LIFE14 ENV/IT/000414
Demonstrating Remote Sensing integration in sustainable forest management
FRESh LIFE

ACTION E3
Indicators

Deliverable
List of indicators with analysis of remote sensing contribution

Firenze,
15/12/2018

Summary

Aims

This action is aimed to compile the information needed to complete the indicator tables (quantitative and qualitative) that will be submitted with the first Progress and Final Reports. For each selected indicator we will evaluated how remote sensing technologies can contribute in supporting the sustainable forest management.

The action is under responsibility of the coordinating beneficiary that acquire information from the responsible beneficiaries in the three demonstration sites also trough the compilation of questionnaires, meetings and field visits.

Milestones e deliverables

In the Action E3, the following milestones and deliverables are expected:

Name of the milestone	*Deadline*
M1 – Definition of the indicators	31/12/2017

Name of the deliverable	*Deadline*
D1 – Indicators submitted with First Progress Report	30/06/2016
D2 – List of indicators with analysis of remote sensing contribution	31/12/2018
D3 - Indicators submitted with Final Report	30/11/2019

Progress

Starting from what indicated in the project proposal we defined the indicators and submit it with the first progress report in line with the deliverable "Indicators submitted with First Progress Report". The project indicators were validated following the indications provided by the monitoring team NEEMO. The online form was compiled by indicating all the indicators considered relevant for the project activities. According to the project timetable the indicators will be compiled again at the end of the project when all the impacts will be more evident and quantifiable.

Selected indicators are the follow:

- 1.5 Project area/length;
- 1.6 Humans (to be) influenced by the project;
- 4.2.1 Sustainable Forest Management;
- 4.2.2 Provision of forest datasets for the European Data Centre;
- 7.3 Natural and semi-natural habitats;
- 11.1 Website;
- 11.2 Other tools for reaching/raising awareness of the general public;
- 12.1 Networking;
- 12.2 Professional training or education;
- 13. Jobs;
- 14.1 Running cost/operating costs during the project and expected in case of continuation/replication/transfer after the project period;
- 14.2.1 Capital expenditure expected in case of continuation/replication/transfer after the project period;
- 14.3 Future funding;
- 14.4.3 Entry into new geographic areas;

Here below we analyze the remote sensing contribution to each of these indicators. However it is important to underline that not all indicators are directly related to the technologies and methodologies proposed by our project so quantify the contribution of remote sensing could be result harder.

Project area/length

Regarding the project area, the contribution of the remote sensing technologies and methodologies proposed by our project is related to the possibilities to extend the forest area managed following the principles of Sustainable Forest Management. New technologies as UAV and Forest Information Systems have a strong attractive power for forest managers so they could decide to apply these innovative methodologies to their forests thanks to our results. An example is the State Forest of Vallombrosa where the local manager, after seeing the potential of our Forest Information Systems, decided to use a similar methodology during the updating of the forest management plan and asked to the project team to participate in it as consultant.

Humans (to be) influenced by the project

As indicated for the previous indicator the innovation of the technologies and methodologies proposed by our project, specially the use of UAV, have an incredible appeal among the forest sector operators but also for the citizens of the demonstration areas. The widespread interest on remote sensing technologies allowed us to participate to different kind of events, also not linked directly to the forests world, that have increased the number of Humans influenced by the project. An example is the participation at the International Robotics Festival in Pisa and at the event "Lucca Nerd", both events are not related to the forest sector that allowed us to reach a different audience.

Sustainable Forest Management

The Forest Information System, created for the three demonstration area of our project thanks to the contribution of remote sensing technologies, has met the expectations of local partners and its potential pushed them to evaluate the possibility to extend the area covered by the project products to other parts of the forest that they manage. The Unione dei Comuni Valdarno Valdisieve, for example, is evaluating the possibility to use the methodologies of FRESh LIFE project during the preparation of the forest management plan of all the forest area increasing the hectares managed by the rules of Sustainable Forest Management from the 200 ha of the demonstration to more than 1000 ha of the entire forest. In the next months with the publication of the Technical Report and the Report for Policy Makers, these possibilities to extend the area managed by Sustainable Forest Management will become more and more frequent.

Provision of forest datasets for the European Data Centre

The strictly correlation between remote sensing technologies and the creation of data set allow us to easily provide new products for the European Data Centre. The use of remote sensing, specially by UAV, give us a huge quantity of raw data that can be analyzed and elaborated in order to obtain a lot of different results. All the data set produced by our project are correlated with metadata following the INSPIRE instructions that facilitate their use in the European context.

Natural and semi-natural habitats

Climate change is an unprecedented issue in modern times, with significant implications for forested ecosystems, the economic benefits they provide, and the livelihoods of those who depend

on them. Climate change is also a dynamic and complex issue that increases uncertainty about what future forests will look like. In this scenario, tools that allow forest managers to take forward-looking decisions are useful in order to preserve the goods and services provided by the forests. Sustainable Forest Management is based on the principle of maintaining and enhancing the long-term health of forest ecosystems while providing environmental, economic, social, and cultural opportunities for current and future generations. Specially in the area of NATURA 2000 network, where the main aim is the conservation of particular habitats, the possible integration of remote sensing technologies in Sustainable Forest Management it's very important in order to provide advanced spatial information that decision makers and forest managers can use to explore potential changes in future climate and their anticipated impacts on forests and forestry.

Website and Other tools for reaching/raising awareness of the general public

The use of remote sensing technologies give us the availability of a huge quantity of data very useful in the dissemination activities. Photos and videos taken by our drones were used inside the project website in order to make it more attractive for the users. Also the maps of Sustainable Forest Management indicators are useful for the same reasons. For the innovational aspects of our methodologies the products of the project (maps, data, photos, videos, reports) have a great appeal in different context, that goes from the forest sector to the robotic. This increase the power of our dissemination trough events, poster, brochure and all the other "channel" considered by this indicator.

Networking, Professional training or education and Jobs

Remote Sensing technologies are not directly related to these indicators but, as indicated for the previous ones, our topics are very innovative and this influence in a positive way all the activities related to the involving of new people from the networking possibilities with other projects to the professional and educational contexts.

Running cost/operating costs during the project and expected in case of continuation/replication/transfer after the project period and Capital expenditure expected in case of continuation/replication/transfer after the project period

The assumption that the integration of remote sensing technologies in Sustainable Forest Management allow to reduce the management costs is one of the pillar on which we founded our project activities. The first analysis on the economics benefits of our methodologies in the demonstration areas confirm what we thought. In the same way the use of remote sensing technologies will reduce part of the costs related to the transfer and upscaling of the project in the after-LIFE planning.

Future funding and Entry into new geographic areas

As explained for all the other indicators, the links between remote sensing technologies and the possibilities to find new found for extend or replicate the project activities, are the innovative character and the topics of the project that make it more attractive and in line with possible calls from UE or other subjects. The same reasons are true when we consider the possibility to extend the project activities into new geographic areas.