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International cooperation in using space for sustainable development: Towards a 'Space2030' agenda (1)

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AGRICULTURE IOT SMALL SATELLITE CONSTELLATION FOR THE AMERICAS, A NEW PARADIGM IN CLIMATE CHANGE RESILIENCE EFFORTS

Abstract

As part of the upcoming United Nations, Climate Change Conference in Glasgow 2021 efforts are being made for a declaration on integrated food policies to tackle the climate emergency. In this scenario access to reliable data is one of the key milestones in the path towards sustainable food production. However, as the recent COVID crisis has exposed access to connectivity is an issue in rural areas all around the globe, which in turn limits access to the technology needed to enable food production efficiency improvements. To democratize access to real-time data and enable the implementation of IoT projects in rural areas where food is being produced, novel connectivity technology must be accessible to local food producers. Technologies such as LORA provide simple data connectivity for on-site sensors which through a constellation of space-based gateways can provide easy implementation independent of economic considerations. The Inter-American Institute for Cooperation in Agriculture (IICA) is the specialized agency for agriculture of the Inter-American System that provides technology and innovation for agriculture cooperation services to its 34 Member States, helping them to achieve agricultural development and rural well-being. IICA has recently inaugurated its digital fabrication laboratory as an enabler for disruptive innovation in the continent's agriculture. The laboratory has successfully developed research in food production in controlled environments for human space exploration and is now proposing the creation of a small satellite constellation of IoT gateways to provide accessible connectivity to rural areas in the American continent. Commercial small satellite constellations for IoT already exist and its technical feasibility has been researched and tested. This paper in turn aims at exploring the economic feasibility of such technical implementation from a non-profit international cooperation perspective, with a special focus on its possibilities as a tool for climate change action and space technology development.