Toward a standard and interoperable approach for supporting the dissemination of environmental life cycle assessment results

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Topic: Communicating research findings and uncertainties: Strategies, tools and new platforms for environmental sciences

The raising awareness of ecological problems by the general public and decision-makers has led to an increased demand of corporate responsibility and the need for environmental information from consumers and private organizations. The access to environmental performance data is a key issue to allow the quantification of the benefits achieved by novel technologies, towards sustainability, in particular within the energy sector considering the energy transition current debate.

In order to provide reliable open access information on environmental assessment aspects of the photovoltaic sector, an interactive tool build above Web services and hosted into a Spatial Data Infrastructure (SDI) is being launched in 2016. This interactive tool provides the users with easy-to-use data and maps on a worldwide coverage for the solar irradiation and environmental results at screening level of representative technologies. The information is based on the most updated life cycle inventories, published in 2015 by the International Energy Agency (IEA), and the solar irradiation database computed from the worldwide NASA SSE database.

The tool was developed using a state of the art interoperable and open standard Web-service framework from the Open Geospatial Consortium (OGC), namely Web Processing Service (WPS) and Web Maps Service (WMS). It is integrated within the collection of Web Services and applications offered by the SDI webservice-energy.org. This SDI aims at providing the users with a unique point of access for renewable energy and environment resources from a geospatial data catalogue and a set of online interactive tools. It is operated by the Center for Observation, Impacts, Energy (O.I.E, MINES ParisTech) since 2008. The SDI is currently recognized as a Global Earth Observation System of Systems (GEOSS) community portal that connects users to thousands of Web services. It integrates tools based either on World Wide Web Consortium (W3C) standards and Open Geospatial Consortium (OGC). Those standards include Web Service Description Language (WSDL), Simple Object Access Protocol (SOAP), Web Map Service (WMS), Web Feature Services (WFS), Web Processing Service (WPS) and Sensor Observation Services (SOS). Being interoperable and compliant with these standards enables this Web service to be included in future developments capitalizing at most this first initiative within LCA for energy pathways.