

PhD Research topic:

“Innovation in economics, marketing and investments for the responsible management of public goods within the domain of natural resources”

PhD Program in Land, Environment, Resources and Health (XXXIII Cycle)
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Natural resources, including forest ones, got momentum in the international research and policy agenda in connection with the emerging of a broad range of challenges including (but not limited to) degradation and loss of natural capital and the ecosystem services it provides, wide socio-economic developments and climate change. Proper management of natural resources and addressing of challenges build on innovative nature-based solutions that are designed to conserve/enhance natural capital and, at the same time, can contribute to support economic growth, business opportunities, job-creation and the general well-being.

The identification and development of such solutions, however, requires huge efforts in terms of access to/proper use of good quality data, defining appropriate policy and normative frameworks, analysing economics of natural resources, setting proper market-based solutions for marketing of ecosystem services and developing specific investment mechanisms for ensure appropriate financial support.

Within this general framework new technologies related to the concept of Internet of Things (IoT) and Industry 4.0 might have a tremendous impacts in changing the forestry/agriculture sector and the management of natural resources and their ecosystem services. Regionally, Greater China, North America and Western Europe are driving the use of connected things. According to Gartner (2017), connected “things” will reach 20.4 billion units, with a total spending of almost \$3 trillion by 2020. The research aims to develop a foresight scenario building on the applicability of new technology related to IoT and Industry 4.0 (Augmented reality, Big Data Analytics, Industrial internet, etc.) applied to the natural resource sector (having a specific emphasis on the forest and their ecosystem services), with a focus on how these technologies can solve historical sector-specific problems, such as sustainability, traceability, supply-demand match, access to nature, recreational services, ecosystem services marketing and investments, etc. Besides, satellites, drones, weather stations, integrated machine’s sensors produce highly intensive data may be used for improving productivity and sustainability in forestry and agriculture. The main challenge is to interpret those data in order to supply user-friendly products. Indeed, those technologies are available but few operators adopt them. Apart from developing a foresight scenario the research aims also to identify limitations and weaknesses associated to these approaches while identifying the most promising solutions that might bring innovation in the management of natural resources and ways to implement them effectively. The final research should focus on one or two innovative IoT applications, analyse their implementation/development and design a business model for marketing and attracting investments on forest ecosystem services. The candidate will be stimulated by working within existing projects such as ECOSTAR Hub and by receiving inputs and additional support by Etifor, spin-off of Padova University, which co-funds the PhD scholarship.