EXECUTIVE ABSTRACT

Forest management in many tropical countries is extremely difficult due to illegal cutting and wood commerce. Many local economic interests further contribute to a continuous deforestation, since millions of people lives depend on wood-related economy. The management of forests, and of natural resources in general, in this context is extremely complex.

Satellite data is a key information source for the operational implementation of a systematic methodology to monitor the existing situation and to propose corrective actions in the cases where the conservative strategies do not achieve the desired effects.

The systematic coverage of affected countries with high-quality satellite data would be useful:

- **To contribute to establish a credible system of monitoring, analysis, information and verification** to quantify the CO2 reductions due to deforestation and forest degradation, combined with the monitoring of tendencies in quality, forest area, etc.
- **To contribute to establish a strong, effective and flexible international support structure to fight against deforestation and forest degradation**, thanks to the availability of objective, homogeneous quantitative information on deforestation emission levels and forest degradation levels.
- **To define a common monitoring denominator for all the countries where Norway could invest throughout climate and forests initiative**.

Unfortunately, up to now, it was not possible to have satellite data with sufficient quality in terms of spatial resolution and revisit time to ensure a systematic and effective monitoring on global scale. This has recently changed thanks to the availability of DEIMOS-1, the first satellite designed specifically to provide a high spatial and temporal resolution for environment monitoring.

This R&D project is meant to demonstrate that a frequent systematic coverage of a tropical country is currently possible with a high-resolution optical satellite, and that the resulting stream of data could be used for a constant high-resolution monitoring of the extent of deforestation and for the systematic generation of the parameters describing the impact of this deforestation on the environment. ELECNOR DEIMOS' DEIMOS-1 satellite will be used for this systematic data acquisition.

Moreover, in the frame of this R&D project we will design and implement an algorithm whose output will be a change product based multi-temporal data, with automatic production using all the acquisitions done between different dates and during two years.

The main outputs of this project will be:

- The continuous coverage of two tropical countries with high-resolution DEIMOS-1 data

- The generation of cloud-free coverages with cloud-elimination filter algorithms that will be developed by ELECNOR DEIMOS IMAGING
- The generation of periodic change mapping for each country
- The generation of the periodic Forest Fraction Coverage evolution for each country

With this project, we will develop an operational methodology to assess the evolution of the environmental impact and the associated carbon estimation, resulting from the deforestation process.