

Cartography | Methods and Tools

Context

Using *spatio-temporal analysis* to map the susceptibility to desertification of the areas in which the *Programme for Decentralised Rural Development* (PDRD) operates is directly linked with PDRD's mandate to make productive use of natural resources. It aims to analyse the state of desertification and to verify if the measures implemented at a cantonal level have helped to control desertification more effectively and in a more appropriate manner.

This study therefore makes it possible to verify whether the efforts made by the local people with support from the *Decentralised Development Fund* (DDF) have had a positive impact. If this is the case, it would also mean that support for the decentralisation process has strengthened the process, by enabling the local people to decide on their plan of action through their local development plans.

This cartographic approach was introduced at the end of the PDRD programme and is part of the work undertaken to evaluate the programme. It is based on technical data covering the period from 1986 to 2010 and is currently being carried out.

In the area covered by the *Programme for Decentralised Rural Development in Assoungba, Biltine and Ouara* (PRODABO), the study is intended to:

- evaluate the impact of local efforts to control soil degradation factors
- estimate the surface area put to use for market gardening
- characterise the land's susceptibility to desertification at cantonal level.¹

It uses advanced techniques and software to process satellite images and **validate the data on the ground**. In the area covered by the sub-programme PRODALKA, the aim is to prepare a spatio-temporal analysis of land use by agricultural systems in the project's area of operation.

¹ *Cartographie par analyse spatio-temporelle, (Cartography using spatio-temporal analysis), Djelasse, 2010*



This analysis is made up of three elements:

- spatio-temporal cartography (1986-2010) of vegetation cover and analysis of the dynamics of land use
- socioeconomic survey of the characterisation and dynamics of production systems based on agro-ecological zoning (Boutna 2010)
- cross analysis of the cartographic results and of the socioeconomic study with the aim of establishing a correlation between areas susceptible to desertification and the corresponding production systems (Boutna et al, 2010).

The approaches taken by each programme are expected to provide a range of data that is sufficiently precise to enable the programme to draw general conclusions on the effects and impacts of its activities. In addition, the two approaches will make it possible to define their respective strengths and weaknesses, and thus to better determine the conditions under which it would be better to use one method rather than the other.

Stakeholders

a. The population

The population has had little involvement in this stage of the work, which consists of analysing technical data. It is, however, involved in the socioeconomic survey conducted by PRODALKA. Nevertheless, the people should take note of the results of this work and learn to use these results to develop their canton and region.



b. The cantonal development committee (CDC)

The CDCs are responsible for local development and should use the cartographic tool they have been offered in order to promote measures that foster local development, and to present these to the local people.

c. Executing agencies

The project staff are the main agents when it comes to carrying out cartography. They manage the technical equipment and required know-how, and work together in close cooperation. The decentralised service departments should also know how to use and interpret the information collected, and also acquaint their departments with the results and technology.

Activities

Currently, PRODABO's work involves analysing the satellite data and validating data on the ground. This work is based on LANDASAT and ASTER/SPOT data.

PRODALKA is supposed to have had access to this satellite data and ground analysis since the end of 2010.

This technical work does not make use of participatory processes, apart from informing the people during data collection and, theoretically, during the reconstruction phase that is to take place once the work is completed.

Products and their use

- The methods used make it possible to compare results, determine the respective limits of each method, and compare the relative merits of the two methods.
- Technical data is compiled on agricultural land and the hydric network.
- Information and publicity material on the results and their consequences for local development are passed on to the local people.
- Activities are conducted to strengthen the capacities of authorities and administrative departments to analyse the results.

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Direct results

- Spatio-temporal cartography of the two zones.
- Two methodologies and one synthesis.

This part cannot be completed because the study is still ongoing.

Monitoring and evaluation

This part cannot be completed because the study is still ongoing.

Scaling up

This part cannot be completed because the study is still ongoing.

Environmental impact

The proposed cartographic analyses should make it possible to establish that the different measures put in place by PRODABO and PRODALKA help to control desertification, and that the work and involvement of the local people can be expected to have a positive effect in the medium and long term. They provide the Republic of Chad with data and methods that can be used as part of its climate change mitigation activities.

Constraints

The analyses are still underway. The constraints encountered by PDRD relate to its capacity to make the results known to the people and the authorities.

In addition, if the proposed methods prove to be effective and efficient, as we expect, they could also be adopted by the authorities and other donors to continue the analyses and use them as development tools.

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