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LandSense: A Citizen Observatory and Innovation Marketplace for Land Use and Land Cover Monitoring

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Currently within the EU's Earth Observation (EO) monitoring framework, there is a need for low-cost methods for acquiring high quality in-situ data to create accurate and well-validated environmental monitoring products. To help address this need, a new four year Horizon 2020 project entitled LandSense will link remote sensing data with modern participatory data collection methods that involve citizen scientists. This paper will describe the citizen science activities within the LandSense Observatory that aim to deliver concrete, measurable and quality-assured ground-based data that will complement existing satellite monitoring systems. LandSense will deploy advanced tools, services and resources to mobilize and engage citizens to collect in-situ observations (i.e. ground-based data and visual interpretations of EO imagery). Integrating these citizen-driven in-situ data collections with established authoritative and open access data sources will help reduce costs, extend GEOSS and Copernicus capacities, and support comprehensive environmental monitoring systems. Policy-relevant campaigns will be implemented in close collaboration with multiple stakeholders to ensure that citizen observations address user requirements and contribute to EU-wide environmental governance and decision-making. Campaigns for addressing local and regional Land Use and Land Cover (LULC) issues are planned for select areas in Austria, France, Germany, Spain, Slovenia and Serbia. Novel LandSense services (LandSense Campaigner, FarmLand Support, Change Detector and Quality Assurance & Control) will be deployed and tested in these areas to address critical LULC issues (i.e. urbanization, agricultural land use and forest/habitat monitoring). For example, local residents in the cities of Vienna, Tulln, and Heidelberg will help cooperatively detect and map changes in land cover and green space to address key issues of urban sprawl, land take and flooding. Such campaigns are facilitated through numerous pathways of citizen empowerment via the LandSense Engagement Platform, i.e. tools for discussion, online voting collaborative mapping, as well as events linked to public consultation and cooperative planning. In addition to creating tools for data collection, quality assurance, and interaction with the public, the project aims to drive innovation through collaboration with the private sector. LandSense will build an innovation marketplace to attract a vast community of users across numerous disciplines and sectors and boost Europe's role in the business of ground-based monitoring. The anticipated outcomes of LandSense have considerable potential to lower expenditure costs on ground-based data collection and greatly extend the current sources of such data, thereby realizing citizen-powered innovations in the processing chain of LULC monitoring activities both within and beyond Europe.