



Evaluation of Steppe Rangeland Development Programs in the Tiaret Area (Algeria)

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Abstract

Algeria is a country that owns an important region, which is the steppe region, which is the basis for the advancement of the pastoral economy, but it faces environmental problems more than ever, the most important of them are desertification and indiscriminate grazing. Even if there are efforts by the state, they are not sufficient to address this great threat to the pastoral steppe environment. Therefore, intensive work must be done on a real and practical strategy that works to protect and develop this region, in addition to the need to educate the population that their behaviour has a major role in preserving and protecting this biological diversity of the region. In this study we evaluated the success rate of rangeland development programs using different methods such as protection, pastoral planting, and the fight against desertification and desertification through consultation of the different programs with the DSA, DGF and HCDS services.

Keywords: Development programs; Steppe rangeland; Pastoral platting

Introduction

The irrational management of rangelands, the introduction of development methods and techniques that are unsuitable for the environment, and the lack of consultation between the various development stakeholders are all factors that have contributed to the degradation of the natural environment and the disruption of ecological balances with socio-economic effects (Nedjraoui et al., 2009). At the heart of the issue of the development of vast semi-arid and arid areas, the degradation of rangelands with its ecological and environmental consequences constitutes the main problem [1]. However, opinions differ in the prioritization of the direct and indirect causes of this phenomenon. In the context of the pastoral system with its three components: man, human activities and the territory, a reading based on the analysis of historical dynamics and current observations makes it possible to prioritize the factors that come into play. Particular attention is paid to the evolution of livestock parameters, which constitutes the main human activity in these areas [2].

Currently, the steppe is gradually losing its initial characteristics, moving from the nomadic system to the sedentary

system, from the shepherd to the farmer, from the collective to the individual, from openness to compartmentalization. The current state of the steppe appears to be the effect of a progressive compartmentalization of space which, itself, can be interpreted largely as a consequence of state policies. The Tiaret region, although part of the Tell Atlas, has 70% of its surface area of steppe rangelands [3-5]. It is considered an area where the phenomenon of desertification is accentuated given its location on the herders' route, particularly nomads. These rangelands, heavily subjected to anthropogenic pressure, show a clearly accentuated weakening, particularly in the Nador massif. The territory of the Tiaret region (Algerian steppe, Tiaret province) illustrates this reality well, to the extent that the evolution of the occupation of space shows a spatial extension by agricultural activity to the detriment of the rangelands, with recurring problems of desertification. It is in this context that this study is part (DSA, 2022).

The assessment of these programs will allow us to better assess the constraints and the role of each of the actors during this entire period, and to see their dysfunctions and their discontinuities,

why some succeeded and others did not? What are the causes? In these conditions, what are the strategies to adopt, for the development of these Renewable but degraded resources? What would be the share of this population and especially of breeders and agropastoral in this management? Whose main objectives are the evaluation: To what extent can we judge the effectiveness of the steppe rangeland rehabilitation projects carried out by the state in the face of desertification and the anthropic action exerted on these lands, the development, access and management of the agro-pastoral space over a long period (2000-2023)? The capacities of the state administrative services and their resources, even if they are significantly increased in terms of conducting steppe path rehabilitation projects to combat degradation [6].

Materials and Methods

The methodological approach pursued during this research is as follows:

Data collection and bibliographic research

We collected a set of data and statistics (climatic, socio-economic, etc.), on the steppe zone in the Tiaret region, a bibliographic synthesis was conducted on: Algerian steppe environment and state policies in the Algerian steppe [7-12].

Pre-surveys

This stage of work allowed us to make contact with the local authorities of the wilaya of Tiaret. We had interviews with representatives of the institutions (HCDS, DSA, APC and forest conservation, etc.) and all the people concerned by the subject of study in order to be able to collect the necessary information and data [13].

Justification for the choice of the study area

The study area is chosen on the basis of certain parameters.

- a) The importance of the geographical location which makes it a passage area.
- b) assess the effect of the development technique which is practiced on the regeneration of steppe pastures - see the state of degradation following agro-pastoral pressures on the natural vegetation of the area
- c) The existence of different livestock systems.
- d) An area with an agro-pastoral vocation.
- e) The importance of the achievements of protection in the municipalities.
- f) The importance of the achievements of fodder and pastoral plantations

Presentation of the study region

Tiaret, the city of the depression of the mina was built on the site of a Roman post near the ruins of the prosperous medieval city of Tahert [14]. Former refuge of both the Rustumides {the historical period, and of Amir Abdelkader. Its origins lie in a military redoubt built in 1854 to monitor the mine gap and the nomadic routes between the tell and the steppe (Duvignaud, 1992).

Geographical location

Located 340 km from the capital Algiers in the northwest of the country, the wilaya of Tiaret presents itself as a contact zone between the north and the south. The territory of the wilaya is made up of mountainous areas in the north, high plains in the center and semi-arid areas in the south [15-20]. They extend over a space delimited between 0.34° {2.5° east longitude and 34.05° to 35.30° north latitude. Tiaret occupies an area of 20,086.62km², it covers part of the Tell Atlas in the north and the highlands in the center and south. It is bordered to the north by the wilayas of Relizane, Chleff and Tisse Silt, to the west by the wilayas of Mascara and Saida, to the east by the wilaya of Djelfa, to the south and south-east by Laghouat and El Bayadh [21] (Figure 1).

Results and Discussions

Programs for the conservation of forests in steppe rangelands:

Dune fixation (2009-2014)

Dune fixation assessment. Programs conducted for the conservation of forests in steppe rangelands are summarized as follows:

- I. Of the 1654 degraded ha, 754 ha were restored by mechanical and biological fixation of dunes, a ve/vp commitment rate of 45% of the surface area and an achievement rate of 45%.
- II. Of the 812 degraded ha, 547 ha were restored by planting belts and planting green strips, a ve/vp commitment rate of 67% of the surface area and an achievement rate of 67%.
- III. Of the 445 very degraded ha that have lost their natural regeneration potential, 445 ha have been rehabilitated by pastoral plantation, i.e., 100% of the area.

Since its launch in 2009, the national reforestation plan has recorded 2,911 ha of all plantations combined, with 445 ha in pastoral plantations and 547 ha green plantations plus 754 ha. As part of a five-year project aimed at conducting reforestation plantations in very degraded steppe areas that exceed 1,106,225 ha hectares, an area of only 2,911 hectares has been identified, corresponding to 0.26% of the total area, and only an area of 1,746 hectares has been conducted with a rate of only 59% [22-26].

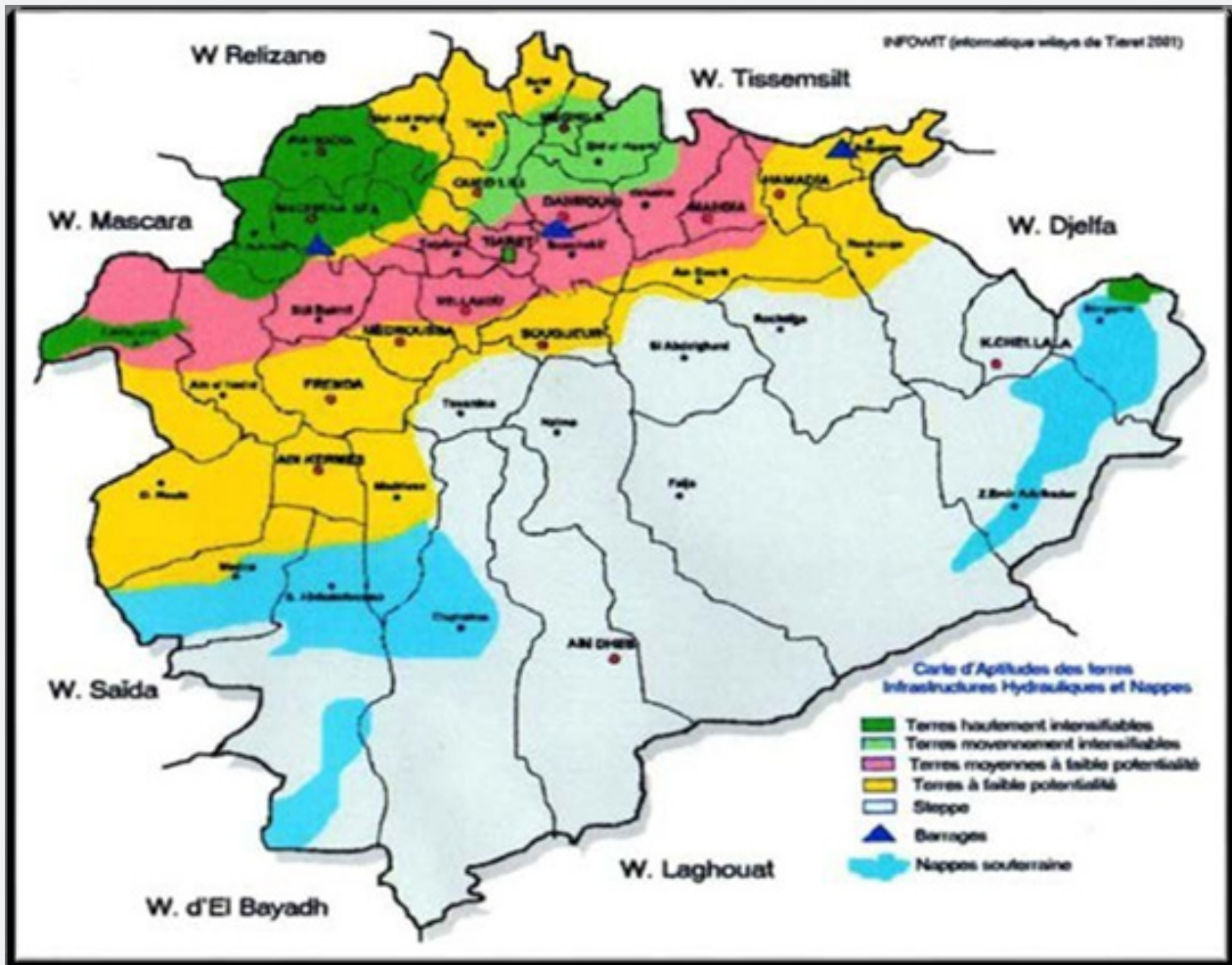


Figure 1: Geographical and administrative location map of the study region.

The various development works of the steppe route (2009-2014)

The various development works of the steppe route (2009-2014). In the same five-year project, several services were programmed in the steppe areas (Tiaret) despite their rarity, but 100% of them were completed (spring development, spring capture, solar kits for households, works CES) [27-32].

- out of 2200 m³ of surface water 19980 m³ were domesticated, i.e., 91% completion rate.
- But pastoral boreholes were only drilled at 2%, which is much lower than the region's aspirations due to the environmental and economic importance of this program due to its high financial cost.
- Improving living conditions through solar energy electrification, i.e., 85 units with a 100% completion rate.

FNDR agricultural tracks (2009-2014)

FNDR agricultural tracks (2009-2014). Improving the living conditions of the populations this component allows to open up the areas by developing tracks in order to facilitate the movement of breeders. The improvement of living conditions also aims to create temporary and permanent jobs by implementing the various actions of the project. Regarding the improvement of the social status of the inhabitants of the 281 km of agricultural tracks were built and tarmacked with a completion rate of 82%.

Windbreak plantation

Windbreak plantation. From 2009 to 2010, the windbreak plantation project was conducted in 10 municipalities at a rate of 9550.78 km, with a completion rate of 85%. However, the desertification from which the region suffers, this project remains unrealizable in an area of more than 1106225 hectares. Out of the 1106225-ha degraded, 9550.78 km were restored by the

windbreak plantation, i.e., a rate of commitments ve/vp 0.87% of the surface area and with a completion rate of 85%.

Dune fixation 2009-2010 assessment

Dune fixation 2009-2010 assessment. According to the data provided by the forest conservation, there has been activity over the past 14 years to protect the steppe areas of the state. On an area of 350 hectares of which only 250 hectares have been conducted to stabilize the sand although the total area is greater than 928,832 hectares, therefore a rate of less than 05 hectares per year. with an achievement rate of 0.026%.

Dune fixation assessment 2020-2023

Dune fixation ASSESSMENT 2020-2023. The dune fixation program in the steppe area of the Tiaret region, after starting from 2009 to 2010 with a total of approximately 347 hectares, stopped for 10 years. Until the beginning of 2020. After 2020, a program was drawn up for an area of 477 hectares. 353 hectares were completed despite the 10-year interruption. With a completion rate of 78%. However, the program that was completed in an. This is what constitutes a very large gap in the process of developing steppe municipalities in Tiaret. Out of the 928,832 degraded ha, 477 ha were restored by mechanical and biological dune fixation, i.e., a completion rate of 0.051%.

Pastoral plantation 2009-2010 Table no: 7: pastoral plantation assessment 2009-2010

From 2009 to 2010, the pastoral plantation project was conducted in 08 steppe pastoral communes out of a total of more than 15 communes with an area of 840 hectares less than what should be achieved according to the project. There remain 190 hectares, mostly in Ain Kermes and Naima, with an estimated area of 20,000 hectares, benefiting from 100 hectares at a rate of achievements of 0.2%, the rest of the communes suffer from the same problem. In a course of more than 90,000 hectares. Of the 1,380,401 ha very degraded having lost their natural regeneration potential, 840 ha were rehabilitated by pastoral plantation, i.e., 0.60% of the area: with a rate of achievement of 81%.

Pastoral planting 2020-2024 table No. 08: pastoral planting 2020-2024

After stopping the LCD programs for forest conservation in the wilaya of Tiaret for a period of 10 years without conducting any pastoral plantation project, they are back again with the program from 2020 to 2024. A four-year project with an area of 705 ha at the level of the 05 communes was only completed at 81% in view of what the region suffers from, in three years, despite the continued degradation of the region. Thus, what was accomplished in 2009 and 20210, half of it was in 03 years, according to the data provided to us. So, on 1,380,401 very degraded ha a four-year project with an area of 705 h with an achievement rate of 81%. and a commitment rate of 0.05%. 9. Fruit plantation (2010-2012).

Table No. 09: Fruit plantation report (2010-2012)

The fruit growing project between 2010 and 2012 amounted to 1142.5 hectares, with a completion rate of 99%, which is a good area at the level of 14 municipalities, but what gives importance to the project is the continuation of this project by beneficiaries.

Fruit plantation 2020/2024

Fruit plantation 2020/2024. After 08 years, the forest conservation is again conducting a fruit plantation project in 05 steppe municipalities with an area of 290 hectares with a completion rate of 99%. The roles of the agricultural services departments in the management (DSA Tiaret) of natural reserves 2009-2023.

Report on the management of natural reserves in AIN DEHEB

Report on the management of natural reserves in AIN DEHEB. The daïra of Ain deheb (03 communes) is distinguished by 09 steppe nature reserves and 03 pastoral plantations, with a total area of 195991 hectares. 07 protected steppe reserves with a plant cover greater than 65%, and 05 unguarded reserves with a plant cover less than 25% are very degraded. The area of the guarded reserves is estimated at 108391 hectares, and the area of the unguarded reserves is estimated at 64600 hectares. Thus, only 55% of the total area is guarded and good, leaving an area of 45% to deteriorate due to lack of guarding. Of the 195991-ha degraded, 108391 ha were restored by putting under defense, i.e., 55% of the area.

Assessment of the management of natural reserves in FAIDJA

Assessment of the management of natural reserves in FAIDJA. The Daira soigneur (01 commune) is distinguished by 06 steppe nature reserves and 02 pastoral plantations, with a total area of 63479 hectares.

a. 04 protected steppe reserves with a plant cover greater than 60%, and 04 unguarded reserves with a plant cover are very degraded. The area of the guarded reserves is estimated at 30079 h, and the area of the unguarded reserves is estimated at 10400 hectares. Thus, only 47% of the total area is guarded and good, leaving an area of 53% to deteriorate due to lack of guarding.

b. Despite the existence of a state decree prohibiting ploughing and indiscriminate grazing in these reserves under n° 1005 of 17/10/2010, due to the lack of continuous control by the authorities concerned. - Of the 63,479-ha degraded, 30,079 ha were restored by putting into protection, i.e., 47% of the surface area.

Assessment of the management of natural reserves in KSAR CHELLALA

Assessment of the management of natural reserves in

KSAR CHELLALA. The Ksar Chellala daïra (02 communes) is distinguished by 04 steppe nature reserves and 04 pastoral plantations, with a total area of 28,581 hectares. 06 protected steppe reserves with a plant cover greater than 60%, and 02 unguarded reserves with a plant cover are very degraded. The area of the guarded reserves is estimated at 22,581h, and the area of the unguarded reserves is estimated at 7,171 hectares. Thus, only 79% of the total area is guarded and good, leaving an area of 21% to deteriorate due to lack of guarding due to the lack of continuous control by the authorities concerned. The communal reserves of Serguine suffer from being totally exploited by the inhabitants who have been stationed there for several years.

Report on the management of natural reserves in AINE KERMES

Report on the management of natural reserves in AINE KERMES

I. The Ain Kermes district (03 communes) is distinguished by 08 steppe nature reserves and 06 pastoral plantations, with a total area of 732,841 hectares.

II. 13 protected steppe reserves with a plant cover greater than 60%, and 01 unguarded reserves with a plant cover greater than 60%. The area of the guarded reserves is estimated at 71,284 hectares, and the area of the unguarded reserves is estimated at 2,000 hectares. So, 97% of the total area is guarded and good, leaving an area of 03% to deteriorate due to lack of guarding. What can be concluded is that the steppe reserves of the Ain Kermes district are in better condition, which confirms the role played by the authorities concerned in the region.

III. Of the 732,841-ha degraded, 71,284 ha were restored by putting into protection, i.e., 97% of the surface area.

Assessment of the management of natural reserves in NADOURA

Assessment of the management of natural reserves in NADOURA. The Mahdia daïra (01 commune) is distinguished by 03 steppe nature reserves and 01 pastoral plantation, with a total area of 21487 hectares. 01 protected steppe reserve with a plant cover greater than 75%, and 03 unguarded reserves with a plant cover greater than 20%. The area of the guarded reserves is estimated at 90h, and the area of the unguarded reserves is estimated at 21397 hectares.

a) Of the 21487ha degraded 90 ha were restored by the protection or 0.41% of the area

b) So, 0.41% of the total area is guarded and good, leaving an area of 99% to deteriorate due to lack of guarding.

c) What can be concluded is that the steppe reserves of the Mahdia daïra are in a very degraded state due to the presence of inhabitants in these reserves, because they are constantly exposed

to random plowing and grazing, this confirms the total absence of the authorities concerned in the region, despite the great economic and environmental importance of this plant wealth, and despite the programs that aim to prepare the steppe pastorals.

The state of the steppe rangelands of the Tiaret region

The state of the steppe rangelands of the Tiaret region

The total area of the steppe rangelands of the wilaya of Tiaret is estimated at 361,440 ha. It has a well-guarded area for plant production, while the degraded area is estimated at 149,359 hectares, due to its non-guarding rate of 39%.

a. Out of the 1,380,401-ha degraded, 361,440 ha have been restored by putting in defense, i.e., 26% of the area

b. Thus, the technology of putting in defense in the steppe rangelands remains very little because of what the region is facing from natural and human causes.

c. The use of 195 guards in an area exceeding 1,380,401 ha remains a very small program despite the availability of financial resources in the region.

d. The agricultural services department of the wilaya of Tiaret supervises the management of 30 natural steppe reserves and 17 steppe pastoral plantations, within the framework of the program of steppe pastoral areas since 2009 to 2020. This technique increases pastoral plant production.

e. Unfortunately, however, the DSA does not keep all the reserves to protect this steppe ecosystem, because there are 13 unguarded natural reserves, equivalent to almost 50% of the number of reserves, which has led to the degradation of the steppe ecosystem in the we also note that there is an unguarded pastoral plantation out of a total of 17 protected areas.

There is also a shortage in the number of guards, from more than 260 guards in 2012 to 195 guards in 2023 for an area estimated at more than 1,380,401 ha, the equivalent of one guard for 1,851 hectares.

HCDS Tiaret works 2007-2023

2007-2008 report. HCDS Tiaret works 2007-2008 (SIDI ABDERRAHMANE. MADNA. SERGUINE. KSAR CHELLALA. Table n°18: HCDS Tiaret works 2007-2008 (AIN DEHEB. CHEHAIMA. FAIDJA. NAIMA). Table n°19: HCDS Tiaret works 2007-2008 (ZEMALET EMIR. RECHAIGA. ROSFA). According to the three tables (21-22-23) that include data obtained from the HCDS Ain d'heeb, the main work that was the subject of the years 2007 to 2010 in most of the steppe communes is the supply of water resources by digging wells and boreholes to combat drought. Energy sources have also been provided, including solar energy. However, there are a number of projects that have been rejected by the hydraulic authorities.

Balance sheet of the rental of defense 2007/2008 HCDS Tiaret

Balance sheet of the rental of defense 2007/2008 HCDS. The defense technique in the steppe reserves of the Tiaret area is conducted by HCDS by favouring the rotation system. The reserves are open in the spring for two months and in the fall for a period of three months. Most of the reserves in the steppe rangelands were established between 2009 and 2010. Good planning in the exploitation of the steppe reserves is what guarantees the complete protection of the steppe ecosystem. The improvement of environmental conditions by reducing soil erosion, the preservation of biodiversity. The protection and restoration of natural rangelands.

2007/2008 HCDS pastoral plantation report

2007/2008 HCDS pastoral plantation report. On a 1380401h pastoral plantations conducted by the HCDS between 2008 and 2010, of areas exceeding 4000 ha with a rate of 2.89%. This is in line with the five-year steppe protection programs,

a) On a 1380401h pastoral plantations conducted 200h in the commune of MADNA with a rate of 0.01%. Between 2010 and 2015.

b) Then its activity also stopped for a period of 05 years until 2020 to return to the plantation of the same previous areas but in the commune of sidi ABDERRAHMANE, with a rate of 0.01%. Then stop definitively.

c) HCDS in the wilaya of Tiaret has been content since 20015 with the sole management of reserves and the installation of breeders in them, although only 50% of the reserves are subject to protection.

We conclude from the previous tables on the management techniques in the steppe rangelands of the Tiaret region that there are no protection programs against desertification, drought or degradation of the steppe plant cover, according to the statements of those responsible for administrative management, due to the lack of financial resources.

General Conclusion

The development and management of the steppe remain complex and difficult to control at present in terms of the choice of options to be taken and the many interdependent parameters to be understood in both the sectoral and intersectoral and/or integrated approach. There are a large number of steppe range development programs, but the reality in the wilaya of Tiaret proves the opposite, according to the data obtained, there are only significant efforts on the part of the conservation of the forest in the study area when HCDS and DSA, There is a total lack of rehabilitation or development programs only there are very few efforts to guard certain natural reserves and pastoral plantations

(50%). The degradation of the steppe ecosystem of the wilaya of Tiaret was highlighted by the work of processing the information collected in the field and our modest results obtained after, the survey carried out with the shepherds and agro pastoralists and the services concerned with farmers in the study region, we can draw the following conclusion: this ecosystem is in very advanced degradation. The implementation of development programs and further of the protection of the ecosystem, a determining factor of sustainability, has not been sufficiently integrated into the approach of the direct users of the steppe pastoral paths. This observation of failure is based on two points:

a. The successive strategies adopted for the development of the steppe zone lacked relevance.

b. The methods used for the identification and formulation of projects as well as for their implementation and monitoring were lacking.

c. The success of pastoral area development programs depends closely on:

d. Establishing a high commission for the development of the independent steppe in the wilaya of Tiaret

e. The development of a pastoral law.

f. The effective participation of pastoral populations not only in the execution but especially in the design of development programs.

g. Integrated development studies of pastoral and agro-pastoral areas.

h. Coherence and coordination between stakeholders in these areas

This can be done through the following actions:

I. Correcting the shortcomings of old control strategies.

II. Getting local authorities more involved in the implementation of future development programs

III. Protecting and planting fodder species in degraded rangelands.

IV. Will avoid agricultural activities that are not appropriate for the nature of the steppe soils.

V. Above all, the solution is political - it requires a complete overhaul of governance and the reestablishment of public force. "The law is the law".

VI. Can we develop and restore balances without a complete and/or controlled defense of the majority of the rangelands? Certainly not and that is why in Tiaret we attack and then dismiss those who only apply the law. Impunity in the steppe is not an exception, it is the rule.

- VII. Implement a genuine policy of modernising sheep farming.
- VIII. Conduct routing work to improve surface water infiltration.
- IX. Install automatic weather stations in the main centres.

These are some ideas for a national programme to restore steppe pastures and agro pastoralism, so that this territory becomes, as it was before, “the land of sheep”.

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