MAPPING TOOLS FOR SUSTAINABLE AGRICULTURE AND FORESTRY

PRACTICAL GUIDE TO USE

September 2023

Foreword

This booklet has been produced as part of the joint activity of the ProSICD project and the GIZ Sector Programme for Sustainable Agricultural Supply Chains and Standards (INA). Designed by the geomatics experts of the company ACTUM DEV, this booklet offers technical and practical solutions for sectors working in the development and management of land and ecosystems. Specifically, it was produced taking into account the needs of cooperatives, regional councils, commodity-related councils, and technical government entities, such as ministries of territory, agriculture, water, forests, planning, etc. As such, this manual addresses the following pillars:

- Good practices for field data collection and storage ,
- Learning and mastering the use of cartographic software for data management and processing,
- Solutions to specific needs encountered in the field,
- Decision-making tools in the face of sustainability issues (especially deforestation).

This booklet was made possible thanks to:

• ProSICD (Sustainable Cocoa Initiative Support Programme), co-financed by the European Union and the Federal Ministry for Economic Cooperation and Development (BMZ) through the Agrichains project;

• The GIZ Sector Programme for Sustainable Agricultural Supply Chains and Standards (INA,) which is a transnational project that focuses on agricultural commodities such as coffee, cocoa, bananas, soybeans, rubber, palm oil and cotton;

• To the experts:

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0. PRESENTATION OF THE TRAINING

0.1. Contextualization of training

An example from Côte d'Ivoire

Mr. Yapi Gaston is a cocoa producer with 10 hectares of plot. To secure the plot that he obtained from his father, he decides to participate in the Land Policy Improvement Program initiated by the State (PAMOFOR) in order to obtain a Land Certificate (LC). During validation, his file is put on hold because part of his plot would end up in classified forest. He therefore seeks help from the water and forestry department which is technically unable to answer him. However, it guides him to the forest registry office in Abidjan, which gives him a technical file confirming unfortunately that his plot is partly in a classified forest.

Mr. Yapi also discovers that because of that area of his plot in the classified forest, his production could not be sold by his or any other cooperative because of new regulations such as the EU Deforestation Regulation (EUDR). This situation is not isolated, as it affects several other parcels of members of the cooperative. The cooperative's revenue is threatened to take a big hit.

With all the national and international regulations, buyers demand cooperatives to prove that their cocoa does not come from deforested areas or classified forests (through provision of polygons) under penalty of not being able to sell their production.

Under pressure, the CEO of the cooperative calls a consultancy company for an audit of their plot, but the cost of this activity is very high given the limited time. This situation could have been avoided beforehand with good data collection by field agents equipped with GPS devices. This scenario is one case among many that all actors in the agricultural and land sector could face (producers, cooperatives, technical agents of water and forestry, agents of municipalities and regional councils, commodity boards such as the Ivorian Conseil Café Cacao, etc...).

This manual is made to provide a technical foundation to address this kind of scenario. In summary, this manual provides information on:

- How to collect quality data in the field;
- How to process field data and produce coherent and useful databases to anticipate the aforementioned problems;
- How to continuously fill in databases and keep them up to date;

- How to produce maps easily presenting the data collected and facilitate the decision of the hierarchy.

0.2. Challenges of cooperatives

This training addresses several challenges that cooperatives may encounter. Through this training, cooperatives will be better able to:

- Monitor and manage the data of members' farms;
- Identify problematic farms and provide effective solutions for the benefit of the cooperative;
- Make better estimates of the overall production (advance knowledge and control of the cooperative's turnover);
- Better plan and deploy activities during campaigns;
- Anticipate land issues and help producers;
- Better access finance;
- Easier market quality products .

0.3. Training objective

The objective of this training is to strengthen the capacities of cooperatives and other actors to use GPS and QGIS, as well as how to read maps and use them in the sustainable management of agricultural, forestry and environmental activities. Specifically, this training will help to:

- Explain the basics of geographic information;
- Work with GPS data in QGIS;
- Collect geographic data in the field;
- Use GPS and mobile tools with QGIS;
- Implement thematic mapping;
- Modify geographic data and create maps

0.4. Target

This training document is published for technical officers in the agricultural, forestry and land use planning sectors. It is specifically designed for:

- Agricultural cooperatives;
- Agents of ministries;
- Technical sustainability officers of regional councils

0.5. Disclaimer

This manual was designed in 2023 with the technologies available at the time. The software packages used (QGIS installers) are available from this page https://www.qgis.org. The used version was QGIS 3.26.3 'Buenos Aires', released on 09.09.2022. The stable long-term release version at the time of conception is QGIS 3.28.10 'Firenze'. QGIS is available for Windows, macOS, Linux, Android and iOS.

I- MODULE 1: DEFINITION AND PRINCIPLES OF CARTOGRAPHY