

A DIGITAL FOREST SYSTEM

for regional planning and monitoring of forests using remote sensing

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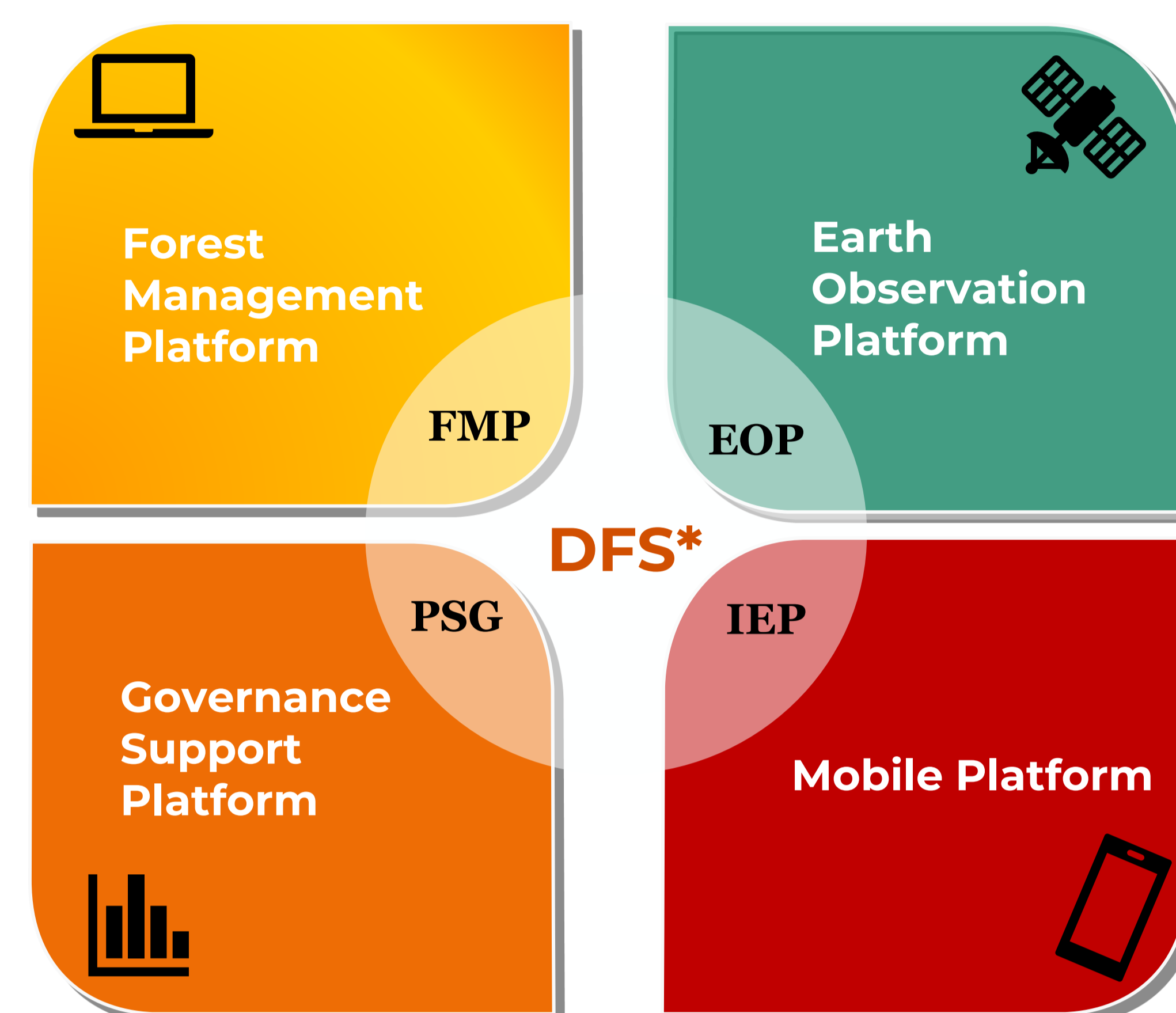
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OBJECTIVES

Planning and governance in the forestry sector are impeded and slowed down due to the absence of a cohesive, real-time monitoring system for forests and ecosystem services. The **LIFE FOLIAGE** project aims to improve forest governance in public administrations by developing a '**Digital Forest System**' (**DFS***) composed of four platforms. This work proposes a **methodology** developed for the **detection of forest clear-cuts** in real time that will be implemented in the **FMP**.



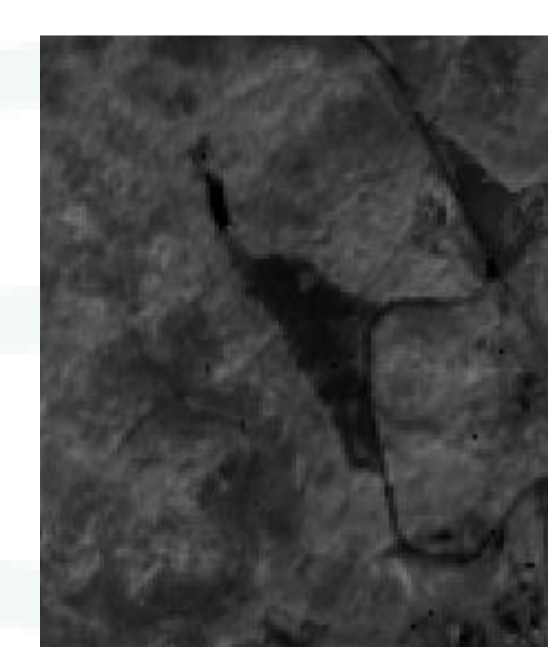
METHODS

The methodology employs **machine learning** algorithms (Random Forest and Support Vector Machine) to perform a **supervised pixel-based** classification of **Sentinel 2** satellite images.

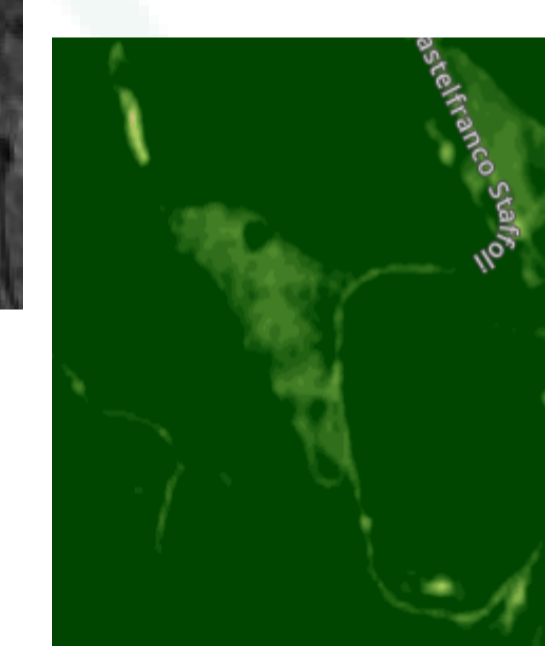
1 STUDY AREA AND DATASETS



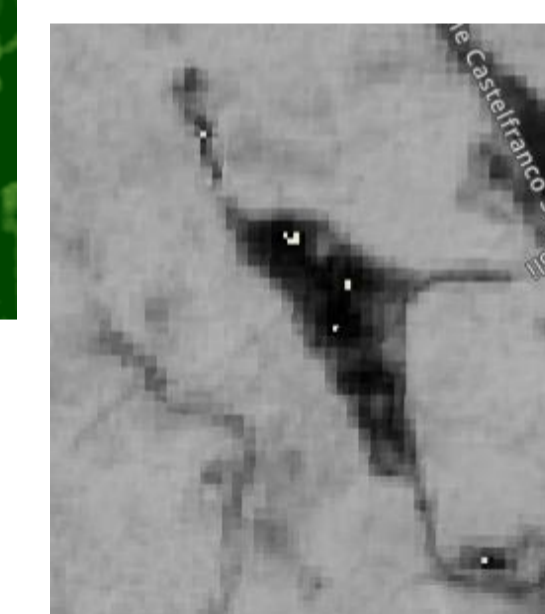
Sentinel-2 dataset



Total Productivity (VPP)



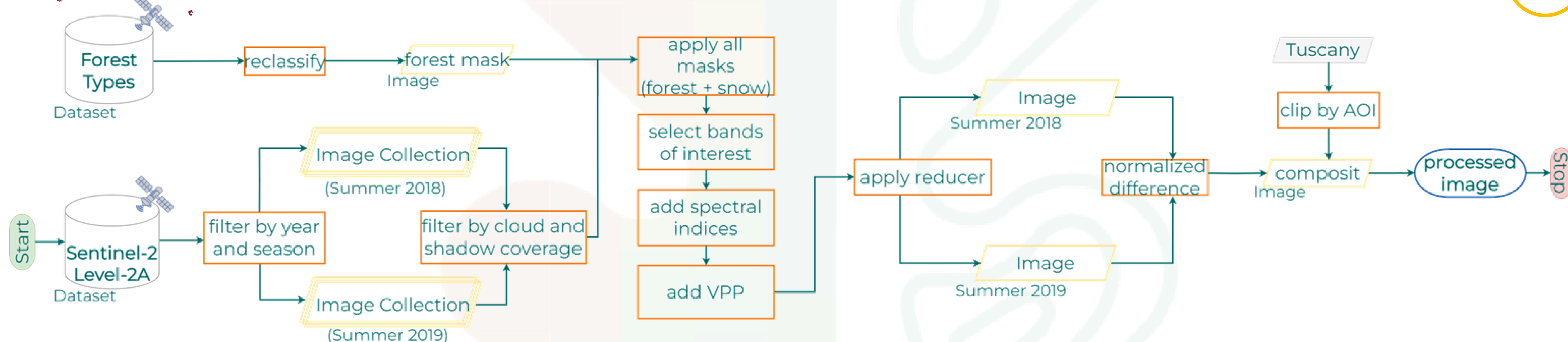
EVI



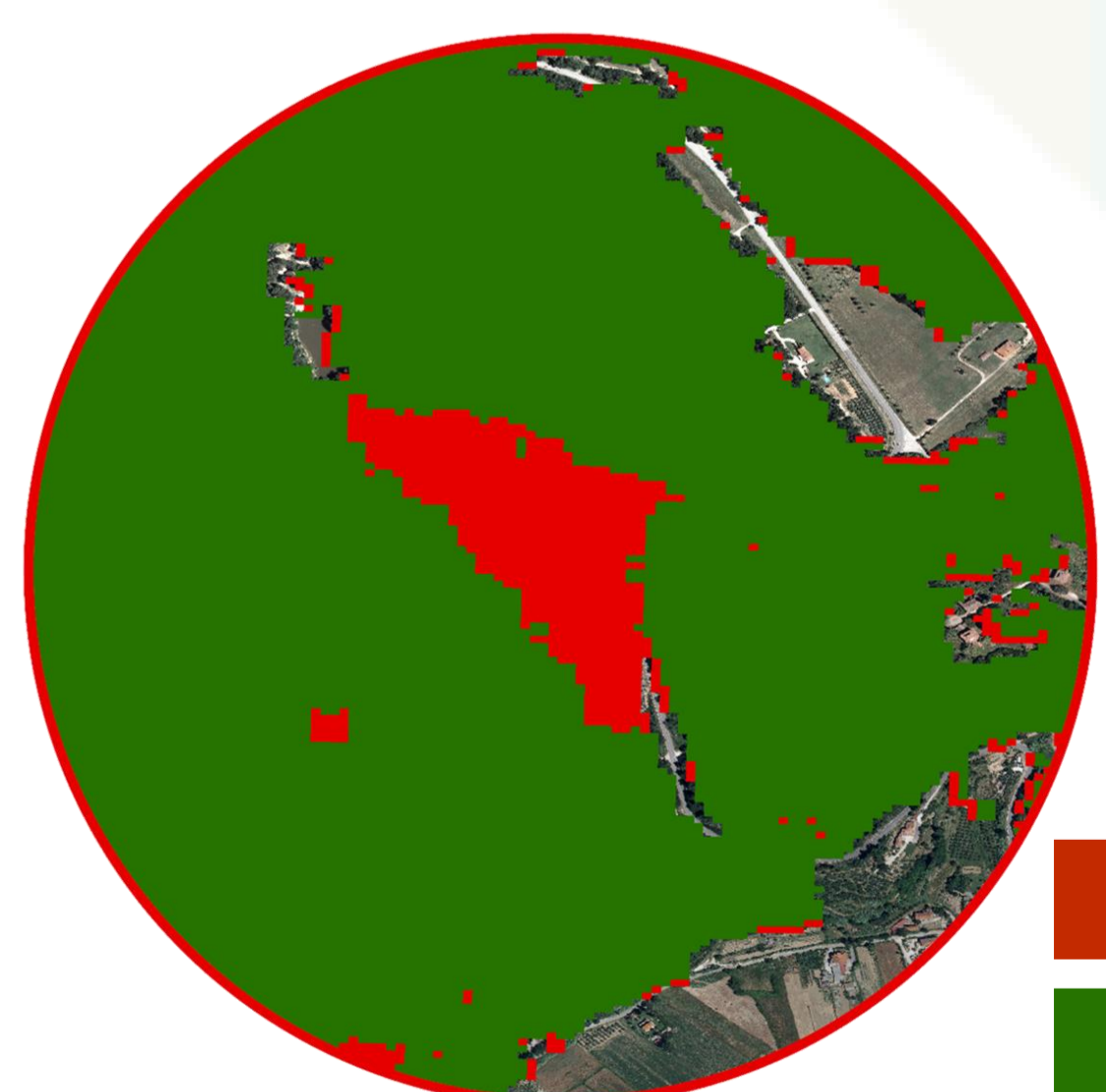
NDMI

Vegetational indices

2 PRE-PROCESSING OF SATELLITE DATA



3 CLASSIFICATION & RESULTS



■ Clear-cut
■ Forest

Confusion matrix:

	TP	FP
TN	130583	2348
FN	3543	138459

Overall accuracy: 0.94 | Matthews corr. coef.: 0.89

> over the entire study area, approximately **90%** of the identified cuts **were correctly classified**.

> The identified cuts are at least **0.5 hectares** in size.

TAKE HOME MESSAGE

LIFE FOLIAGE's remote sensing and machine learning **tools** can effectively **support planning of forest resources** of the project's Regions partners and, at the national level, could **contribute to lowering the uncertainty surrounding** unreported "primary" and "secondary" **biomass and carbon flows** entering the domestic timber market.