

## **Demands and ways on how to strengthen government's capacity to do land and environmental compliance in the long term**

Deforestation rates in the Brazilian state of Pará, as well as in the entire Amazon, have reached a peak of more than 10km<sup>2</sup> of forest lost per year in the last decade (INPE, 2022). Concurrently, the approval of the new federal "land law" in 2017 (Law N<sup>o</sup> 13.465) contributed to the upsurge of land grabbing in the biome by granting amnesty to those who illegally occupied rural public lands between 2005 and 2011. Such context has further stimulated deforestation since this is common practice to signal land occupation and rights (BRITO et al. 2019). The government must therefore act on ways to address forest loss, and this includes mechanisms to curb illegal land grabbing, as this is one of the causes of such escalation. Despite government inaction at the federal level, some subnational governments are endeavoring to act on this issue. There are, however, many requirements that have to be fulfilled in order to ensure land and environmental compliance.

Focusing on the state of Pará, we assessed the demands on key state agencies such as SEMAS and ITERPA, and proposed means by which they could overcome crucial barriers to improve their capacity to automatically analyze land requests and environmental compliance on each property. For SEMAS, demands includes:

- Database structure for forest monitoring and management;
- Database structure to follow-up the "Brown Agenda" engagement;
- Technical knowledge to database usage;
- Data availability to support inspection
- Data on environmental issues (such as non-embargoed areas, most critical and priority areas for deforestation and forest conservation, etc.).

As for ITERPA, demands are intrinsically associated with data availability for prioritizing titling requests to substantiate technical reports and for monitoring of the titled areas.

Demanded data include:

- Properties' environmental situation, particularly deficits;
- Post-2008 deforestation;
- Post-2014 deforestation;
- Post-2008 forest coverage;
- Post-2014 forest coverage;
- Current forest coverage (most recent data);
- Alternative land use until 2008;
- Alternative land use until 2014;
- Embargoes;
- Vegetation clearance authorizations;
- PRA (environmental regularization program);
- Information on participation in environmental programs.

The means for improving subnational government's capacity to meet long-term land and environmental compliance certainly need to address the above-mentioned demands in the first place. With data availability being the core issue, a key action of scientific projects as such is to provide transparent and quality data to the competent agencies. The development of platforms such as the Forest Monitor and DETER Intenso module for Pará allows for monitoring deforestation in near-real-time. The former is a user-friendly webgis platform that allows image viewing, contrast enhancement and a vector drawing tool for the visual interpretation of areas identified as deforestation by remote sensing experts, as well as identifying changes in land use without the need to download images on a daily basis. DETER Intenso is entirely based on Forest Monitor technology and produces alerts for deforestation and forest degradation in areas considered critical in the Amazon, as defined by SEMAS. Technical personnel from the Secretariat were trained to use the Forest Monitor/DETER Intenso, resulting in the mapping of approximately 5,100 polygons of deforestation or forest degradation in Pará, totaling 3,200 km<sup>2</sup> between October 2020 and June 2022.

In order to overcome the lack of information about the environmental situation of properties (presence of legal and illegal deforestation, forest deficits, fines, embargoes, etc) the SeloVerde was developed. The platform combines information from a myriad of sources and displays it in a geospatial interface that can be accessed by anyone at any time to check compliance with the Forest Code at the property level. In addition to helping increase the effectiveness of environmental inspections, SeloVerde also fosters transparency in the cattle supply chain, as it enables the traceability of both direct and indirect suppliers. Combined, these tools empower governments to improve command and control actions based on easy-to-use systems built on the best available science.