an iterative process of articulating the demand and tailoring the supply of specific knowledge (stakeholder-driven method)
- translate research outcomes with innovation potential into formats for use by end-users (farmers, advisers, and enterprises in the supply chain)
- establish a generic web-based infrastructure enabling stakeholder communities beyond the project to apply the VALERIE approach.

The project extracts, reviews, and wraps-up applicable research outcomes and existing scientific information on selected themes in sustainable agriculture and forestry. These cover soil and water management, integrated pest management and crop rotation, recycling of biomass, integrated supply chain tools, and ecosystem and social services from agriculture and forestry. Results are presented in formats suited to end-users in the primary production sector, and will facilitate their integration into practices through a series of 'case studies on innovation'. These have a regional orientation, and a focus on either specific commodities, farming systems, or the landscape scale. They cover a range of regional and local specificities.

Innovation requires effective communication between actors in the field, and between researchers and practitioners. To facilitate these interactions while injecting new knowledge into the process, VALERIE launches a 'Communication Facility' named ask-Valerie.eu. This facility makes new knowledge accessible to the end-users, and will enable users to share their empirical knowledge, experience and views with peers across Europe. Integrating social media with 'formal' sources of information, ask-Valerie.eu will represent a powerful infrastructure to support the services of the EIP-AGRI Service Point, where the tool is to be embedded.

## Second Section (work performed and results achieved)

The overriding challenge is to make innovative research output in the agriculture & forestry domains accessible to end-users. During Period 1, VALERIE developed an approach that consists of three key-elements: an ontology with domain knowledge, a set of documents that have been annotated and meta-annotated, and a computer system (*ask-Valerie.eu*) that is based on a dialogue to represent the interaction between end user and system. This system helps the user in formulating his/her question and in answering it in a useful way. The first version of *ask-Valerie.eu* was completed in Period 1 and was tested in June, 2015. It integrates a series of back-end services (auto-completion, sieving, ranking of results etc.) with a simple and attractive user interface, and allows the detailing of user profiles to optimise user query output.

To achieve the above, an iterative cycle was established that links (a) stakeholders in case studies (CS) across partner countries with (b) providers of knowledge (content) on selected 'field problems' and thematic domains, and (c) a formal representation of domain knowledge organised as an ontology or hierarchy of concepts. Phases in this cycle are identifying knowledge demand by stakeholders, supplying knowledge input in response to the demand, and capturing key concepts from science and practitioners to build the ontology. The ontology, as it develops through iterative improvement, is used to harvest better matching information - from selected repositories on the web - by each cycle. The ontology completed two iterations in Period 1 and now contains over 4000 concepts.

Ten case studies in six VALERIE partner countries were established. They have a regional orientation and a focus on either specific commodities, particular farming systems, or management at a landscape scale, and so embrace different scales and dimensions. Most of the case studies are already well-established due to previous project activity and have well-defined issues and themes of interest and the CS partners have a good relationship with the existing stakeholder community. Two series of participatory CS meetings were held. Case studies cover issues in soil and water management, catchment scale water quality, control of weeds, pests, and diseases, forest ecosystem services, and forest biomass use and recycling.

A database of innovations in the VALERIE themes was established (InnoVal). It now contains 479 innovations. Half of them are connected to projects; 235 are classified with a TRL (mostly between 7 and 9, which shows the practical type of innovations selected). This 'draft list' of innovations, and their connections to projects and sources, will be further developed towards more exhaustive stages by midterm (December 2015) and by completion of the project. Six expert panels were established, involving a total of 44 scientists from seven countries and sixteen institutions.

To test the first version of *ask-Valerie.eu*, 1128 documents were collected to answer typical questions from each case study. Documents were automatically annotated by newly developed VALERIE tools. Manual meta-annotation of text fragments in these documents appeared highly effective, but too time-consuming. VALERIE is therefore experimenting with semi-automated methods that can compile relevant information from a large number of sources more time-efficiently than 'manual' processing can.

Language turns out a key issue, despite case studies being guided by multi-lingual advisors. In response, ontologies will be translated into all partner languages (e.g. French), and relevant non-English documents from national projects and/or stored in 'national-language repositories' will be annotated using the translated ontologies. This enables non-English users to find not only English documents upon formulating a query to *ask-Valerie.eu* in their own language, but also documents in non-English languages. A total of 26 existing repositories of fact sheets – in different EU languages –

Presentation workshops were held at the Copa-Cogeca offices in Brussels on 5<sup>th</sup>-6<sup>th</sup> June 2014 providing the opportunity for farmer unions, SCAR, EU project and EIP-AGRI SP representatives to discuss knowledge exchange for innovation in agriculture and forestry, and to provide feedback on VALERIE objectives and work plan. Outcomes were captured in an "Initial Report on Feedback from Major Clients".

### **Third Section (results and expected impact)**

The VALERIE-project will help close the innovation gap that exists between research and farming/forestry practice, and will so valorise the high level scientific knowledge produced in EU and other research programs. By injecting concisely summarised knowledge for practitioners into the innovation process on the ground, it will contribute to making agriculture and forestry practices more sustainable and more productive.

More specifically, VALERIE supports the activities of the European Innovation Partnership EIP-AGRI, by providing the *ask-Valerie.eu* webtool that is a highly interactive knowledge base on sustainable agriculture and forestry, as well as a medium for communication amongst end-users.

VALERIE presents an entirely new concept to mobilise science to increase public goods provision by agriculture, and to capture the users' perspective for integration into science and policy activities. Through *ask-Valerie.eu*, VALERIE will stimulate innovations to arrive faster on the ground, and it will channel feedback from practitioners into the research and policy communities. This will dramatically facilitate and improve the process of stakeholder-driven agenda-setting in the research-policy arena.

Facilitating this very process is at the heart of the EIP-based programming. Through its case studies, VALERIE will set a new approach for articulating the specific needs and empirical knowledge by practitioners, and for integrating these into scientific activities. The VALERIE case studies aim to demonstrate how a long term dialogue between scientists, producers and other stakeholders can be organised effectively, to the benefit of all parties involved. Both *ask-Valerie.eu* and the VALERIE case studies will inspire new stakeholder communities in Europe to utilise the modern tools and approaches offered by the project.

The outputs generated by VALERIE are geared to strengthening the innovation chain, by enhancing communication between all actors involved, and by injecting precisely tailored and up-to-date knowledge into the innovation process. This will be especially so for the innovation domains closely connected with the sustainability themes elaborated in this project, but can easily be extended to broader array of thematic domains.