

## POPULATION DYNAMICS, CHANGES IN LAND MANAGEMENT, AND THE FUTURE OF MOUNTAIN AREAS IN NORTHERN CAUCASUS: THE EXAMPLE OF NORTH OSSETIA

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With 8 figures, 5 tables and 5 photos

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**Summary:** This study deals with population dynamics in the mountains of North Ossetia-Alania (Russian Federation) over the last 120 years. It documents the loss of mountain population over this period and analyses its implications on demography and land use. The combined processes of growth in the piedmont and outmigration from the mountains have led to a drop in the proportion of the mountain population within the Republic from 20% in 1900 to 1% in 2010. Most of the population loss in the mountains occurred before 1989 and was due to forced as well as opportunity-based migration. The key demographic effects of this exodus are a lack of young people and overrepresentation of old people in mountain communities, with an old-to-young-age dependency ratio of 1.42, which is very high in international comparison. Outmigration and social change led to the abandonment of the majority of mountain settlements and of traditional land management, posing a threat to cultural heritage. The current open-access grazing regime leads to overuse of easily accessible pastures and underuse of more remote grazing areas. Bush and forest encroachment are visible on remote pastures within the montane zone, and first stages of the process are also evident in subalpine meadows. Mountain development is at a crossroads today. The survival of the remaining communities seems uncertain in spite of an emerging interest in mountains and mountain recreation among the urban population. Official development plans focus on resort-based tourism and hydropower generation, thus serving mainly lowland interests. The methods used for this study include a literature review, use of official statistics from different administrative levels, and five field campaigns from 2006 to 2010 for ground truthing, local data collection and survey, and for conducting interviews and informal discussions with officials and administrators at different levels, and mountain residents.

**Zusammenfassung:** Der folgende Beitrag behandelt Bevölkerungsdynamik und Landnutzung im Berggebiet der Republik Nordossetien-Alanien (Russische Föderation). In den vergangenen 120 Jahren hat der kombinierte Effekt von Bevölkerungsverlust im Gebirge und Wachstum im Gebirgsvorland zu einem Rückgang des Anteils der Bergbevölkerung von 20% (1900) auf 1% (2010) geführt. Der Großteil des Bevölkerungsverlustes fand vor 1989 statt und beruht auf Zwangsumsiedlung und auf freiwilliger Migration. Die demographischen Folgen sind Unterrepräsentation junger und Überrepräsentation alter Bevölkerungsgruppen. Die old-to-young-age dependency ratio beträgt 1.42, ein auch im internationalen Vergleich (Alpen) sehr hoher Wert. Migration und sozialer Wandel führten zu ausgedehnter Siedlungswüstung und der Aufgabe überkommener Formen der Landnutzung. Beides stellt eine Gefahr für das kulturlandschaftliche Erbe dieser Gebirgsräume dar. Das gegenwärtige Nutzungsregime kennzeichnet sich durch Übernutzung siedlungsnaher Flächen und die Unternutzung siedlungsferner Gebiete, wo es zu Busch- und Waldausbreitung kommt. Die Entwicklung des Gebirgsraums steht heute an einem Wendepunkt. Der Fortbestand der noch existierenden Siedlungen erscheint trotz des neu erwachten städtischen Interesses am Gebirgsraum als nicht gesichert. Die offiziellen Entwicklungspläne konzentrieren sich auf den Aufbau von Tourismusresorts und den Ausbau der Wasserkraft und berücksichtigen mithin vor allem die Interessen der Nichtgebirgsräume.

**Keywords:** Population dynamics, outmigration, dependency ratio, sex ratio, old age ratio, land use and settlement dynamics, loss of cultural heritage, mountain development, North Ossetia, Northern Caucasus

### 1 Introduction

High-mountain areas around the world are experiencing outmigration, unless they have specific climatic advantages or economic opportunities (tourism, mining, transport routes) attractive enough to prevent it. Global processes such as industrialisation and urbanisation outside mountain

areas, an increase in the availability and attractiveness of off-farm employment, and improved road accessibility in the mountains have changed the way in which mountain areas are valued by society. At the same time, outmigration has led to the abandonment of traditional settlements and land use in the high mountains, such as modest subsistence agriculture and livestock herding – forms of land

use that were usually well adapted to the natural environment and shaped specific cultural landscapes as they evolved. The specificity of natural and culturally shaped high-mountain landscapes has generally been recognised at least since the 1992 Earth Summit in Rio de Janeiro (STONE 1992; MESSERLI and IVES 1997). Awareness of the ecological value of traditional cultural landscapes developed around the same time in the frame of the sustainability discourse and even before (ARMAND 1975; DROSTE et al. 1995; VEDENIN and KULESHOVA 2001; FOWLER 2003). UNESCO contributed to this change in perception by including mountain landscapes in its list of World Heritage Sites. However, traditional cultural landscapes were reassessed not only in terms of their ecological value, but also in terms of their economic interest; their preservation forms an important basis for regional tourism concepts. These general trends are subject to various regional modifications. The Great Caucasus offers an extremely rich cultural diversity, but it has been marked by conflicts over the past two decades (HALBACH and KAPPELER 1995; PIETZONKA 1995; COPPIETERS 1996; STADELBAUER 1995, 2001; TSUTSIYEV 2006; RADVANYI and MUDUYEV 2002; BAKKE et al. 2009; COENE 2010; O'LOUGHLIN and WITMER 2011). In search of ways to overcome conflict and promote economic development, tourism based on these rich cultural traditions might be an option (SCHNEIDER and STADELBAUER 2008 for Kyrgyzstan). Within the large variety of Caucasian regions, the example of North Ossetia-Alania is used to examine the influence of demographic processes on the social valuation of cultural landscape heritage.

As many other mountain areas within the former Soviet Union (see for example AYDARALIYEV 2010 for Kyrgyzstan, or GRACHEVA 2006 for Georgia), the mountains of North Ossetia have been characterized by a massive overall loss of population, which forms a marked contrast to the development pathways in the lowland and piedmont area. Population outflow from the mountains started in Tsarist Russia, continued under Soviet rule and can still be observed today (GLEZER and POLIAN 1988; BADOV and MAKROYEV 1998; GRACHEVA and NEFEDOVA 2007; EL DAROV et al. 2007; RADVANYI and MUDUYEV 2007; BEROYEV and MAKROYEV 2009). This development forms a remarkable contrast to the key strategic position held by this area in the central part of the northern Caucasus in the past; a role that became even more marked after the demise of the Soviet Union, which made the region a border area between Russia and Georgia.

This study documents the process of depopulation in the different mountain regions of North Ossetia over the 20<sup>th</sup> century. It consists of seven sections. The first two sections present an introductory part and the methods used in the study. Section three provides an overview of the Northern Caucasus. Section four presents an analysis and discussion of demographic developments in North Ossetia in general, followed by an assessment from a regional perspective first dealing with all mountain areas of North Ossetia and then focusing in particular on the mountains of Digoria in the westernmost part of the Republic. Section five examines the effect of outmigration on the cultural landscape, including settlements and land management. Section six presents the official mountain development strategies of the authorities, and finally, section seven discusses the future of the mountain regions in North Ossetia.

## 2 Methods

The study is based on a literature review of both Russian and non-Russian sources. Investigations into population and livestock dynamics were carried out using present-day and historical statistics and maps from federal, republic, and local administrative sources. Land use and livestock data were obtained from all 19 local administrations of North Ossetia, which are considered mountain areas according to the Law on Mountain Areas of the Republic of North Ossetia-Alania. Large-scale satellite imagery interpretation was conducted for mapping settlement status and abandonment of individual villages. Detailed information was obtained for the key research area, the Digoria mountains in Iraf Rayon, where the research team was hosted by local people during several field campaigns from 2006 to 2010. Field work included ground truthing of imagery and mapping of current land cover and land use. Furthermore, extensive exchange was carried out with local residents as well as with local, Rayon, and national administrators and decision-makers. This exchange included semi-standardized interviews with resource persons, focus discussions with village communities, and informal discussions. Field work in this border area had to be planned well in advance as it required special permission; unfortunately, this was not granted to foreign researchers anymore after the outbreak of the war between Russia and Georgia in 2008.

### 3 The Northern Caucasus: An overview

Extending from the Caspian Sea to the Black Sea, the Northern Caucasus has extremely different natural conditions. The range of landscapes includes the steppe of the Caspian Lowlands in the Northeast with annual precipitation of about 300 mm as well as the humid broad-leaved forests in the West with yearly precipitation of up to 3,000 mm along the Black Sea coast. Its altitudinal zonation extends from sea level to alpine and nival environments along the Central Range of the Great Caucasus, with dozens of peaks of more than 5,000 m, of which Mount Elbrus is the highest (5,642 m). The vegetation offers a great variety of plants with a high degree of endemism. In administrative terms, the Northern Caucasus comprises the mountain and plain region covered, from East to West, by the Republic of Dagestan, Chechen Republic, Republic of Ingushetia, Republic of North Ossetia-Alania, Kabardino-Balkarian Republic, Karachaevo-Cherkessian Republic, Republic of

Adygeya, and the southern parts of Stavropol Kray and Krasnodar Kray. A wider definition includes the same areas as well as the areas of the plains to the North, i.e., Krasnodar Kray, Stavropol Kray, and Rostov Oblast. Such a wider definition was used in late Soviet times when the area included Rostov Oblast (Severo-Kavkazski Ekonomicheski Rayon). In 2000, the North Caucasus area became an integral part of the newly created Southern Federal Okrug ("the Russian South"). In 2010, this Okrug was divided and a new North Caucasian Federal Okrug was formed. It includes Stavropol Kray (but not Krasnodar Kray), plus the Republics mentioned above, with the exception of Adygeya (Fig. 1). The new Federal Okrug covers most of the mountain lands of the Northern Caucasus, including North Ossetia, and the eastern and central sections of the foreland plains. Since the demise of the Soviet Union in 1991, the Northern Caucasus has formed part of the Southern boundary of the Russian Federation with Georgia and Azerbaijan.



Fig. 1: Northern Caucasus: territories and population 2010

Any map of administrative divisions only partially reflects the great ethnic and cultural diversity and fragmentation, which characterizes the Caucasus as a whole. The Northern Caucasus is home to people from about 100 nations and smaller ethnic groups who speak Indo-European, Caucasian, Turk and Afro-Asian languages, among them more than 40 indigenous languages (WIXMAN 1980; COMRIE 1981; BENNINGSEN-BROXUP 1992; ALEKSEYEV et al. 2001). At the same time, the area is a zone of overlap of Islam and Orthodox Christianity. Outside Krasnodar and Stavropol krais, only two territories, the Republics of North Ossetia and Adygeya, have an Orthodox Christian majority. In Adygeya, this is due to the Russian majority in the population; in North Ossetia, Christian belief is mixed/amalgamated with strong “pagan” elements of Ossetian origin (KALOYEV 1971). It is of importance that religious differences exist against the backdrop of established strong customary law in all North Caucasian regions (LEONTOVICH 2002; DE WAAL 2010). Multi-ethnicity with deep historical roots, historical legacies including Tsarist and Soviet ethno policy with forced migration and deportations in the 19<sup>th</sup> and 20<sup>th</sup> centuries, and the post-Soviet political and economic transformation, have all contributed to generate a difficult political environment with numerous and overlapping fields of conflict, including violent ones such as in Prigorodny Rayon (Eastern part of North Ossetia, formerly inhabited by Ingush people) and in the Chechen Republic, to mention only some of the most important ones. The Northern Caucasus is often referred to as the most complex region of the Russian Federation and Eurasia as a whole (BELOZEROV 2005a; GADZHIYEV 2001; O’LOUGHLIN et al. 2007; RADVANYI and MUDUYEV 2007; ZUERCHER 2007; HALBACH 2008). This delicate constellation has been exacerbated by the region’s international border position, as the recent conflicts in South Ossetia and Abkhazia in 2008 have shown. The demise of the Soviet Union also broke down traditional transboundary relations for people, exchange of goods, animal husbandry, and common recreation system.

In light of its often conflicting past and its recent delicate strategic position, it may come as a surprise that, according to statistical data, the Northern Caucasus (with the exception of the Chechen Republic) showed one of the highest overall population growth rates within the Russian Federation between 1989 and 2002, the more so as the figures for the Federation as a whole were declining (BRADSHAW

2003). Natural population growth has traditionally been high in the Northern Caucasus. It continued until the end of the 1990s and was higher than in other regions of Russia (ITOGI VSESOYUZNOY PEREPISI 1962; REGIONY ROSSII 2006). Since then, natural growth has continued in the eastern part of the region with annual growth rates of 1.2% in Dagestan, 2.3% in Ingushetia, and 2.4% in the Chechen Republic (REGIONY ROSSII 2011), while it has decreased in the central and western parts, where overall population figures have shown a slow decline from 2003–2004 onwards. Migration and refugee movements in the wake of the break-up of the Soviet Union had also an important effect on overall population figures. Available data suggest that the region gained from migratory movements in the 1990s due to immigration mainly from South Caucasian and, to a much lesser extent, from Central Asian republics, while outmigration dominated in the first decade of the 21<sup>st</sup> century, at least in the mountain territories (MUDUYEV 2002; STADELBAUER 2003; BELOZEROV 2005b; GRACHEVA and NEFEDOVA, 2007; BELOZEROV et al. 2008).

Nonetheless, the relative calm in the area of frozen conflicts in the Northern Caucasus (Prigorodny Rayon, Chechnya) must not be misunderstood. The region remains unstable and prone to unrest. The Beslan school hostage-taking and its bloody suppression (2004) are deeply engraved in the collective memory of the North Ossetian population. In terms of frequency of attacks, Dagestan and Kabardino-Balkaria are currently the least stable. In Dagestan, the original balance of political participation among the major ethnic groups has been destabilised and Wahhabi influence has grown, while in Kabardino-Balkaria, Caucasian Kabardinians and Turkic Balkars are confronted with each other’s conflicting interests (WARE and KISRIV 2010; DE WAAL 2010). Recent attacks in Kabardino-Balkaria have hit the capital city of Nalchik and tourist destinations in the Baksan Valley at the foot of the Elbrus massif (Prielbrusye National Park). This has been a heavy setback for tourism, which is generally considered an important development opportunity in the Caucasus region. Border shifts following the deportation of Chechens in 1944 and the relocation of Laks from the mountains (Novolakski Rayon and Aukhovski Rayon) are straining relations with Dagestan’s western neighbour, Chechnya. Although Russia has formally ended the war against Chechnya, the Caucasus continues to be perceived internationally as a conflict region (COENE 2010; DE WAAL 2010).

## 4 Population dynamics in North Ossetia

### 4.1 A widening gap between piedmont and mountain areas

North Ossetia presents a special case within the Northern Caucasus: With the exceptions mentioned above, it has not been involved in the violent conflicts that have hampered development in many parts of the region in the last decades. The Republic is located in the central part of the Northern Caucasus (Fig. 1). It occupies a key strategic position within the Russian Federation, as it has the two major Transcaucasian roads, the only transit routes open year-round in the Central Caucasus, and a pipeline which crosses its territory from north to south. Moreover, a majority of its population is Orthodox Christian. Its shared border with South Ossetia has increased the region's importance in the recent past. The Republic covers an area of 8,000 km<sup>2</sup> and has a population of about 713,000 according to the all-Russian census 2010, a share of 7.5% of the North Caucasian Federal Okrug (and 0.5% of the Russian Federation). As many as 311,693 (45%) live in the capital city of Vladikavkaz (REGIONY ROSSII 2011). Given the key importance of the capital – its name means “ruler of the Caucasus” in Russian – in demographic, but also in economic, administrative, and strategic terms, North Ossetia is often called the “Republic of one city” and is the most urbanised region of the Northern Caucasus. Infrastructure is generally well developed; the region has one of the densest networks of asphalt roads in the Russian Federation (REGIONY ROSSII 2011). Per capita income is about 13,228 Roubles or 70% of the Russian average of 18,881 Roubles (REGIONY ROSSII 2011). 48% of the territory of the Republic is defined as mountain area. Important for livestock production and, in some areas, for mining (polymetallic ores, lead, zinc) and summer tourism during the Soviet time, the mountains are seen by policymakers today as a key arena for the Republic's future development, especially with regard to the promotion of tourism, hydropower generation, and nature conservation (STRATEGIYA 2007).

The importance assigned to the mountain areas in recent years is in remarkable contrast to their demographic position, which is close to insignificant. This is due to outmigration, which can be documented for at least the last 250 years. Generally, North Ossetian mountain valleys were areas of ancient settlement and functioned as corridors between the Northern and the Southern Caucasus; they have been repeat-

edly abandoned and repopulated during at least the last two thousand years (KALOYEV 1971; BLIYEV and BZAROV 2000). Expansion of Russian rule in the North Caucasus during the second half of the 18<sup>th</sup> century offered first opportunities for outmigration; the Russian rulers were likewise interested in the resettlement of local inhabitants, as this enabled them to gain better control of the region (KALOYEV 1971; BLIYEV and BZAROV 2000; BZAROV 2010). The Ossetians were actively involved in the Russian army and found employment as a labour force for developing military infrastructures including the fort at Vladikavkaz and roads like the Georgian military road (BEROZOV 1972), which strengthened the traditionally friendly terms they entertained with the Russian Empire. Since the mid-18<sup>th</sup> century, schools for mountain migrant communities have been established in emerging small towns in the piedmont such as in Mozdok in 1764 (KALOYEV 1980). For the 1820s, the mountain population was estimated to be 55% of the total population of North Ossetia within the present territory of the Republic (TAVASIEV 2010). From a social perspective, the mountain population was formed by communities composed of several extended families or clans organized along the catchment areas of the tributaries of the Terek (LAVROV 1883; BZAROV 2002). In 1897, when the first all-Russian census was conducted, the mountain population was still 39,300 or 20% of the total population of North Ossetia, a figure which increased to about 47,000 (17%) in 1913. In 2010, only 7,000 people lived in the mountains, representing 18% of the 1897 figure, and accounting for only 1% of the population of the Republic. By contrast, the population of the piedmont has increased eightfold in the same period, from 157,600 in 1897 to over 700,000 in 2010 (Tab. 1) (BADOV and MAKROYEV 1998; REGIONY ROSSII 2011). Relating to demography and employment, North Ossetia has become a lowland and largely urban society today.

The growing population gap between the mountains and the piedmont is not limited to North Ossetia. Mountain outmigration in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries has also been documented for other parts of the Northern Caucasus, such as Dagestan, where it has been seen as the result of overpopulation and shortage of agricultural land (GLEZER and POLIAN 1988; STADELBAUER 1994; MUDUYEV 2002; EL DAROV et al. 2007). In North Ossetia, the gap can be explained by two main factors. The first of these is the influx of population from other parts of Russia, which started in the 18<sup>th</sup> century with the increasing Russian influence in the Northern Caucasus, and continued until the late 20<sup>th</sup> century.

Tab. 1: Population dynamics in North Ossetia 1897–2010

Population	Total population (persons) in single years								
	1897	1913	1926	1939	1959	1989	1997	2002	2010
<b>Total</b>	196784	273280	271700*	407850	450581	632430	690630	710275	701800
<b>Urban</b>	59246	89000	90300	174167	237454	422400	460000	464875	451600
<b>Rural</b>	137538	184280	181400	233683	213127	210030	230630	245400	250200
<b>Plains</b>	157460	226280	251170	n.d.	426030	620580	679730	702575	694600
<b>Mountains</b>	39324	47000	20530	n.d.	24630**	11850	10900	7700	7000
<b>Mountain share</b>	20%	17%	7.50%	-	5.50%	1.90%	1.50%	1.10%	1%

\* 1926: figures vary depending on source; e.g. 271,700 (TAVASIEV 2010), as against 303,000 (BADOV and MAKOEYEV 1998). 271,700 seem to be more accurate because many authors write about population decrease between 1914 and 1926

\*\* TAVASIEV 2010; 22600 (BADOV and MAKOEYEV 1998).

Sources: 1897, 1913 – Census data, Russian Empire; 1926, 1939, 1959, 1989 – Census data, USSR; 1997 – current statistics; 2002, 2010 – Census data, Russian Federation.

This influx was very largely directed to the plains and emerging towns in the piedmont. It had a spike in the 1990s due to forced migration from South Ossetia (Georgia), Ingushetia, and other neighbouring areas. In 1991–1992, for example, there were 161,200 immigrants, amounting to 25.0% of the total population of North Ossetia (BADOV and MAKOEYEV 1998). The second factor is mountain outmigration, which was motivated by political reasons and economic opportunities (BEROZOV 1972). In the late 19<sup>th</sup> century, the new developing Russian towns in the piedmont areas were important destinations. Spontaneous outmigration occurred again in 1914–1921, i.e., during World War I and the Civil War. Planned outmigration under Soviet rule from the mountains to the lowlands began in 1922–1926; in this period, new settlements were developed in the piedmont area, where their number increased from 322 to 351. Beginning in the late 1920s, collectivisation provided a new impetus for resettlement from mountain to piedmont areas. Forced migration in the time of Stalin's repression – especially the resettlement of mountain residents from some settlements of Ossetia to abandoned Ingush villages in Prigorodny Rayon east of Ordzhonikidze (now Vladikavkaz) following the deportation of these villages' Ingush inhabitants to Central Asia in 1944 – led to further abandonment of mountain areas in North Ossetia (POLIAN 1999). Economic and political reforms under Nikita Khrushchev (1953–1964) caused a new outflow of people, financially supported by the state. In this period, new mines, as well as tourist destinations and sanatoriums, brought a new dynamic to the mountains. The new urban-type settlements and enterprises that emerged in the course of these developments attracted many rural mountain residents; in spite of the fact that specialists were gen-

erally Russians, many local people became engaged in tourism and construction. While outmigration to the lowlands continued, mines, tourism, and sanatoriums therefore lead to a redistribution of population within the mountains. The demise of the Soviet Union and the economic crisis that followed affected both mining and tourism, including sanatorium resorts, and led to further outmigration, as both industries had been important employers in the mountains of North Ossetia; in light of the critical political situation in the Northern Caucasus, this outmigration was directed towards central Russia rather than the towns of North Ossetia. As many of the people engaged in these sectors were ethnic Russians, the remaining mountain population today is ethnically more homogeneous than in Tsarist and Soviet times – a fact observed across the entire Northern Caucasus (BELOZEROV and POLIAN 2006).

#### 4.2 Depopulation of the mountain regions

An analysis of population dynamics at *the regional level* based on the mountain sections of the five river catchments within North Ossetia confirms the overall loss of population in the mountains in the 20<sup>th</sup> century (Fig. 2), but also reveals considerable differences between rural and urban settlements. Rural settlements show a persistent loss of population. In the Alagir and Kurtat catchments, for example, the rural areas were practically abandoned by 1989. Generally, depopulation in absolute figures was much more pronounced in Soviet times than during the post-Soviet transformation, and more pronounced in earlier than in later Soviet times. Outmigration was already substantial in the first quarter of the 20<sup>th</sup> century,

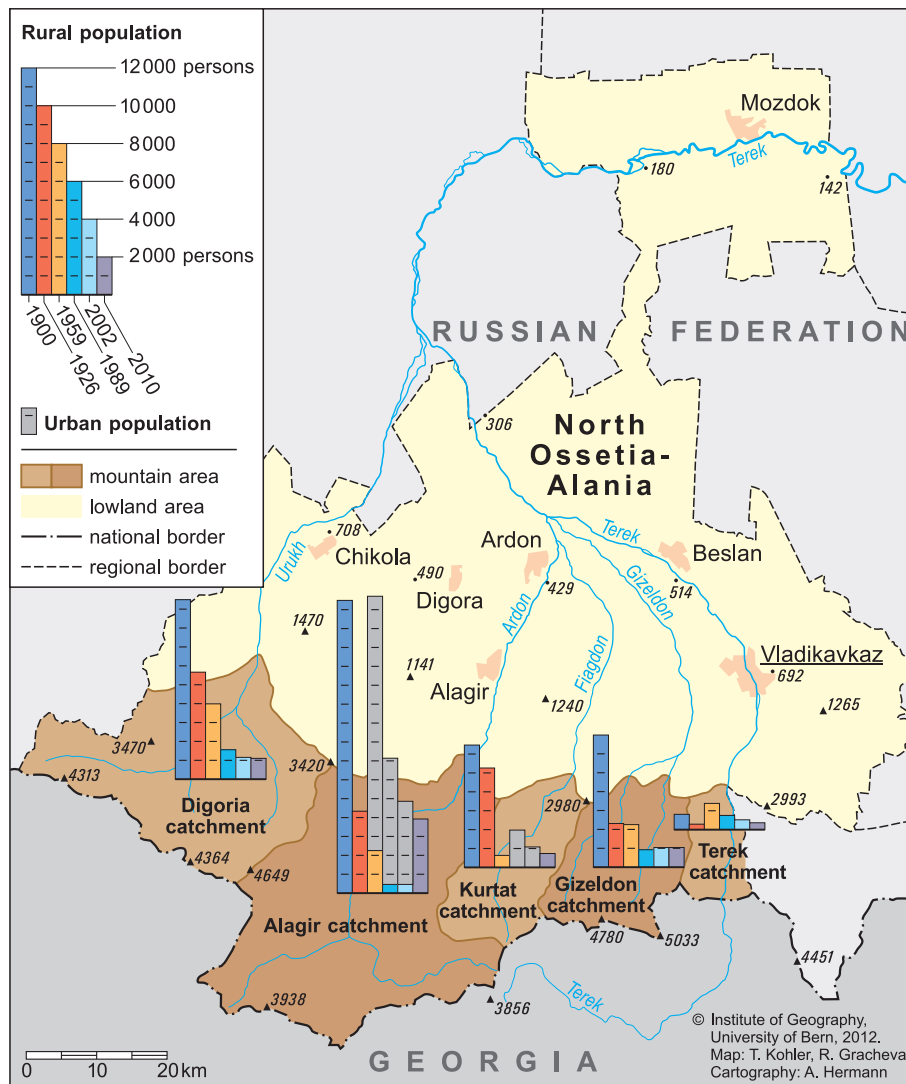


Fig. 2: Population dynamics in the mountains of North Ossetia, 1900–2010

as shown by the case of the Alagir catchment where the rural population declined from over 15,000 to just over 4,000 between 1900 and 1926. A substantial part of this decline can be assumed to have taken place before the Soviet era. The only exception to the general rural exodus is the Terek catchment, which has benefitted from its strategic location on the Transcaucasian Highway (Georgian Military Road) and from its proximity to Vladikavkaz.

Urban-type settlements in the mountains made their appearance in the Soviet time, first in the Alagir area (census 1926) and later on in Kurtat (census 1959). They were created mostly for mining and focused on the exploitation of polymetallic ores, and testify to the inclusion of the Northern Caucasus

into the Soviet industrial complex. Their population originated largely from outside the mountains. While dominating in terms of population numbers in their areas in the late 1950s, accounting for over 15,000 people, they declined significantly in the following decades, totalling a mere 5,000 inhabitants in 2002. The 2010 census does not distinguish any more between urban and rural settlements in mountains.

An analysis at the local level confirms the picture of overall population loss. This can be shown using the example of the Digoria catchment, hereafter referred to as Digoria, which corresponds to the mountain section of Iraf Rayon in the westernmost part of the Republic (Fig. 3). This Rayon includes mountain areas as well as the piedmont to the north. Its south-

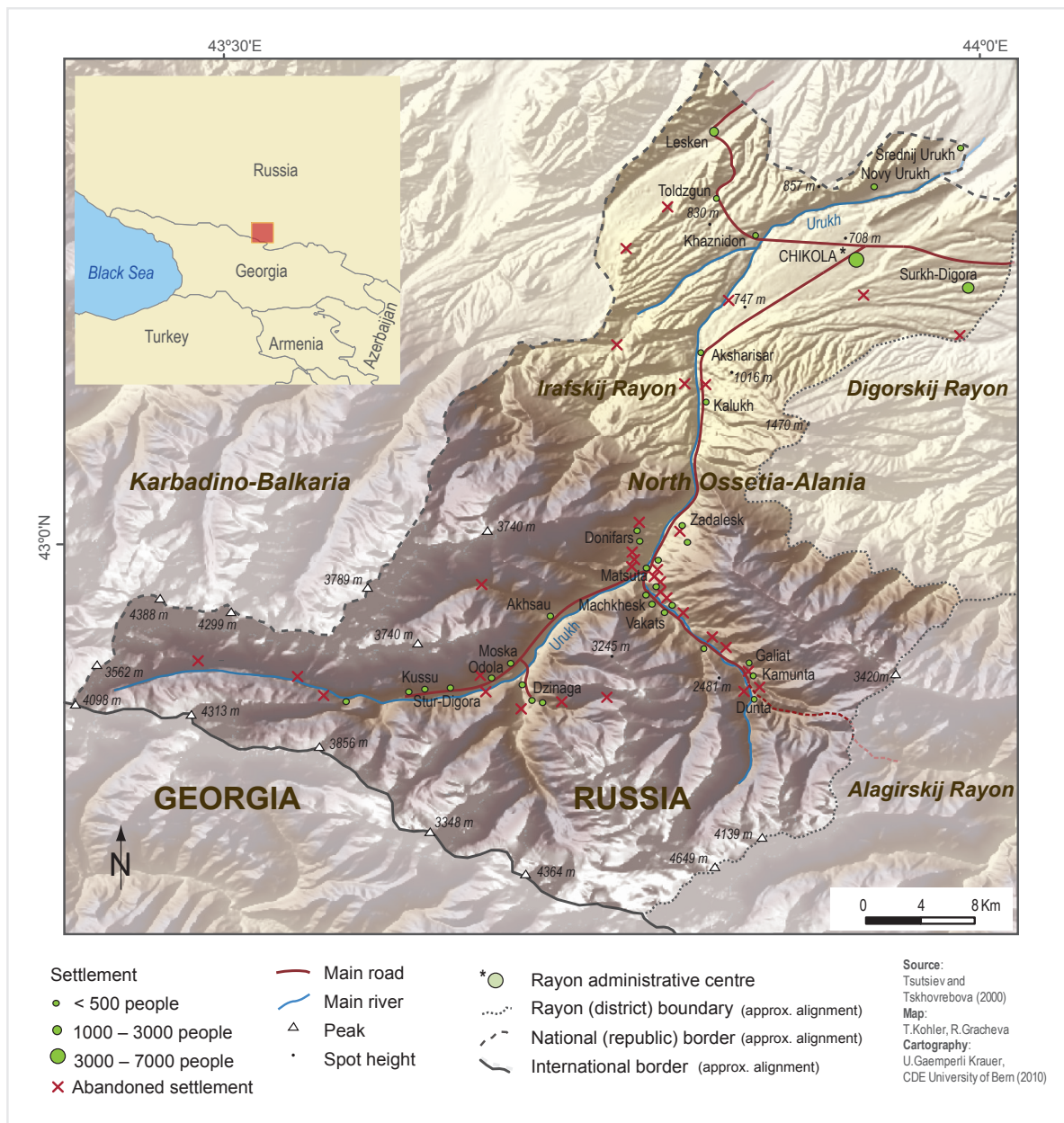


Fig. 3: Existing and abandoned settlements, Digoria 1920–1995

ern border is defined by the natural barrier of the Central Range of the High Caucasus with peaks of over 4,000 m. This mountain chain also forms the international border between the Russian Federation and Georgia.

Digoria is populated by the Digorians, one of the three sub-ethnic groups of Ossetians (the other two are the Iron, the main North Ossetian population, and the Kudar in South Ossetia). Digorians are commonly referred to as a conservative group, and

have kept many forms of traditional ways alive. They practice traditional livestock farming, with meat and dairy as the main market products, but remittances and pensions are also important sources of income. In Soviet times, Digoria was a renowned recreation area attractive for tourists and alpinists from all over the USSR thanks to its scenic mountain landscape, its peaks and glaciers. A mountain pass with a trail connected Digoria with Georgia, a route which was very popular with hikers.



Population figures for the five locations or settlement clusters of Digoria show a decline from 8,076 to 948 people between 1886 and 2008, which represents a net loss of 88% over these 120 years (Tab. 2 and 3). Because the data represent periods with different lengths, absolute and relative annual losses are shown as well. The data reveal that most of the population loss took place before 1989. The highest losses in absolute terms can be observed between the censuses of 1886 and 1979. Dynamics of loss over time are different for each location. In two of them, population decline was already substantial between 1886 and 1926 (Zadalesk, Galiat). Losses increased in the following period (1926 and 1959) in absolute and relative terms in all locations; factors that explain this include World War I, the 1917 revolution and its aftermath, population movements during the collectivisation of agriculture, and migration in the 1920s

and 1930s, including forced migration. World War II – in which North Ossetia was a frontline area – took a heavy toll also on the mountain population, as shown by the war memorials that can be found in all locations. The effect of the war was compounded by deportations of the Ingush population in 1944 and subsequent displacement of some of the Ossetian mountain communities into the abandoned Ingush settlements. Displacement also involved Georgian and South Ossetian communities and refugees from other regions. Outmigration continued in the decades that followed, as documented by the censuses of 1959, 1979, and 1989. Outmigration from the 1950s onwards was opportunity-based rather than forced as before, reflecting the new political era that followed after the end of Stalin's rule. This era was formally introduced at the 20<sup>th</sup> Congress of the Communist Party in 1956. In the years that followed, deported

**Tab. 2: Population dynamics in Digoria, 1886–2008, absolute figures**

	Total population (persons)							Total decrease (persons)			Annual average decrease (persons)					
	in single years							in main periods			in single periods					
Locations*	1886	1926	1959	1979	1989	1997	2008	1886 -1989	1989 -2008	1886 -2008	1886 -1926	1926 -1959	1959 -1979	1979 -1989	1989 -1997	1997 -2008
Stur-Digora	1453	1277	681	444	347	289	253	1106	94	1200	4.4	18.1	11.9	9.7	7.3	4
Makhchesk	1426	1269	681	561	457	406	242	969	215	1184	3.9	17.8	6	10.4	6.4	18.2
Zadalesk	2342	1346	861	228	151	192	160	2191	-9	2182	24.9	14.7	31.7	7.7	-5.1	3.6
Gular	844	710	919	551	333	228	244	511	89	600	3.4	-6.3	18.4	21.8	13.1	-1.8
Galiat	2011	1302	538	245	180	171	49	1831	131	1962	17.7	23.2	14.7	6.5	1.1	13.6
<b>Total</b>	<b>8076</b>	<b>5904</b>	<b>3680</b>	<b>2029</b>	<b>1468</b>	<b>1286</b>	<b>948</b>	<b>6608</b>	<b>520</b>	<b>7128</b>	<b>54.3</b>	<b>67.4</b>	<b>82.6</b>	<b>56.1</b>	<b>22.8</b>	<b>37.6</b>

\* locations are administrative centres, comprising several settlements. Note: The settlement of Gular has been abandoned and the administration is now in Dzinaga (see Fig. 3).

Sources: Archives of village administrations and Iraf Rayon administration, 2009

**Tab. 3: Population dynamics in Digoria, 1886–2008, relative figures**

Locations	Total decrease in %				Average annual decrease in %				
	in main periods				in single periods				
	1886 -1989	1989 -2008	1886 -2008	1886 -1926	1926 -1959	1959 -1979	1979 -1989	1989 -1997	1997 -2008
Stur-Digora	76.1	6.5	82.6	0.3	1.8	2	2.2	2	1.3
Makhchesk	68	15.1	83	0.3	1.8	0.9	1.9	1.3	5.2
Zadalesk	93.6	-0.4	93.2	1.4	1.3	6.3	3.7	-2.7	1.8
Gular	60.5	10.5	71.1	0.4	-0.8	2.4	4.6	4.2	-0.7
Galiat	91	6.5	97.6	1.1	2.6	3.7	2.8	0.6	12.5
<b>Total</b>	<b>81.8</b>	<b>6.4</b>	<b>88.3</b>	<b>0.8</b>	<b>1.4</b>	<b>2.8</b>	<b>2.9</b>	<b>1.5</b>	<b>3.1</b>

Source: Calculated from data presented in table 2

nations were allowed to return to their native regions. This caused new problems and conflicts, for example between Ingushetia and North Ossetia over Prigorodny Rayon. Economic reforms, less restrictions on population movement, new industrial development, agricultural colonisation, as well as urbanisation and the notion of new living standards: All these developments led to migration flows which also involved mountain populations. Migration continued after the transformation in 1989–1991, with population loss continuing unabated in all locations of Digoria up to the present day.

Analysis of migration figures reveals that the demise of the Soviet Union did not have any noticeable specific effect on outmigration. The decades before and after the transformation show greater losses in absolute and relative terms than the period in which the transformation took place (1989–97). This may be due to the economic and political instability that accompanied the transformation, including massive loss of jobs in the industrial-urban complex, which prevented people from migrating. Some locations even showed an increase in population after the transformation (Tab. 2 and 3). The high overall loss shown for 1997–2008 should not be over-interpreted, as it is due to one single location, Galiat. According to local residents, this loss can be attributed to lack of off-farm employment opportunities, difficult access in winter – Galiat is the highest settlement in Digoria – and unreliable road maintenance as compared to Soviet times. By contrast, Stur-Digora, which also lies towards the upper end of a valley, lost much fewer people than Galiat over the same period. This can be largely attributed to a more diversified local economy resulting from tourism and resort development in Soviet times, which helped secure local employment, better road access, and, last but not least, important linkages with influential personalities from within North Ossetia and the Union in general. These linkages have been retained or renewed since 1989; and with the economic boom in recent years, tourism has seen a partial revival. The difference in development between the two settlements is also reflected in their household structures. In 1886, the average household size was about 8 persons in both places. By 2006 this figure had dropped to 4 persons in Stur-Digora and to only 2 persons in Galiat. While elderly people of retirement age comprise the majority in both places, Stur-Digora has a more balanced age structure. This is reflected in the number of school children, which was 36 in Stur-Digora for primary and secondary schools combined (2008), as against 2 in Galiat, which had a

primary school only. The school in Galiat was closed in 2009; an incident which shows that depopulation in many mountain settlements has now reached a critical threshold below which the core institutional fabric cannot be maintained and the very survival of the community is put in question.

A note of precision should be added here. When talking about population loss, this study looks at the net result of migratory movements within a given period. This is a simplification of the processes as they actually happened in reality. While outmigration has dominated the rural areas for every specific period over the last 120 years, there is also evidence of in-migration, or more precisely back-migration, to mountain areas. For example, local residents in Kamunta related that members of their village community had returned to their mountain regions after the resettlement of the mid 1940s, but that most of them, or their children, returned to the piedmont later on. However, evidence of such movements is anecdotal, difficult to quantify, and would require extensive further study to document.

### 4.3 The effects of outmigration on mountain societies

The following paragraphs present the effects of outmigration on key socio-demographic parameters – specifically on age structure, dependency ratios, and sex ratio. The analysis is again based on data from Digoria, i.e., Iraf Rayon. The *age structure*, represented by the population pyramid of the Rayon by 5-year age classes, presents a visual impression of the residual nature of the mountain population in 2008 (Fig. 4). Altogether, 985 of the 15,708 inhabitants of the Rayon, or 6.3% lived in the mountain area in that year. Overall, the effects of World War II and its aftermath are still clearly visible from the massive indentation in the age classes between 45 and 59 years of age. The limited numbers for the 0–9 year age classes are attributable to the effects of post-Soviet transformation and the economic downturn of the 1990s. For the mountain area, the figure shows a thin string instead of anything similar to a pyramid, with open gaps, as some age classes are not represented. This pattern becomes even more pronounced if we look at individual locations (Fig. 5).

Several *dependency ratios*<sup>1)</sup> were calculated, based on the number of people below working age (0–14

<sup>1)</sup> For definition of these ratios, see table 4.

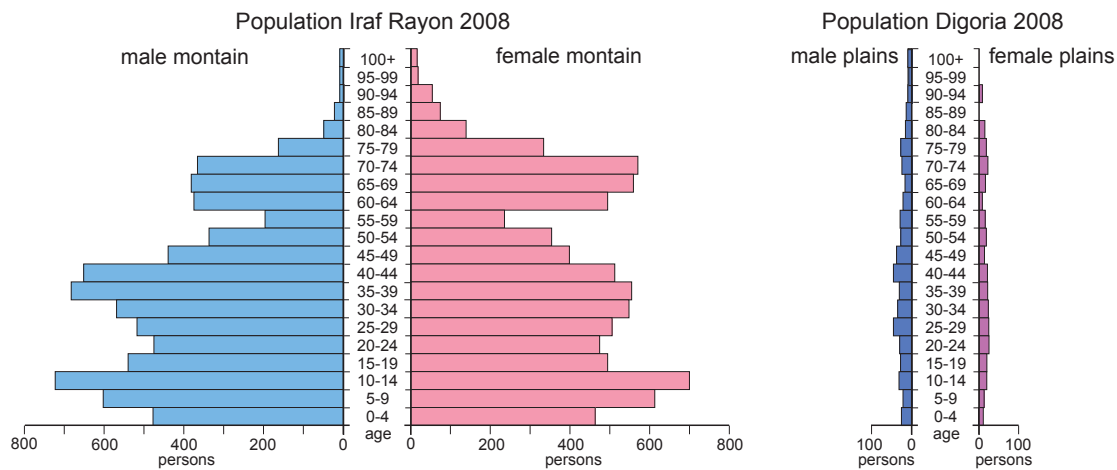


Fig. 4: Population by age and sex, Iraf Rayon (left) and Digoria (right) 2008

years); of working age (15–64 years)<sup>2)</sup>; and past working age (65 and more years) (Tab. 4). The data show a pronounced underrepresentation of the age classes below 15 years, and an overrepresentation of those above 65 years, for the mountains as compared to the rural piedmont and the Republic as a whole. The *youth dependency ratio* of 0.2 for Digoria is also very low in international comparison: It corresponds to the lowest, and thus most critical, level found in the European Alps (TAPPEINER et al. 2008). The same is true for the *old-age dependency ratio* of 0.3. In the EU, for example, a population is considered excessively aged if its old age dependency ratio is higher than 0.15. The imbalance between the younger and the elderly population is brought out most clearly by the “*old-to-young-age dependency ratio*”, which directly compares the number of people aged 65 and more with the number of those under 15. In Digoria, its value is 1.42, i.e., twice as high as for the piedmont areas of Iraf Rayon and for North Ossetia as a whole. Values for the five locations vary between around 1 and 1.9. In the European Alps, a value of 1.50 is found in many depopulated communities in the southern and south-western Alps, and is considered to be very high (TAPPEINER et al. 2008).

The balance between male and female population can be described by the *sex ratio* (number of males per 100 females). To put the situation

in Digoria into the broader context of North Ossetia, the figures for the urban areas and those for the piedmont areas of Iraf Rayon are presented as well (Tab. 5). Contrary to the urban areas and the piedmont, the mountains show a male surplus for practically all age groups up to the age of 64, most markedly so in the classes between 25 and 44 years of age. The higher life expectancy for women explains the underrepresentation of men above the age of 64 in all regions. The large fluctuation in the sex ratio from one age group to the other in the individual mountain locations is due to the very small number of persons involved. Overall, male overrepresentation in the mountains is the result of female outmigration; it appears that women are more mobile than men. According to local residents, this has important cultural roots. Men are expected to take over the family farm and care for the parents. As a result, a substantial number of single men can be found in all locations; in Stur-Digora, for example, they make up 23% of the total population (GRACHEVA and KOZEL'TSEV 2009). Younger women are reluctant to remain in mountain communities – or return there – due to the harsh conditions of life and work as compared to life in the lowlands or in urban environments. “The last fiancée was taken away 5 years ago!”, one elderly (and married) local informant in Stur-Digora complained. On the other hand, local people explained that according to traditional culture it is humiliating for a man to follow a woman and “stay in the wife’s house”. Absence of women in a household also means that meat replaces dairy products as the main food and commodity for sale, as cheese and butter making are traditionally the work of women.

<sup>2)</sup> In the Russian Federation, the working age is 15–60 for men, and 15–54 for women. For the present article, 15–64 was chosen for both men and women to allow for comparison with non-Russian mountain areas – specifically the European Alps, for which extensive data are available.

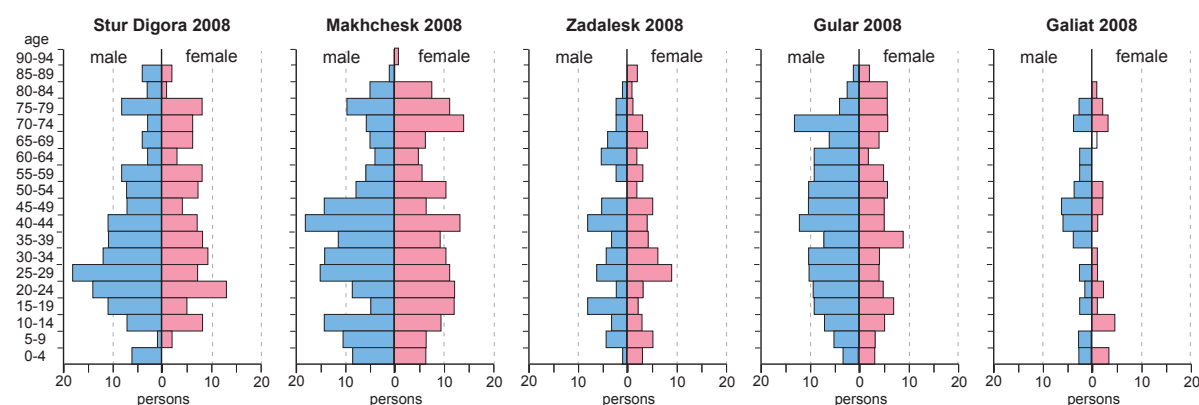


Fig. 5: Population by age, sex and location, Digoria 2008

Tab. 4: Age groups and dependency ratios, Iraf Rayon – piedmont and Digoria 2008

	RNO-A	Iraf Rayon	Iraf Rayon	Stur Digora	Makhchek	Zadalesk	Gular	Galiat
	Piedmont	Piedmont	Digoria					
			total					
<b>Shares of key age groups in %</b>								
<5 years in %	5.4	6.2	3.8	2.5	4.7	3.3	2.7	8.6
<15 years in %	19.6	23.5	14.1	9.9	12.9	15.6	11.7	19.0
15-64 years in %	67.5	59.3	65.9	71.5	65.3	68.0	65.9	60.3
65+ years in %	12.9	17.3	20.0	18.6	21.8	16.4	22.4	20.7
total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>Dependency ratios</b>								
Total dependency ratio	0.48	0.69	0.52	0.40	0.53	0.47	0.52	0.66
Old age dependency ratio	0.19	0.29	0.30	0.26	0.33	0.24	0.34	0.34
Youth dependency ratio	0.29	0.40	0.21	0.14	0.20	0.23	0.18	0.31
Old-to-young age dependency ratio	0.65	0.73	1.42	1.88	1.19	1.05	1.92	1.09

RNO-A: Republic of North Ossetia-Alania

Total dependency ratio = (persons of age &lt;15 plus persons of age 65+)/ (persons of age 15-64)

Old age dependency ratio = (persons of age 65+)/ (persons of age 15-64)

Youth dependency ratio = (persons of age &lt;15)/ (persons of age 15-64)

Old-to-young age dependency ratio = (persons of age 65+)/ (persons of age &lt;15)

Sources: current statistic, Russian Federation 2009; Iraf Rayon administration 2009

Tab. 5: Number of male per 100 female persons, Iraf Rayon – piedmont and Digoria 2008

Age classes	RNO-A	Iraf Rajon	Iraf Rayon	Stur Digora	Makhchek	Zadalesk	Gular	Galiat
	Piedmont	Piedmont	Digoria					
0-4	106	102	131		129	33	100	67
5-14	105	74	117	80	153	88	150	50
15-19	125	107	125	220	38	400	129	200
20 - 24	117	99	97	108	69	67	180	50
25 - 44	92	111	146	168	132	91	177	333
45-64	77	87	141	114	114	100	211	300
64 and more	56	54	82	96	63	82	108	71
<b>Average, all classes</b>	<b>90</b>	<b>87</b>	<b>121</b>	<b>133</b>	<b>101</b>	<b>97</b>	<b>156</b>	<b>142</b>

RNO-A: Republic of North Ossetia-Alania

Sources: Current statistics, Russian Federation 2009; Iraf Rayon administration 2009

## 5 Impacts on settlements and land use

### 5.1 Loss of cultural heritage

The persistent loss of population has left its mark on settlements, land use, and land management. The number of mountain settlements in North Ossetia was cut in half over the last century, from 160 in 1897 to 100 in 1959, and to a mere 64 in 1989. These figures are based on the definition of settlement as used in Russian statistics (*naseleennyi punkt*). As the example of Iraf Rayon shows, the abandonment of settlements is practically limited to the mountain area, i.e., Digoria, where 25 villages were abandoned between 1920 and 1995 (while none were newly created), as against 8 in the piedmont (where new settlements were created over the same period) (Fig. 3) (TSUTSIYEV and TSHOVREBOVA 2000). Although population loss in the mountains is a general phenomenon with a long history, it is not uniform in space. The case of Digoria shows that the most remote and highest mountain zones have been affected most; settlements that still exist today are located along the main access road in the valley bottom or in its proximity. Many of the existing settlements are dotted with ruins which are indicative of larger populations in earlier times. This can be illustrated by the example of Kamunta, one of the settlements within Galiat. Situated at an altitude of 1,900 meters on a mountain ridge in the subalpine zone with productive pastures, it is one of the highest settlements in the mountains of North Ossetia (Fig. 6 and Photo 1). In 1886, it had 609 inhabitants who lived in 69 households; the average household size was thus 8.8 persons (data by Iraf Rayon Administration). In 2006, at the time of the first field visit for this study, there were 15 inhabitants in 7 households (2.1 persons per household). Kamunta nowadays covers only a fraction of its earlier area. Ruins of houses and terraces were mapped from a large-scale satellite image (2007), and ground truthing was done in 2009 by the authors of this study. Fieldwork also showed that the basic infrastructure includes a health post, a small shop, a village library, a primary school, and a community centre. Efforts have been made by the authorities in recent years to improve basic services; a new public phone was installed in 2008, mobile telecom service is available, and children are shuttled to the secondary school, which is 6 km downstream of the village. Nevertheless, connection to the outside world remains a key concern of local residents, as road access is not guaranteed during the winter – unlike in Soviet times. Overall, however, mountain communities are not isolated. They maintain close



**Photo 1:** Village of Kamunta in Digoria seen from the south. Its population was over 600 in 1886, but is now down to 15 (2008). Figure 6 has the same orientation as this picture. (Photo: ALAN BAISANGUROV 2008)

ties with their relatives living in the piedmont area, who in turn spend their vacations in the mountains, often over extended periods, particularly in the summer months. Some then help out in farming, working in the home gardens or engaging in haymaking. Village administrators related that they are often approached by people from the plains, relatives of local people as well as outsiders, who are looking for a place to build a small house for recreational purposes. Such requests are handled very differently depending on the village administrator. Other lowlanders decide to settle permanently in the mountains, but these are exceptional cases, such as the three young men in Galiat in 2009, who resided in an abandoned homestead of a distant relative, and who related to the study team that they are determined to make a living from livestock rearing. They were still actively engaged in farming in 2010.

In addition to making life more difficult for those who stay behind, the abandonment of settlements also represents a loss of cultural heritage (STADELBAUER 1992). Traditional hamlets in Digoria, as elsewhere in North Ossetia and in the Caucasus, have a specific and unique style that includes dry stone construction, stone towers, as well as dense and compact settlement. They are accompanied by diverse stone monuments (Photos 2 and 3). In addition, the architectural heritage also comprises relics from the entire second millennium, including remains of mediaeval places of worship from the pre-Christian and Christian past as well as with later adaptations to the Islamic culture (KALOYEV 1971). Many of these features and artefacts are disintegrating and will gradually disappear. This loss of heritage is further accentuated by current construction trends: Renovation of buildings in the last

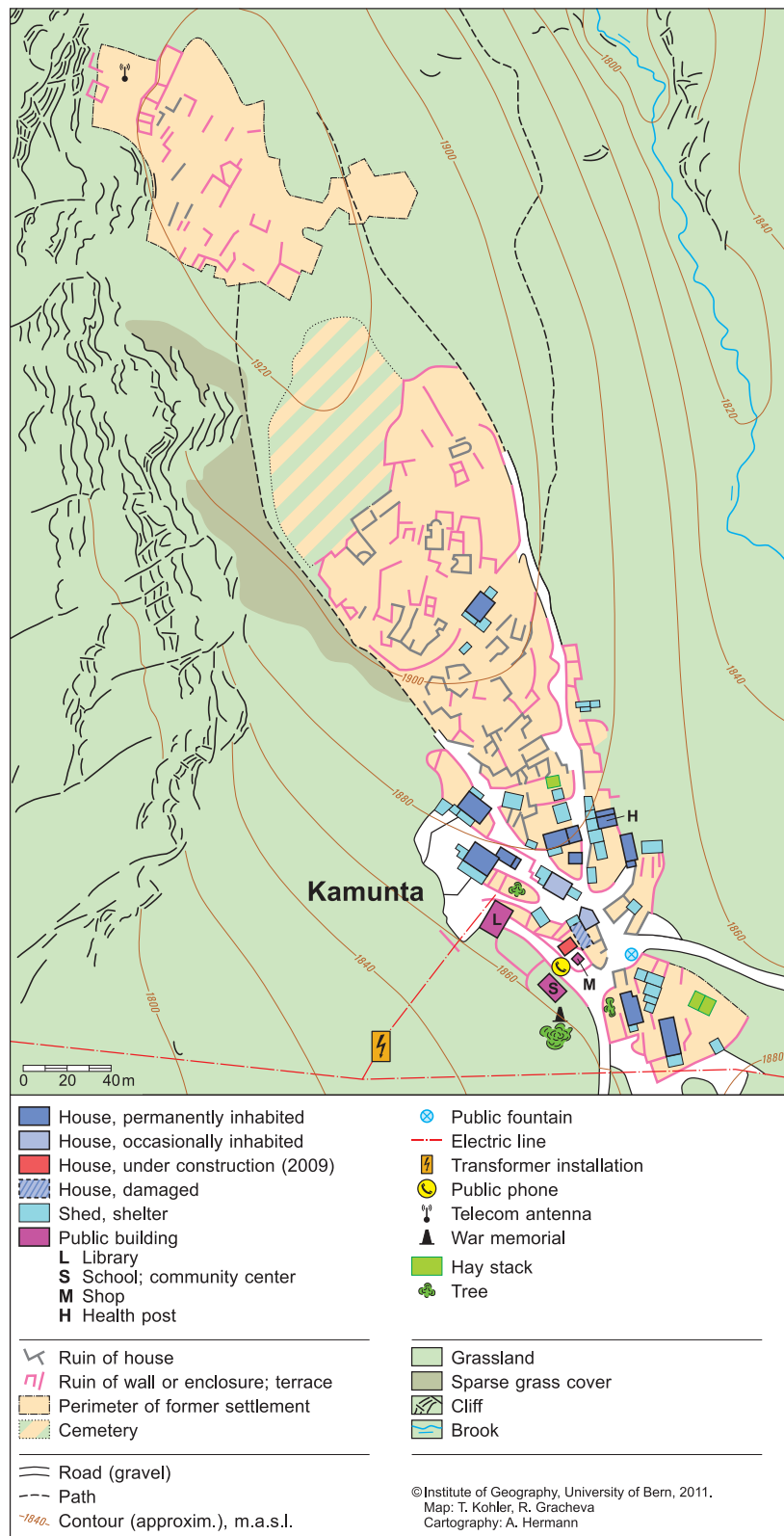


Fig. 6: Village map of Kamunta 2009



Photo 2 (left) and Photo 3 (right): Cultural and historical heritage of Digoria. *Left* - Medieval watch and signal towers can be found at many sites in Digoria. *Right* - Gravestone (erected 1952) with combined Soviet and ancient pre-Christian Ossetian symbols, near Stur Digora. (PHOTOS: RAISA GRACHEVA 2008)

decades has generally been done using non-traditional materials such as timber, brick, and corrugated iron. The same holds true for new buildings. Moreover, these are often erected outside the traditional village perimeter for reasons of privacy. This destroys the traditional nestled settlement structure, a challenge also known from the European Alps, especially the inner and Southern Alps with their traditionally compact appearance.

## 5.2 Changes in land management

Change is also significant with regard to landscape development and land management. In pre-Soviet times, mixed family farming dominated that was based on livestock and crop production. Crops were grown on extensive stretches of terraced land on slopes located in the vicinity of the settlements. Contrary to the European Alps – and to the mountains of Dagestan – terraces in North Ossetia are not supported by stone walls, but by earth embankments that developed over time by ploughing in the same direction. These terraces are now covered by grass and used as pastures, but are still clearly discernible in the

landscape, as are the heaps of collected stones that accompany them – a testimony of the efforts made for land improvement in those times (Photo 4). The main crops grown were barley, rye (local land races that have become lost), oats, potatoes, and beans. However, Digoria was never self-sufficient in cereals. In Kamunta, elder residents related that bread was always in short supply and highly valued, and was obtained from the piedmont together with other essential products in exchange for cheese, meat, skins, and trophies from hunting.

Collectivisation in Soviet times, which took place in Digoria between 1933 and 1935, induced a shift from subsistence-oriented farming to market-oriented production within a planned economy. This resulted in greater specialisation between the piedmont and mountain regions, with a focus on collective livestock production in the latter. As in other regions of the northern Caucasus, crop production became more and more marginal after World War II and was practically given up in the 1960s, when lowland and mountain kolkhozes were merged and the mountain population benefitted from increased exchange of goods, including crops from the lowland sections of the kolkhozes. Today, crops are grown in home gar-



**Photo 4:** View from Kamunta towards south. The slope on the opposite side shows traces of an abandoned settlement (centre right). Now used for grazing, the lower section of the slope was formerly used for crop cultivation, as indicated by the terraces and the rows of stones collected for land improvement. Steeper portions of the upper slope show signs of degraded vegetation and erosion (upper left). According to local residents, there was hardly any forest on the upper slope 50 to 60 years ago. (Photo: RAISA GRACHEVA 2008)

dens and on few small plots around the settlements, with a focus on potatoes. The produce is consumed locally, but potatoes are also brought to the markets in the piedmont, where they meet a ready demand. Livestock husbandry has thus remained the main type of land use, as in Soviet times, but now takes place under private ownership. Grazing and haymaking within mountain lands are free for mountain residents. Privatisation of livestock was largely completed by 2001 in this region. It was accompanied by a reduction of the number of cattle and smallstock (sheep and goats) by about 30% for the whole Rayon between 1990 and 2008 (Fig. 7). This decline took place in the piedmont as well as in the mountains, but while numbers in the piedmont did not drop below those of the 1980s, livestock populations in the mountains were reduced much more drastically and are much lower today than at any other time since 1954 (Fig. 8)<sup>3)</sup>. This is especially true for sheep, which in the

<sup>3)</sup> Official livestock statistics, especially those from Soviet times are known to have been arranged so as to meet official plans. For this publication, official statistics were thus cross-checked with data kept in the archives of local administrations, which are considered more reliable.

eyes of local farmers are less profitable than cattle: The price for mutton is lower than for beef, and prices for sheep wool have collapsed. Moreover, sheep must be herded as they are more mobile than cattle. Whether done individually or communally, this requires more labour, which is either not available or too expensive given the low returns.

Transhumance (the seasonal mountain – lowland migration of livestock), which was practiced in pre-Soviet times and later by the kolkhozes, came to an end after the break up of the Soviet system. The larger groups of cattle and sheep that can be seen in Digoria today belong to large private or corporate owners from the piedmont. Grazing arrangements for these herds are no longer based on land management plans; they are generally the result of informal deals involving regional administrative and political circles, thus side-lining village communities, who are neither informed nor consulted, and do not receive compensation for such arrangements. As a result, relations between these communities and the successors of the kolkhozes are often difficult, a situation that appears to be widespread in the Russian Federation even if win-win arrangements exist (MOSER and LINDNER



2011). By contrast to Soviet times, the mountains of Digoria have become marginalised in functional and political terms. Relating to grazing, their status has changed from community commons, where access was governed by the village community in the old days (KALOYEV 1993) and by the kolkhozes during the Soviet time, to de facto open commons which, according to the local population, can be accessed by anybody depending on their ability to exploit informal pathways. As the livestock involved in such deals may not be properly registered, official statistics are likely to underrate stock numbers in the mountain areas. In recent years, considerable efforts have been made by the authorities to normalise and regulate land tenure and access to land, meaning that the use of mountain commons must now be based on formal contracts between local mountain administrations and lowland livestock owners. However, not all local mountain administrations were sure about land boundaries and ownership rights at the time of writing of this paper.

Regular grazing based on the specific potentials of the different altitudinal zones and involving both nearby and remote areas is crucial for maintaining the high quality of pastures and high levels of biodiversity, and hence has played a key role in sustainable management and in safeguarding the cultural landscape heritage. The current grazing regime in the study area and in other mountain regions of North Ossetia, however, leads to unbalanced pasture use in terms of space and intensity. Distant pastures have shown evidence of underuse in recent decades. Mountain grasslands of the Caucasus are semi-natural ecosystems; historically, the impact of grazing has been an important factor shaping their structure, function, and diversity. Cessation of grazing leads to an increase in organic debris and, as a result, to an increase of sod thickness; this inhibits regeneration of species and thus changes vegetation composition (GRACHEVA and BELONOVSKAYA 2010). Field observations during this study revealed the widespread appearance of zoogenic and phytogenic tussocks in underused and abandoned grasslands that lower pasture quality. Rapid and widespread natural forest regrowth can be observed in the more distant hayfields in the montane zone (e.g., in Stur-Digora), and a marked expansion of scrub and crooked birch forest is taking place in the subalpine zone (e.g., in Galiat). Local residents are well aware of this development. Specific studies are required to determine the extent of underuse and the threat it poses to the unique open mountain cultural landscapes typical for most of the montane

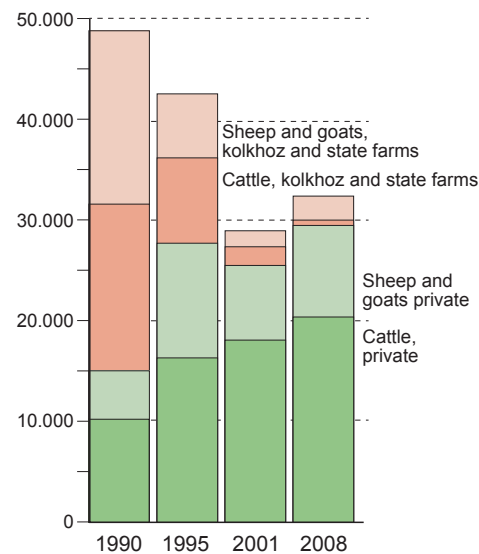


Fig. 7: Livestock ownership by type of livestock, Iraf Rayon 1990–2008

and subalpine zones in North Ossetia. Pastures within easy reach for grazing present a different picture altogether, showing indicators of human-induced ecosystem diversity on the one hand, and signs of degradation on the other hand, including anthropogenic steppe and badlands on the steepest slopes (Photo 5). Overall, the impact on grasslands is much lower than in Soviet times. However, there is no regulation of grazing in terms of time and space, no control, and no pasture reclamation or stone removal. The broad picture of overuse of easy-to-reach grazing areas and underuse of more remote pastures has also been observed in other mountain regions in countries in transition, such as in the Tajik Pamirs (BREU and HURNI 2003).

## 6 Development of mountain regions: The official strategies

The development programme of North Caucasian Federal Okrug describes an inertial, a basic and optimum scenario of development for the North Caucasus until 2025 (STRATEGIYA 2010). Under the optimum scenario, the region will develop into a key health and skiing area within Russia and CIS, a large-scale provider of ecologically pure products, a transport nodal point linking Russia with the South Caucasus and the Mediterranean, and an attractive area to live in.

All scenarios see mountains as a resource base for lowland interests, with a focus on tourism and hydropower development. Relating to tourism, the

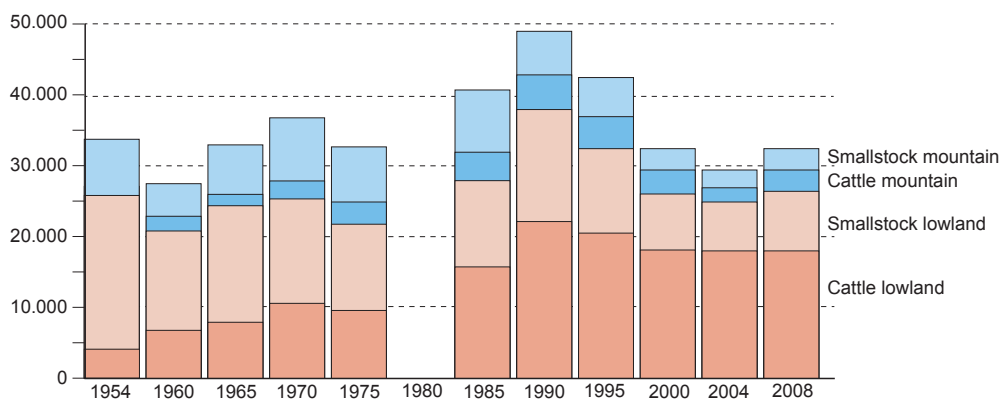


Fig. 8: Livestock numbers Iraf Rayon – piedmont and Digoria 1954–2008

plans foresee the construction of five centers in the North Caucasus, one each in North Ossetia, Dagestan, Kabardino-Balkaria, Karachaevo-Cherkessia and Adygeya-Krasnodar, which are expected to create a total of 330,000 job positions. Plans for rural development and farming are limited to the lowlands.

Development plans for North Ossetia follow the same pattern. The Republic is one of the two federal subjects in Russia that have a law on mountain areas (the second being Dagestan). Under this law, which was adopted in 1998, a federal programme under the name “Mountains of Ossetia” was set up with the aim to promote socio-economic development in mountain areas and to respond to the basic needs of the population. However, this programme, which was functional until 2008, never represented the main logic of development in the Republic. This is also shown by the current development plan (STRATEGIYA 2007) which does not mention rural development in mountain areas. When discussing future mountain development with high ranking decision makers in North Ossetia, it becomes clear that in their eyes, mountains represent a large, hitherto untapped and underproductive part of the Republic, which should now contribute its share to overall development and help reduce the dependency on federal transfer payments, which account for a share of 80–90% of the national budget. In line with this strategy, the plan identifies tourism promotion and hydropower generation as priority fields for mountain development. In line with the Federal Okrug strategy mentioned above, for example, a multi-purpose four-season mountain resort is planned at Mamison, an area within in the Alagir catchment east of Digoria (Fig. 2). In its final stage, it is planned to accommodate 30,000 tourists and provide 10,000 jobs on site and

in supplying sectors within the Republic. Usually, staff in tourist enterprises of this kind is recruited from outside the mountains except for unskilled positions and sometimes for mountain guides. Provisions including food are usually brought in in bulk from external providers. Local residents will thus derive marginal benefits from such a station. This is shown by the example of Tsey, an emerging mountain resort north of Mamison, where adjacent villages continue to lose population and villagers complain about unemployment. It should be noted, however, that in other areas of the Northern Caucasus such as the Elbrus (Kabardino-Balkaria) or Dombay (Karachaevo-Cherkessia) regions where tourism infrastructure is more developed, the local population is more involved in the sector. An additional challenge for Mamison and similar high mountain resort projects in North Ossetia is their location in the strategic border zone and the restrictions imposed for this zone relating to access and movement. While regional tourism has increased in recent years, the Northern Caucasus is still perceived as an area of conflict both in Russia and abroad. This is a major constraint to any grand plans for tourism development.

The development of hydropower is in full swing, too, with the aim of reducing North Ossetia’s dependence on energy supplies from other parts of the Russian Federation. Construction on the Zaramag hydropower scheme with three power stations on the Ardon River in the Alagir catchment (Fig. 2), which was interrupted for about 20 years, was resumed in 2009. The combined capacity of these stations will be 352 MW. In Digoria, a cascade of 17 smaller hydropower plants with total capacity of 240 MW is planned on Uruk River and its tributaries. The first plant (6.4 MW), located about 2 km downstream of Kamunta, was connected to



Photo 5: Past and present erosion at Makhchesk, Digoria. Old village with watchtower on hilltop upper left, new village from Soviet time on the lower slope in the foreground. Degraded vegetation due to stock movement and grazing can be seen on the nearer slopes on the right hand side, and on those in the background on the upper right. (Photo: THOMAS KOHLER 2009)

the national grid in 2009, and work on a second plant (5.3 MW) close by is in progress. The other 15 plants wait for investment.

## 7 Conclusions: What future is there for mountain regions?

- The combined processes of mountain outmigration and population growth in the piedmont areas have reduced the mountain population to a tiny minority in North Ossetia today. Outmigration from mountain areas is not a new phenomenon, but has been observed for over 200 years and can be documented statistically for the last 120 years. The demographic effects of this exodus on mountain communities include a lack of young people, overrepresentation of old people, and a lack of women in the younger age groups. Coupled with the overall small size of the mountain population, these factors have begun to threaten the very survival of mountain communities. Outmigration, modernisation, and incorporation of the mountains in the wider Soviet, and

later Russian, economy and culture have led to a contraction of the area settled and used, and now pose a threat to the cultural heritage of the mountain regions.

- By contrast to the loss of population, the loss of livestock is the result of the transformation after 1991 and thus a comparatively recent phenomenon (even though livestock numbers may have collapsed on former occasions, e.g., during Soviet collectivisation in the 1920s). This stands in marked contrast to the European Alps, where outmigration and decreasing stock numbers often occurred simultaneously, and bush and forest encroachment are thus an older and more widespread phenomenon, especially in the southern and western Alps. In the mountains of North Ossetia and in Digoria specifically, livestock numbers were at their peak in the later decades of the Soviet era, when mountains had an important complementary function as grazing areas within the kolkhoz system. This system broke down after the transformation and has been replaced by a system of common use. In the eyes of the local communities, this system is open as it allows gra-

zing by outsiders over whom they have no control; but from a wider governance perspective, it cannot be regarded as open in the strict sense of the word, as it is based on informal deals between external users and circles within the administration. Although efforts to regulate land tenure and access to village lands and to enforce the law are stepped up at the national level, the ownership and extent of mountain village territories are likely to remain an issue in future. According to the Land Law of North Ossetia that was adopted in 2004, privatisation of agricultural lands has been postponed for 49 years. This opens a wide arena for intransparent deals relating to investment and development in mountain areas. Local interests may be difficult to defend under this condition against those of big business, especially if the latter are in line with the regional and federal development complex.

- *What future is there for the mountains of North Ossetia?*

In the current political debate, mountains are seen as an important resource base for national development, with a focus on large-scale resort-based tourism, hydropower generation, and nature conservation. All these initiatives primarily consider interests from outside the mountains. Their motive is to substantially increase financial returns and to “make mountains pay” their share for economic development of the Republic. In addition to these national motives, Russia has had a vital strategic interest in the region since 1991, when the mountains became the international border with Georgia; this interest has increased due to the conflict with Georgia since 2008. In light of this constellation of interests, questions about sustainable mountain development, sustainable land management, and population development are of secondary importance on the political agenda.

- Less grand programmes than those mentioned above have also been promoted in recent years. They appear to have a more delicate stand, though, as was shown by the example of a short-lived UNDP-supported programme for the promotion of rural tourism, which was started around 2007 but was abandoned a few years later. However, the government of North Ossetia is in support of the sector, and a number of rural tourism-oriented companies have appeared over the past years. The renewed interest in mountain areas among urban residents from within North Ossetia as well as tourists from other regions in Russia, may help to generate some local income;

but what the effects will be and whether they will be strong and lasting enough to help reverse depopulation and aging remains to be seen. So far, the blessings of this trend have been mixed: Most of these new urban-based residents live in the mountains on a part-time basis and have built their houses outside the traditional villages and in a non-traditional style. Because of its remote location, Digoria has been less affected by this move to the mountains than other regions in North Ossetia, but the trend towards secondary homes is likely to increase in the future. At the same time, local residents generally lack the funds, or the interest, to upgrade their traditional houses with a view to accommodating tourists.

- Mountain development is at a crossroads today; it is caught between grand economic designs, nature conservation, unresolved issues over land use and access to resources, and a reawakening of interest in mountain life and recreation in the mountains among urban people. The diversity of these driving forces calls for a broad platform that could host a political debate about desirable mountain futures. Exchange with and learning from other mountain regions facing similar challenges might provide useful insights, especially if combined with approaches that give an active role to local communities and enterprising local individuals (RADVANYI and MUDUYEV 2007). The legal base for such local involvement and for broadly negotiated pathways of future development has been put in place, but whether it will be exploited is an open question.

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