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in

Camarda D. (ed.), Grassini L. (ed.).
Local resources and global trades: Environments and agriculture in the Mediterranean region

Bari : CIHEAM

Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 57

2003

pages 243-247

Article available on line / Article disponible en ligne à l'adresse :

<http://om.ciheam.org/article.php?IDPDF=4001975>

To cite this article / Pour citer cet article

Gracheva R. **Unexpected transformation of nature use and soil resources in the eastern coast of the black sea (the last 10 years)**. In : Camarda D. (ed.), Grassini L. (ed.). *Local resources and global trades: Environments and agriculture in the Mediterranean region*. Bari : CIHEAM, 2003. p. 243-247 (Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 57)



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UNEXPECTED TRANSFORMATION OF NATURE USE AND SOIL RESOURCES IN THE EASTERN COAST OF THE BLACK SEA (THE LAST 10 YEARS)

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ABSTRACT

The main expectations concerning the use of nature, which were popular before 1991 in such multinational and populous parts of the former USSR as the eastern coast of the Black Sea are considered, and real results of nature use and soil resources transformations in this region are analysed. It is shown that the collapse of nature protective legislation and privatisation of lands results in the destruction of forest and soil resources, activation of soil erosion and landslides, heavy grazing on the nearest pastures and abandonment of the distant mountain grazing lands. The privatisation of forestry has led to the impossibility for mountain communities to take part in forest management, unemployment and migration. The poverty and need of food has caused the expansion of tilled crops and, as a result, the intensification of soil erosion. Indigenous knowledge is called only for individual survival and could be in contradiction with traditions of migrants. The difference between soil resources in Abkhazia and Adzharia and the relations between geological features, life-supporting soil properties and migration processes are shown. Economic and social conditions on the Russian coast are more successful than in West Georgia because of development of resort industry, but the condition of nature resources and particularly soil resources is critical. Processes of population migration cause significant demographic, ethnic and nature protection problems along the eastern coast of the Black Sea.

1. INTRODUCTION

Sustainable development of the agricultural region and, especially, mountain region is tightly related to the existence and conditions of their soil resources, primarily to total thickness and fine earth content. It is well known that irreversible loss of soil mantle has seriously damaged or even ruined the social and economic life in many regions, for example, in the Caucasus, Central Asia, Mediterranean, India, Ethiopia, etc. On the contrary, abrupt change of social factors have often led to the transformation of ways of land use, and as a consequence, to nature and land degradation.

In the late 1980^s many ideas and concepts suggesting new ways of socio-economic development based on a rational nature use were published and discussed very actively in the USSR. The main ideas and expectations concerning optimal nature use were as follows.

1. Economical independence from the central (Moscow) and regional self-government will lead to rational nature and land use, adapted to regional specific characteristics. This idea was exposed in many regional programs of economic development, in spite of fact that usually most of the regional budget was expected as financial support from the Federal budget.
2. Privatisation of industry, forestry and agriculture will be a precondition of ecologically adapted nature use. Private-owner psychology was considered as psychology of economy, and it was expected that owners, especially farmers, would use nature protective methods of management on a local level.
3. Regeneration of indigenous knowledge of nature and land use will lead to traditional man-nature relationships.

These expectations were particularly popular in the multinational and populous mountain regions of the Soviet Union.

The aim of this study was to analyze the main expectations and real results of ten years of transformation of land use and soil resources in the eastern coast of the Black Sea as a multinational densely populated agricultural region.

This paper is based on published sources, field researches and personal communications of Georgian colleagues.

2. RESEARCH AREA

The eastern coast of the Black Sea, or the area located between Novorossiysk and Batumi, belongs now partly to Russia (Krasnodar district, Novorossiysk-Sochi area) and partly to the Republic of Georgia, and the former autonomous part of Georgia known as Abkhazia. Abkhazia has considered itself as an independent state during the last 10 years.

The eastern coast of the Black sea is a part of the Caucasian mountain region with marine subtropical climate, where urbanised areas are situated within agricultural landscapes, predominantly vineyards, citrus, tea and tobacco plantations. Settled and agricultural areas occupy terraces and mountain slopes along the coastline and within flat Kolkhida lowland. Along the Black Sea coastline the wetness of climate increases from north to south, and annual precipitation changes from 800-1200 mm to 2000-3000 mm in this direction. The climate of the northern part of this region (Novorossiysk coast) with dry warm season is close to that of the Mediterranean, and hardy forests (mainly oak) and sclerophyllous shrubs are widespread; in the soil cover Cinnamonic soils (Chromic Cambisols), Burozems (Eutric Cambisols) and Rendzinas predominate. In the southern part of the region Yellow Podzolic soils are developed in Kolkhida lowland, and Krasnozems (Ferralsols) under subtropical broad-leaved forests are widespread on the mountain slopes and terraces.

The human history of this ancient densely populated region is closely connected with all the Mediterranean, especially with Greece, and later with Turkey. Traditional trade and migration links contributed to specific international synthetic features of human life and culture. Density of the agricultural population is high and change from 100 to 300 and more person/km² from north to south and distribution of settlements is uneven: the settled area is narrow and limited by steep mountain slopes in the north and is wider in the southern part.

Natural landscapes of this region have been radically transformed throughout the last 2,000 years by deforestation and agricultural impact. In the last 150 years such species as cypress, fan palm, magnolia, tangerine-trees, tea, and tobacco have been introduced, and plant introduction unified cultural landscapes along all the eastern coast of the Black Sea. In the soviet time reclamation of coast marshlands such as the Kolkhida lowland took place, and eucalyptus were planted for transpiration.

3. REAL RESULTS OF POST-SOVIET TRANSFORMATION OF NATURE USE

At the end of 1980^s the eastern coast of the Black Sea had a relatively stable economic condition due to numerous health resorts, cargo seaports (Novorossiysk, Poti, Batumi) and subtropical agriculture. Productivity of agriculture and net profit of farmers increased towards the south and were highest in the marine part of West Georgia-Adzharia, where citrus and tea plantations are more profitable than in the northern part of the region. However, soil degradation and lack of free lands have caused essential social problems and flows of migration, especially from the mountain agricultural regions of Abkhazia. The unified centralised approaches to economic planning and management, ignoring the regional natural and ethnic specific led often to negative consequences, and the state response usually came too late.

1991 gave start to the significant political, social and economic changes within the while of the former USSR. What are the real results of expectations in the field of nature use in this marine region?

1. Collapse of the economic dictation of central authorities turned into independence on nature protection legislation and destruction of nature resources. It is related not only to independent Georgia, but to Russia regions too. First of all chestnut and beech forests, including soil- and water-protective ones, were cut, and the afforestation was fully stopped, excluding the Sochi region. According to numerous data more than 30% of mountain forests in Abkhazia and Adzharia, and not less then 20% in the Russian part of the sea coast have been destroyed by felling. In Russia this process was particularly intensive in 1992-1996, when Russia-Turkey timber trade was very active, but it has been restricted since 1996-1997. Due to the logging and building of temporary roads soil erosion and creep intensified catastrophically, especially in the southern humid parts of the area. These human induced processes coincided with the peak of climate induced activity of slides, mudflows and avalanches. Giant catastrophic debris slides have taken place in Adzharia during last 10 years, and numerous new landslides have appeared in the Sochi district. In the Kolkhida lowland the cutting of trees for firewood has resulted in the ground water level rising and bogging activation, and productive arable lands have been abandoned.

2. The first steps of privatisation began in the Georgian part of the region as far back as 1987-1989 as division of the property of the collective farms and attempts to increase land areas and the head of cattle in private ownership. These actions were unsuccessful because of lack of markets and forage, but their consequences were very significant. Privatisation of citrus (tangerine-trees) and fruit plantations was not accompanied by organisation of purchasing, supplying and other servicing corporations, particularly in Abkhazia during the Georgia-Abkhazia war conflict. In the absence or low capacity of the home market the Russian market is the most attractive, but the quality and prices of Georgian subtropical production is not comparable with the same production from the Mediterranean region, for example, from Morocco. So, private subtropical husbandry has turned out to be unprofitable, and often serves only family needs. As a result, many old plantations have been destroyed for croplands, and area of erosion has increased. Privatisation of tobacco plantations in Adzharia and their increasing at the beginning of the reforms caused total erosion due to soil-exhausting properties of tobacco and erosion.

Poverty of the population and need of food caused increase of areas of clean-tilled crops, especially maize, and their expansion to mountain eroded slopes. Tea plantations, including experimental scientific plots, were destroyed and transformed into cropland almost completely in Abkhazia, and partly in other parts of West Georgia. As a result, human induced soil erosion was intensified everywhere except along alpine belts.

The intensive use of the nearest pastures for private cattle resulted in heavy grazing, depletion of bioproductivity and increase of cattle-plague. Using nearest forests for grazing and soil compaction activates surface runoff and erosion loss of soils. Distant mountain grazing lands were neglected and rapidly changed to rough, stony areas. Present conditions of pastures productivity show that self-restoration of mountain ecosystems without human effort is very slow and problematical.

Privatization of forestry caused impossibility for mountain communities to take part in forest management, rise of unemployment and migration of population. This is characteristic for all parts of the region, but particularly for Abkhazia. Local communities found themselves left out of economic activity and forest use management.

In the Russian region privatisation of land did not exceed 17-20%, and the main previous regularities of agricultural land use have been preserved. But activity of a large part of the population is directed to resort industry now, and, for example, private individual farms produce only 10-12% of total grape production of the Krasnodar district (Goskomstat, 1999; Goskomstat, 2000a). Impact on the soils and nature on the whole has been intensified by increase of population due to immigration (Goskomstat, 2000b).

3. Indigenous knowledge is called only for individual survival and concerns mainly soil treatment by hand and return to traditional simple food. This means increasing areas under maize and vegetable, and felling of all the nearest trees for firewood. Unfortunately, hard life conditions make people forget their traditional nature protective habits and stop such social public actions like putting roads, soils or streams in order. Indigenous nature use and trades are forced out of the present economy of this region.

The civil war in West Georgia and ethnic contradictions in Abkhazia complicate and multiply all the problems of these regions. The combined results of all these factors are the degradation of agro-and nature ecosystems and mass migration of population from West Georgia into Russia. Usually migrants choose the central parts of Russia and especially large cities, but many of them prefer the Novorossiysk-Sochi coast of the Black Sea, which is considered now as one of the immigration regions of Russia.

One of the serious impacts of the migration process on the land conditions is that many migrants have no practical knowledge and ability to live and work in new environments. Thus the area of troubles is extending. The agricultural activity of migrants from dry mountains to humid conditions of the Sochi district often leads to land degradation, especially to landslides activation. Mountain slopes along the Sochi coast are subjected to intensive natural landslides, and hazard of soil slides is the highest in Russia. The number of landslides and creeps reaches 1000 within narrow 10 km strip along the coast (Azhigirov, 1987). Daily life and activity of local communities are adapted to these phenomena and aimed at reducing slide actions. On the end of 1980s the Armenia-Azerbaijan conflict provoked waves of migrants from this republic, and later active migration from dry regions of the Northern and East Caucasus took place. New inhabitants ignored local experience and use non-adapted ways of agricultural cultivation and building of houses, such as terracing, excessive irrigation, disturbance of the monolithic character of ground. This intensifies both shallow and deep slides. So, two different systems of indigenous knowledge are in contradiction in regions of modern multinational immigration.

4. SOIL RESOURCES OF ADZHARIA AND ABKHAZIA AS FACTORS OF ECONOMICAL AND SOCIAL CONDITIONS

Soil degradation and lack of arable lands in an agricultural region could be a cause of its economic degradation and depopulation. The question “Are soil resources of the eastern coast of the Black sea factors of sustainable development or preconditions of conflicts?” is a vital question now.

According to our researches, the difference between soil resources in Abkhazia and Adzharia was one of the essential reasons for economic and demographic difference in these marine parts of Georgia in the Soviet period, and one of the reasons for different ways of their development in the present. The relations between soil properties, social contradictions and migration processes have been considered (Ilichev *et al.*, 1998).

The two autonomous republics of Western Georgia Adzharia and Abkhazia have wet marine subtropical climate, similar topography of coastal mountains and high activity of natural erosion. The agricultural practice during the last century was connected with citrus plantations, vineyards, tobacco and alpine pasture husbandry, and was very intense in both areas.

However, by the end of the 20th century Adzharia and Abkhazia had very different levels of land quality and density of agricultural population. In Adzharia, in spite of expansion of tobacco and acceleration of soil erosion, soil productivity was relatively stable, and the population had increased up to the end of soviet time in 1991. In Abkhazia 50% of the agricultural area was eroded, and all free lands were used. As a result of migration, many mountain communities had already lost almost 70% of their population by 1970^s (Gvazava, 1984). What are the reasons for this different life of the two regions?

The comparative multidisciplinary study of geological features, the main life-supporting soil properties and economic and demographic conditions of Adzharia and Abkhazia showed that there are close relations between these factors (Gracheva *et al.*, 1990).

In Adzharia the habitat areas with long-term economic and demographic stability coincide with specific geological zones of hydrothermal alkaline metasomatism of mountain rocks. Due to properties of parent rocks deep (2-4m) and strongly weathered regoliths and soils are formed which are comfortable for plant growth and very attractive for farming. Productive and long-term farming on these soils is possible in spite of permanent human-induced soil erosion, and the present economic and social situation is relatively stable in Adzharia. However, expansion of tobacco and clean-tilled crops, the using and further increase of unsuitable ways of road and building construction may provoke catastrophic soil erosion and landslides. According to Georgian scientists, “ecological capacity” of Adzharia is overfilled now, and density of population must be limited (Gigineishvili *et al.*, 1998).

In Abkhazia almost all agricultural mountain lands are situated within the geological zones of postmagmatic silicification or calcification, and parent rocks resistant to weathering predominate. Shallow (30-50 cm) soils with coarse texture are formed, and using these soils in agriculture results in rapid soil loss and formation of bad land. Unsuitable cultivation intensifies this process, and this is a reason for the reduction of agricultural lands and, to a considerable extent, of social conflicts and migration of the population. We suppose that ethnic Abkhazian-Georgian contradictions in Abkhazia were strengthened by lack of good agricultural lands. The present lack of nature protective legislation, state agricultural and forestry policy leads to further degradation of soil resources in Abkhazia.

Thus, different kinds of natural soil resources cause different conditions and perspectives of development of the two regions of the West Georgian coast of the Black Sea.

5. CONCLUSION

More than ten years of transformation of nature use has changed the conditions of nature and natural resources within the eastern coast of the Black Sea. Optimal nature use was not reached, and the main expectations have not been realised. However, results of reforms are not similar in different parts of sea coast and depends to a considerable extent on soil resources. Abkhazia could be called a region of nature and social emergency, while the situation in Adzharia is relatively stable. Economic and social conditions along the Russian coast are the most successful because of development of health industry industry, but the condition of nature resources and particularly soil resources is critical. The processes of migration are causing significant demographic, ethnic and nature protection problems in the Russian part the marine region.

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