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## AGRICULTURE MONITORING USING SENTINEL IMAGES

### >>> A few years later

In this solution, both Sentinel-1 and 2 data are used to generate crop maps, to detect changes and to obtain new outputs: urban elements and detection of practices in agricultural parcels. The compilation of each Sentinel-derived product is implemented in the Walloon Paying Agency in the framework of the new Check by Monitoring system.

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| BENEFICIARIES | Walloon Agricultural Research Centre, Wallonie Region | Walloon Paying Agency Wallonie Region]   | Farmers  | Citizens and society   |
|---------------|---|--|--|--|
|               | <b>TIER 1: SERVICE PROVIDER</b>                       | <b>TIER 2 PRIMARY USER</b>   | <b>TIER 3 SECONDARY USER</b>   | <b>TIER 4 END USER BENEFICIARIES</b>                           |
| SERVICES      | Sentinel-1, Sentinel-2;                               | Systematic update of Land Parcel Identification System (LPIS); field visits for control-checks limited to the minimum necessary; | Pre-filled declarations of cultivated fields (and eventually the ecological focus areas) | Improved crop management and maintenance of agricultural land; |

Value chain definition following SeBS Methodology - <https://ears.org/sebs>

### The space-based solution

This solution was produced by a scientific entity for a Public Administration, in collaboration with Wallonie Region (SPW) itself for its internal use.

### The Usage Maturity Level

Since 2018 the solution has transitioned to a higher level and is now integrated in the workflow of the administration. Now, both Sentinel-1 and 2 data are used to generate crop maps, to detect changes and to obtain new outputs.

Thematic Area



AGRICULTURE, FOOD, FORESTRY AND FISHERIES

Region of Application



WALLONIA

Sentinel mission used



S1  
S2

Copernicus Service used



-

Usage Maturity Level



5

## Overall benefits

### ECONOMIC



Reduction of risk has been registered

### ENVIRONMENTAL



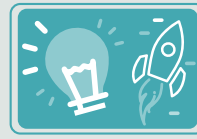
- Reduced pollution
- Reduced depletion of natural resources (soil, water)

### REGULATORY



- There were improvements in the policy monitoring capabilities of the PA in charge
- The solution has improved the PA's capabilities to detect and assess non-compliances
- The solution improved compliance promotion with duty-holders

### INNOVATION



- The solution has helped to introduce some innovation in the functioning of the public administration
- There were positive market externalities. (soil, water)

### SCIENCE



- The solution has enabled some technological advancement
- There was an increase in technical/scientific expertise related to Copernicus/EO within the PA.

### SOCIETAL



Civil security has improved in terms of trust and community building for the involved actor

Benefits classification following SeBS Methodology - <https://earsc.org/sebs>

## Interesting facts...

In the past few years, significant technical advances have been implemented. Specifically, performance and automation improvements of Sentinel-1 and Sentinel-2 data pre-processing, crop type mapping and agricultural practices detection. The solution is integrated in administrative workflow and the chain runs continuously along the subsequent crop seasons.

## Outlook to the future

Additional EO data should be used jointly with Sentinel-1 and Sentinel-2 images, such as aerial photos or very high spatial resolution satellite imagery to address the quality improvement on small parcels. Other products are planned in order to monitor additional schemes. In terms of environmental benefits, in the future, a better maintenance of agricultural land is being envisaged.

## Acknowledgements

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