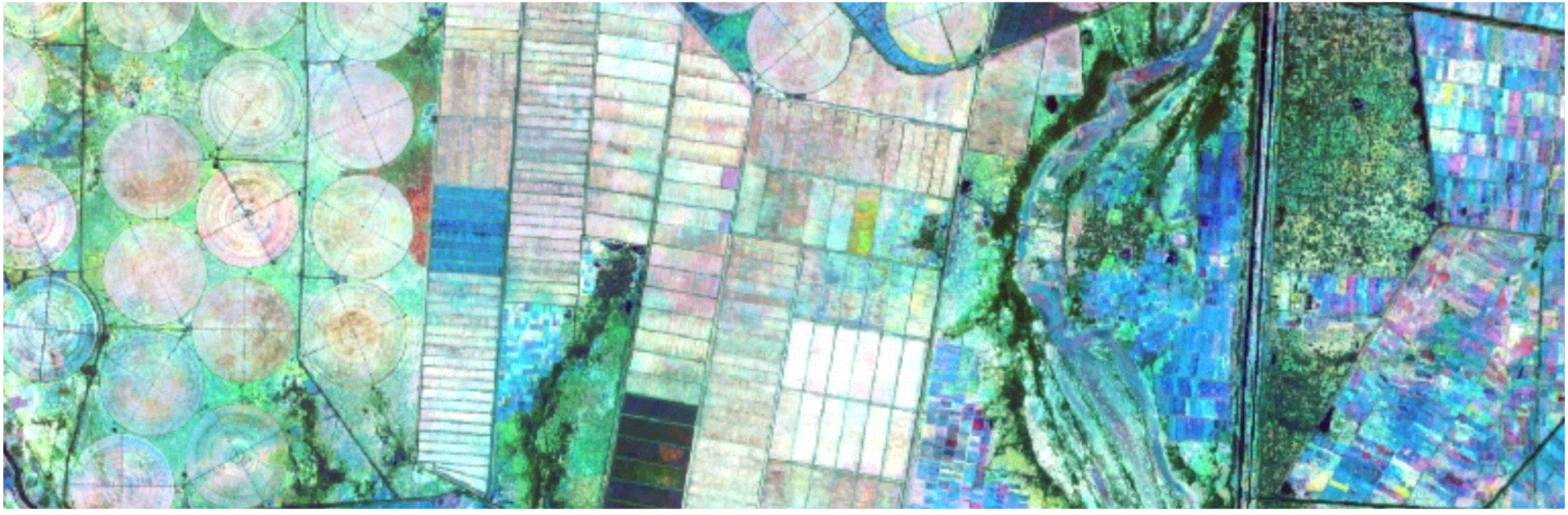
# SUMMARY NOTE:

## *Cropland change analysis in hard-to-access areas due to insecurity in 2021 in Mali*



Ministère du Développement Rural

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coopération allemande DEUTSCHE ZUSAMMENARBEIT

WFP Programme Alimentaire Mondial

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# CONTEXT

Mali has been experiencing a security crisis due to conflicts between armed groups and inter- and intra-community tensions in the north since 2012, which spread to the center of the country in 2018 and gradually to other regions. Insecurity has spread in the regions of Timbuktu, Kidal, Gao Mopti, and Ségou. Recently, it has continued to further spread to the rest of the country, particularly in the northern parts of the regions of Kayes, Koulikoro and Sikasso.

The civilian population continues to pay the highest price, through attacks on villages, killings, fires, the planting of explosive devices, abductions, the destruction of fields and granaries, and the theft of livestock.... These different forms of violence have a negative impact on food security through the degradation of household livelihoods, displacement of populations and severe disruption of socio-economic activities. Movement restrictions are imposed to people and goods, including the inability to access farms and markets.

To better understand the impact of insecurity on cropland dynamics, the World Food Programme (WFP) in collaboration with the Ministry of Rural Development (MDR) and the involvement of technical services and partners: AGIR Cell, CPS/SDR, DNA, DRA (Gao, Timbuktu, Mopti and Segou), INSTAT, IGM, DNGR, Mali-Météo, USSGB, IER, GIZ, IPRODI have undertaken in October 2021 the analysis based on satellite images[1] to observe and detect the dynamics of agricultural surfaces. Indeed, satellite imagery has proven to be an effective and innovative tool to obtain information in these difficult-to-access areas.

By detecting the physical impacts of the conflict, such as the reduction, disappearance and/or increase of crops, this analysis provides a overview of the situation at the end of the 2021 agricultural season, and enables to identify the most affected and vulnerable areas in Mali.

# OBJECTIVES

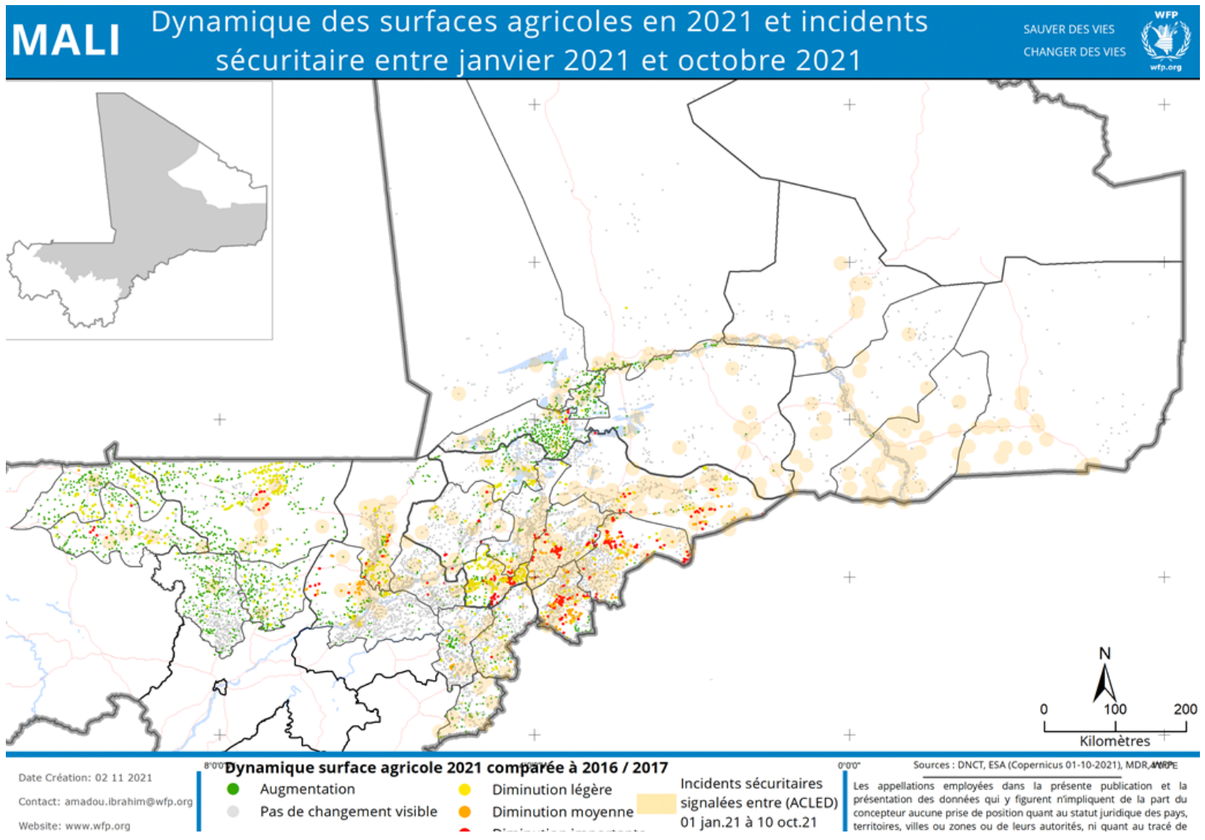
This analysis provides information to the Government and all partners, thus contributing to:

- Food security analysis: a contributing factor of the Harmonised Framework, at the November 2021 and March 2022 sessions,
- Humanitarian response: a tool to inform the geographical targeting of the most affected areas and the most vulnerable populations,
- Advocacy: by providing tangible evidence of the impact of the conflict on agriculture in these hard-to-reach areas (even inaccessible in some cases), share the assessments of technical services and partners with regard to the tool and its use, and provide perspectives.

[1] Sentinel-2, ESA/Copernicus

# KEY MESSAGES

- Insecurity severely disrupted activities during the 2021-2022 agricultural season in the circles (of the Dogon plateau, Djenne and Douentza) Mopti region and the circles (of Niono, Ségou, San and Tominian) Ségou region,
- In total, 5% of localities in the study area will be affected by medium to significant reductions in agricultural land in 2021. The most affected regions are: Mopti with 12% of localities and Ségou with 3%,
- Despite the insecurity raging in certain areas of Mali, there is no major impact on agricultural land in these areas in 2021,
- About 254,000 people are affected by the average to significant reduction in agricultural land.

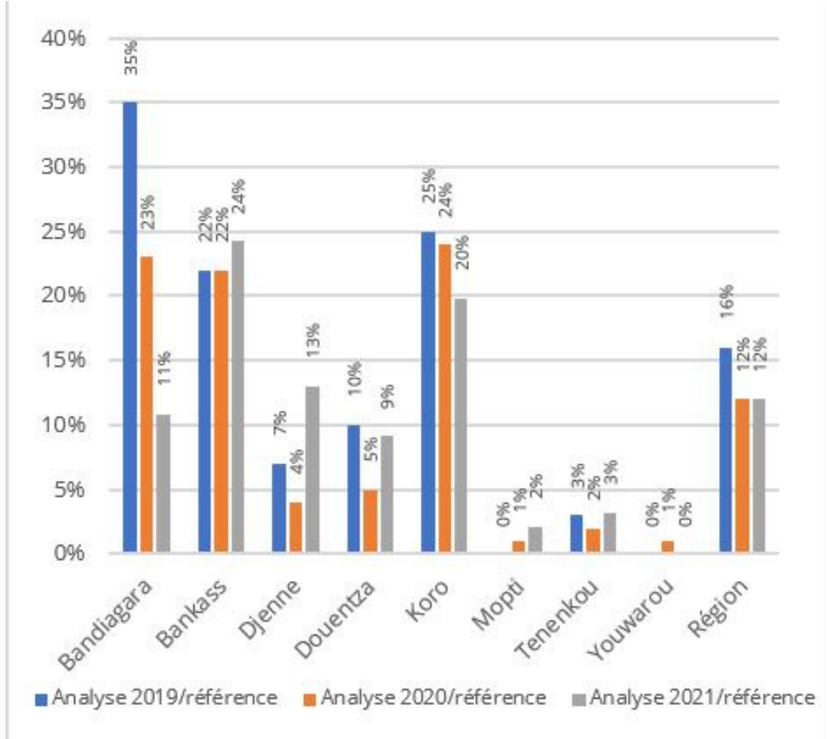


## 4. MAIN RESULTS

4.1 Estimation of population affected by reductions in agricultural areas in 2021:

The cercles most affected by significant decreases (medium to severe) in terms of population are the cercles of the Mopti region with 20% in Bankass, 18% in Koro and 11% in Djenne. In the Segou region, the cercles of Niono (3%), Tominian (3%) and Segou (2%) are affected. The population estimated to be affected in the two regions (Mopti and Segou) is estimated at 253,821 people, representing 7% of the total population of the Mopti region and 5% of that of Segou.

[1] Based on the 2019 population projection (DNP)
[2] Of the total population of the five circles (Ségou, Macina, Niono, San and Tominian) of the region analyzed out of the eight.




### 4.2 Comparison of the analyses of the Mopti region in October 2019, October 2020 and October 2021 :

EComparing the analyses of October 2019, October 2020 and October 2021 (at the end of the agricultural season for each year), we find a global increase in agricultural land in the Mopti region. The medium and severe decrease go from 16% of localities in 2019 to 12% in 2020 and 2021. This trend is confirmed for the Bandiagara (35% in 2019, 23% in 2020 and 11% in 2021) and Koro (25% in 2019, 24% in 2020 and 20% in 2021) cercles, which show a relative improvement. Stability is observed in the cercles of Youwarou, Tenenkou and Mopti, with a 1% difference between the different analyses. The cercles that have deteriorated in 2021 are Djenne, with 7% of localities significantly affected in 2019, 4% in 2020 and 13% in 2021, Douentza (10% in 2019, 5% in 2020, 9% in 2021) and Bankass (22% in 2019, 22% and 24%). See Graph.

It should be noted that the cercles of Djenne, Bankass and Tenenkou experienced an increase in the population estimated to be affected by cropland loss between 2020 and 2021, which went from 2% in 2020 to 11% in 2021, 16% in 2020 to 20% in 2021 and 0% in 2020 to 2% in 2021, respectively.

## 5. ASSESSMENT BY TECHNICAL SERVICES IN RELATION TO THE ANALYSIS TOOL

Below are presented the assessments of experts from State's technical services in relation to the satellite analysis of cropland change in hard-to-reach areas and its usefulness in decision-making processes in the context of insecurity currently experienced by Mali.

> ***We appreciate the tool and would like to see it deployed nationally, while forming a pool of experts at the level of each DRA to carry out analyses that will be shared with the national level. The tool could be an effective asset to fill existing gaps in agricultural statistics data. It allows us to triangulate with data provided by agents in inaccessible areas. The tool will also serve as a decision aid for the qualitative assessment of crops and agricultural areas.***
>
> - **Programme Officer at Direction Nationale de l'Agriculture (DNA)**

> ***The tool is of interest to us insofar as it allows us to have an overview of the agricultural season in areas that are difficult to access, to detect any deficit areas and to be able to take the necessary measures, and to be able to compare agricultural seasons in terms of cultivated areas. It can also complement the Enquête Agricole de Conjoncture (EAC) and the results of the Cadre Harmonisé.***
>
> **- Programme Officer at Cellule de Planification et de Statistique du Secteur Développement Rural (CPS/SDR)**

> ***For the past two years, we have not had access to certain parts of the region, so the tool is very timely. It allows us to assess the dynamics of agricultural areas and crops without risk in our areas which are prone to insecurity. This analysis workshop is relevant for us because it allows us to exchange and share our experiences and knowledge on our intervention zones. We suggest the creation of a dynamic network that allows each entity to update the data of its region and to share.***
>
> - **Monitoring & Evaluation Officer, Direction Régionale de l'Agriculture (DRA) of Ségou**

# 6. PROSPECTS AND EXPECTATIONS

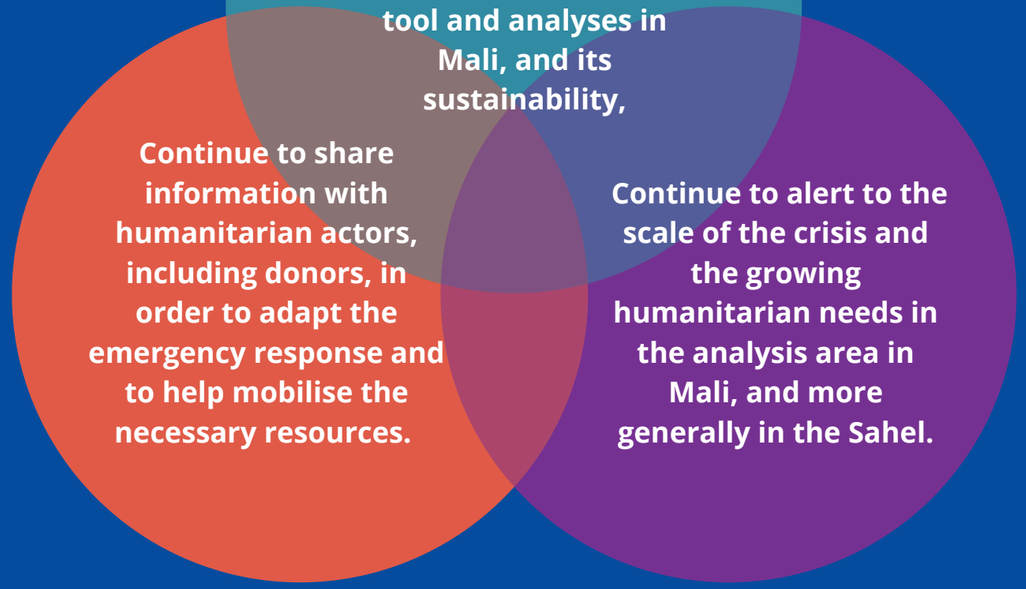
## 6.1. PROSPECTS

- Strengthen technical capacities of partners and government services to handle the analysis tool and Earth Observation products, in order to improve the quality of available information.
- Support the Ministry of Rural Development (MDR) in deploying the tool and analyses at DRA level
- Use these analyses as a tool to inform decision-making mechanisms and in defining the most appropriate humanitarian responses, targeting host communities as well as displaced persons, villages under embargo, prioritizing localities affected by significant reductions in agricultural areas.

**Assistant Permanent Secretary at CONACILSS at the Ministry of Rural Development:**

***We find the tool useful as it supports technical services in this period of security crisis, it will allow us to monitor inaccessible areas and realise the realities of the areas concerned, in terms of agricultural.***

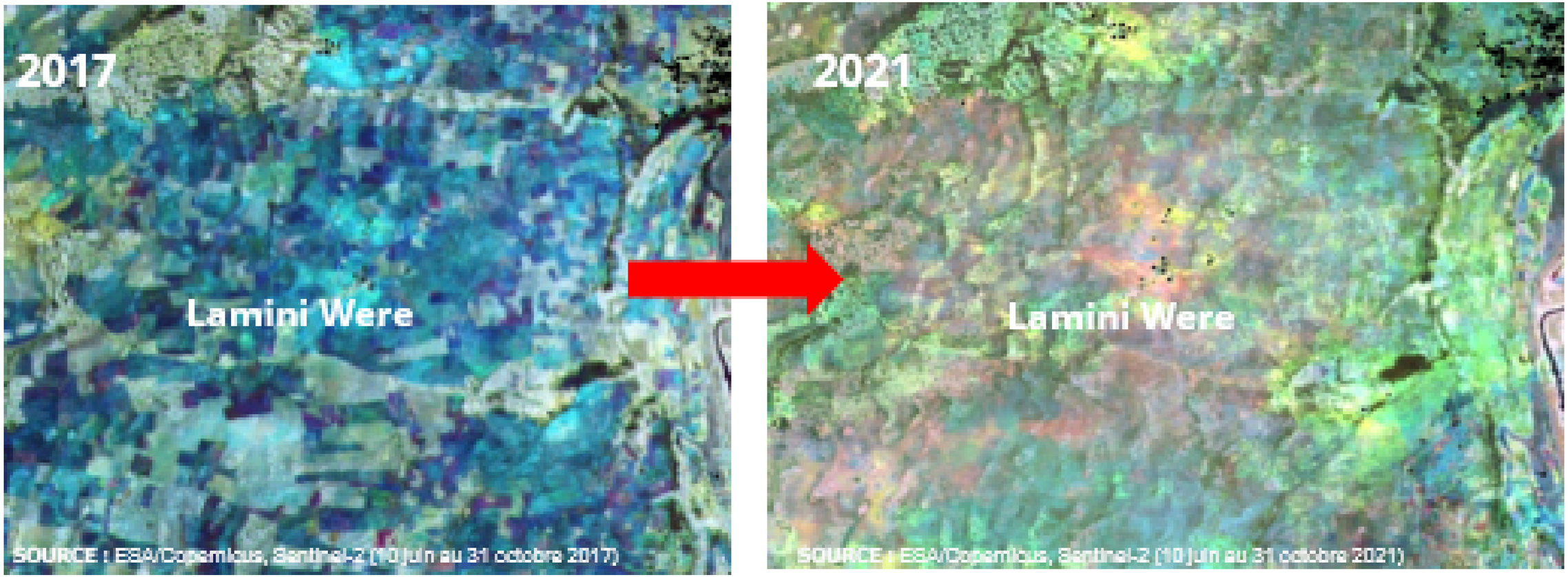
## 6.2. EXPECTATIONS




**Monitoring and evaluation officer, Direction Régionale de l'Agriculture (DRA) of Mopti**

***This tool is very interesting for us in order to appreciate the dynamics of agricultural areas. We have been facing a problem of insufficient number of agents in the field due to insecurity that limits the access of our agents, so the tool will allow us to better appreciate the agricultural season. We would like to be further trained in its use and handling.***

**Earth Observation technology has become a mainstay of WFP's analytical work since 2010 and is used for many of the organisation's operational activities.In the context of Mali, satellite imagery overcomes access constraints and territory's vastness: by detecting cropland abandonment, it enables to identify the villages most affected by the conflict.**




Satellite images showing the impact of movement restrictions on cultivated land around Lamini Were village

**In this locality in the cercle of Ségou, located in the commune of N'Koumandougou, insecurity has led to an almost total loss of cultivated land in the surroundings of this locality in 2021 (right), while crops are clearly visible in the 2017 image (left).**

**9 350**

**NOMBRE DE LOCALITES**
couvert par l'analyse

**254 000**

**ESTIMATION DE POPULATION**
affectée par les diminutions (moyenne à importante)

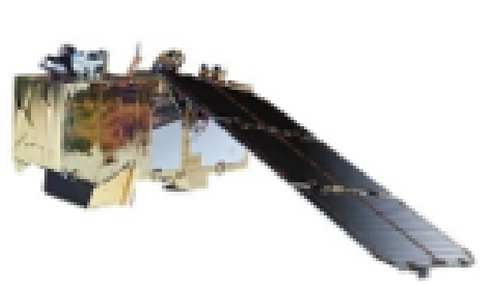
**10 648**

**IMAGES SATELLITAIRES**
Traitées pour couvrir la zone

**SPATIAL PRECISION**
10-meter resolution

**FREQUENT UPDATE**
Every 5 to 6 days

**INACCESSIBLE AREAS**
And/or very vast



**ARCHIVE IMAGERY**
Comparing with a past situation

**RATIO COST-EFFICIENCY**
Freely accessible imagery

Sentinel-2 is an Earth observation mission led by the European Space Agency since 2015, providing high-resolution optical images and mapping the Earth's surface in less than a week.

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Complete report
https://fscluster.org/mali/document/pam-rapport-danalyse-sur-la-dynamique

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