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Hydrology across disciplines: the experience of a Public Hydrological Service in Italy

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Water is very important for human consumption, production and services and also for inspiration, recreation, landscapes, ecosystems and wild life. UN and EU policies highlights the interaction of historical scientific, economic, societal and environmental factors and the linkage of water policies with biodiversity protection and Climate Change adaptation. According to the European Green Deal (2019), for a fair and prosperous society, with a modern, resource-efficient and competitive economy working across sectors and disciplines, will be needed, also involving local communities. Moreover Political and management processes may take benefits from specific participatory Tools.

The Emilia-Romagna Regional Agency for Prevention, Environment and Energy (Arpae) helps sustainability developing actions for water protection, water use, flood management and education to sustainability.

Arpae Hydrological Service (HS) supports flood management and water management, as also design and management of hydraulic structures, through the Flood Early Warning System FEWS and the Drought Early Warning System DEWS. Arpae HS also collect and publish hydrological time series (water, solid transport) and stage-discharge equations.

Within FP7 Enhance (2017) multi risk analysis and Public Private Partnership (PPPs) experiences were supported by modeling tools combining flood /earthquake/Climate Change scenarios in a densely populated, highly developed land reclamation territory. An Application of the System for Economic and Environmental Accounting for Water (UN SEEA -Water) was developed in 2017. Within Interreg Proline-CE (2019), the FEWS and DEWS Systems, respectively supporting the Flood Forecasting Center and the Observatory on Water Uses, were proposed as Best Management Practices (BMPs) for land and water management useful for drinking water protection. BMPs where tested through workshops, questionnaires, meetings and technical visits, useful for dissemination and stakeholders involvement. H2020 Clara was useful to experience co-design/co-development approaches, to explore market segments and business models for water knowledge and climate services, and to set dedicated Policy Briefs for Water and Climate Change Adaptation; Arpae HS developed a set of modeling services (Clara PWA) related to water management, solid transport, water quality and habitat availability, useful to understand the influenced of climate change and the needs and proposal coming from market and the institutions. Interreg boDEREC-

CE is a current project on pharmaceutical and personal care pollutants (PPCPs), aimed at developing tools and strategies for protection of drinking water, water ecosystems and public health from pollution, bacterial resistance, toxicity and pathogens.

Arpae HS through these experiences has gained awareness of the inter linkage of hydrology with other sectors (economy, Earth sciences, ICT, health, ecology, society) and of the importance of developing specific decision support tools maximizing stakeholder participation, societal dissemination, transparency, education to sustainability and experts involvement.