

# **Sustainable Livelihoods in a Fragile Environment - Case Studies from the Tajik Pamirs**

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## **Abstract**

The Tajik Pamirs, in the east of the country, comprise nearly half of the total land area of Tajikistan. The area is characterised by a harsh high mountain climate, with few natural resources.

Until the mid-1950s, human settlements were small and the population survived on subsistence farming and nomadic herding. Minor improvements in living standards occurred after the occupation of the region by the Tsarist army at the end of the 19th century, but it was not until the 1950s with the advent of Soviet central planning and massive subsidies that living standards improved substantially. The subsidisation - including food and fuel deliveries in winter from Osh across the high plateau - was part of a deliberate policy to populate the border regions and thus assert sovereignty over disputed territory. The condition of dependency was intended to forestall any separatist tendencies.

With the break-up of the Soviet Union and Tajik independence in 1991, the population of this isolated border region became vulnerable and there was a threat of famine. In 1992, the Aga Khan Foundation initiated an emergency food aid programme, accompanied almost immediately by a strategy for the longer-term development of the region, in particular an agricultural reform programme.

Thanks to the relative autonomy of the local government, a policy of land and herd privatisation was adopted. This shift to private farming, combined with technical assistance and the supply on credit of improved seeds and fertiliser, organised by the Foundation, led to a rise in self-sufficiency in basic foodstuffs from 15% at the end of the Soviet period to over 50% by 2002.

The success of the agricultural reform programme can be mainly attributed to intelligent public policy by the local government, resourcefulness and adaptability on the part of the population and a wide variety of accompanying measures by a committed international agency (in this case the Aga Khan Foundation) supported in turn by government funding from the developed world.

However, the Tajik Pamirs, with only 240 square km of arable land will never be able to achieve local self-sufficiency. The deficit is today made up by substantial monetary remittances from young people working outside the country. This too is unsustainable.

In the Tajik Pamirs, Soviet central planning and a deliberate policy of forcing human settlement in inhospitable areas, combined with inadequate natural resources, have led to imbalances and distortions that can only be corrected by a reduction in the pressure of population on the land.

The three greatest resources of the Pamirs are a network of fast-running rivers, the high level of education of the population and spectacular natural beauty. Future strategies must concentrate on exploiting these natural advantages. However, the difficulty of achieving post-Soviet transition should not be underestimated.

Some former Soviet zone countries have made the transition successfully - Tajikistan has not. For the time being, the threat of Islamic extremism is minor but could increase with a major deterioration of the economy, especially in remote impoverished regions such as the Pamirs.

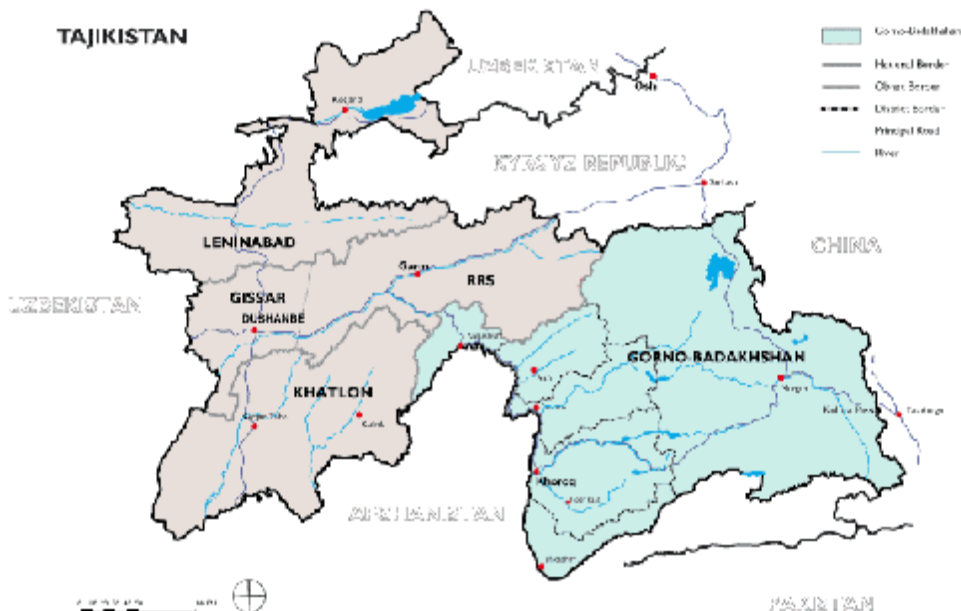
# Sustainable Livelihoods in a Fragile Environment - Case Studies from the Tajik Pamirs

## 1. Population and Physical Characteristics of the Tajik Pamirs

The Tajik Pamirs are situated in the eastern part of Tajikistan (Gorno-Badakhshan Autonomous Oblast - GBAO) and cover nearly half of the total surface area of Tajikistan (approx. 64,000 square km, equal to 1.5 times the area of Switzerland). The western and southern frontiers of the Tajik Pamirs are determined by the Panj/Amu Darya (喷赤河 / 阿姆河) and Pamir rivers and are contiguous to Afghanistan. The eastern border is contiguous to the Kashgar prefecture of China (中国的喀什地区).

Prior to the occupation of the Pamirs by the Tsarist Imperial army, and the establishment of a Russian military base in the town of Khorog in 1895, the area of today's Gorno-Badakhshan consisted of several semi-self-governing entities, comprising territories that today are part of GBAO and Badakhshan Province in Afghanistan. Darwaz and Shughnan-Rushan, on the east bank of the Panj/Amu Darya, owed formal allegiance to the Emir of Bukhara. The latter territories were also claimed by Afghanistan, as was Wakhan, in the south.

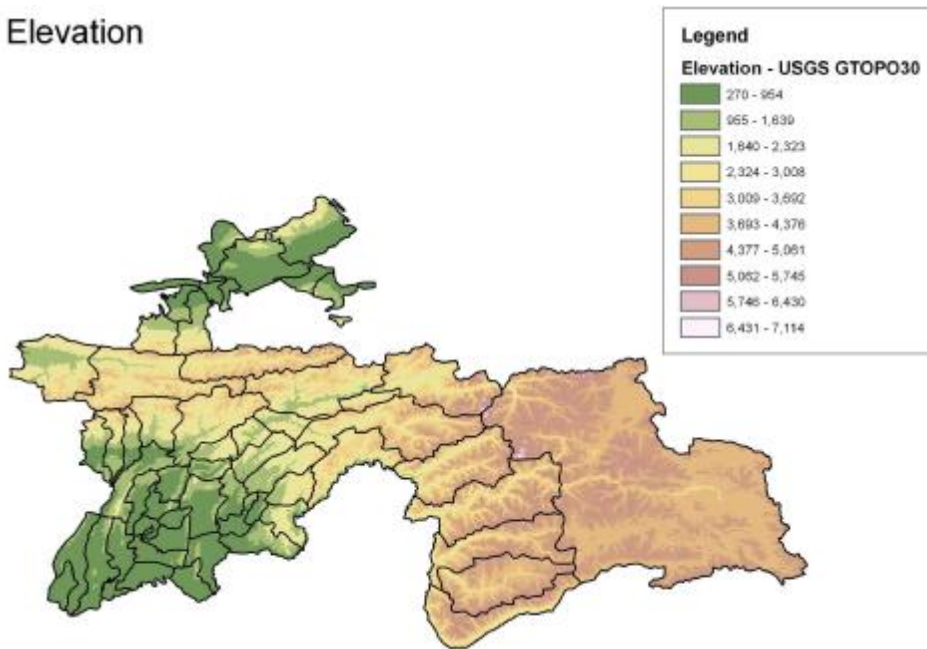
The Qing (清朝) rulers of China also claimed control of the entire Pamir Mountains, but Qing military units only controlled the passes just west of the town of Tashkurgan (塔什库尔干镇). In the 1890s, the Chinese, Russian and Afghan governments signed a series of agreements that divided Badakhshan, but the borders were not finally settled until a 2002 agreement between the governments of China and Tajikistan. GBAO was created in January 1925 and was attached to the Tajik Soviet Socialist Republic after the republic's creation in 1929.



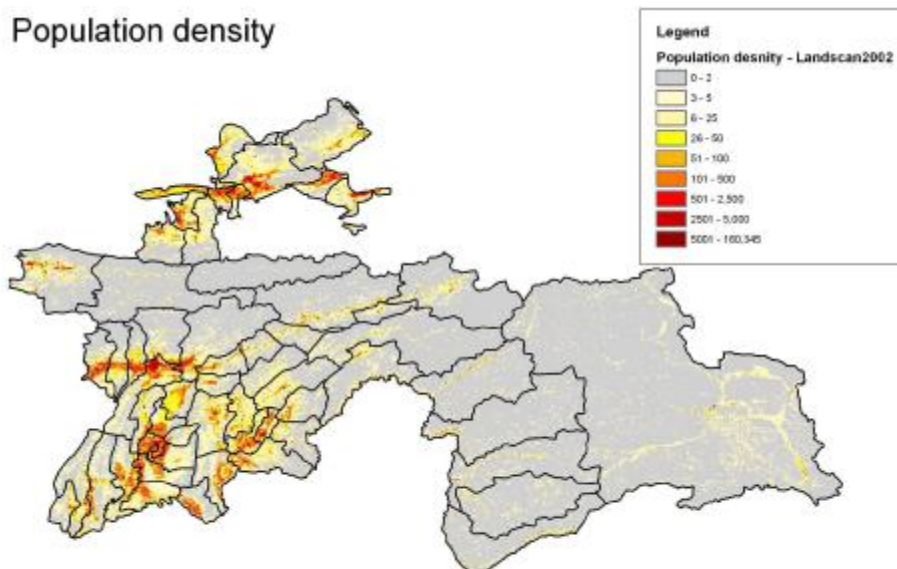
The current population is estimated at 216,000 (approx. 3% of the total population of Tajikistan). The total area of arable land (available for cultivation) is only 240 square km (0.4% of the Tajikistan total). Human settlements are located at altitudes varying from 1,200m to 3,500m. GBAO is one of the poorest regions in Tajikistan and therefore one of the poorest in all Central Asia as well as worldwide. The average per capita income in Tajikistan in 2011 was around \$2,000 per year (substantially lower in GBAO).<sup>1</sup>

<sup>1</sup> World Bank ([http://en.wikipedia.org/wiki/List\\_of\\_countries\\_by\\_GDP\\_%28PPP%29\\_per\\_capita](http://en.wikipedia.org/wiki/List_of_countries_by_GDP_%28PPP%29_per_capita))

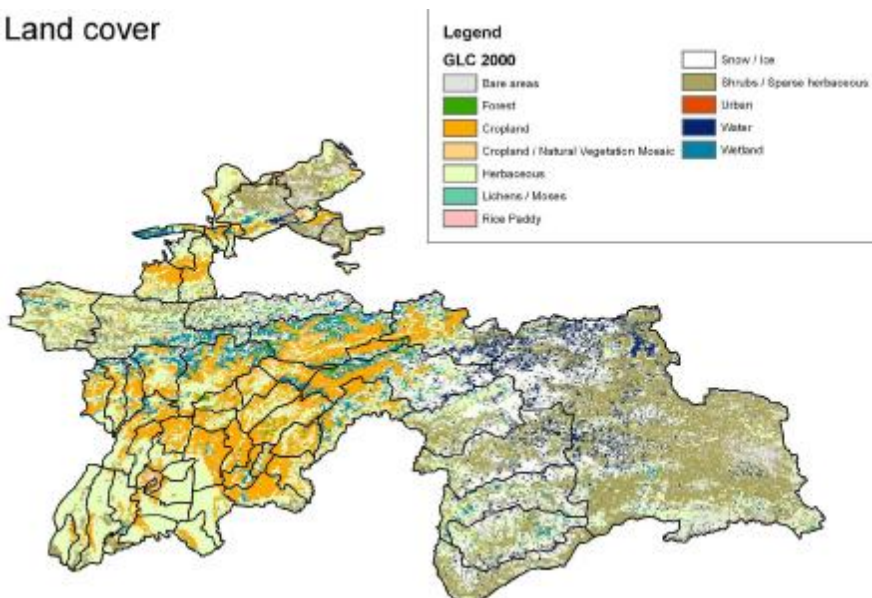
## Elevation



## Population density



## Land cover



The Eastern Pamirs (Murghab district, population approx. 16,000) are mainly inhabited by people of Kyrgyz extraction, although there is a significant minority in Murghab town originating from the Western Pamirs.



The Western Pamirs (Darwaz, Vanj, Rushan, Shughnan - including the regional capital Khorog - Roshtkala and Ishkashim districts, population approx. 200,000) are inhabited by people of Irano-European extraction.



The physical characteristics of the population of the Western Pamirs suggest that they may be the remnants of the original Saka/Scythian inhabitants of Central Asia who were driven westward by successive Mongol invasions from the 13th century CE onwards and ultimately found refuge in the inaccessible high mountain area of the Pamirs.



The Western Pamirs are characterised by narrow and long valleys, leading west into the Panj/Amu Darya. The eastern Pamirs are a high plateau (approx. 3,000m-3,500m) that contains several mountains over 6,000m:



Peak Somoni - formerly Pik Communism (7,495m)



Independence Peak - formerly Peak Lenin (7,134m)



Peak Karl Marx (right - 6,723m) and Peak Engels (left - 6,510m)

The Fedchenko glacier, named after the famous Russian scientist and explorer, is the longest glacier in the world outside of the polar regions.



Mustagh Ata (centre - 慕士塔格峰 - 7,546m) and Kongur Tagh (left - 公格尔峰 - 7,649m) are just across the border in China.



Nineteenth century explorers of the Pamirs concluded that the term ‘Pamir’ was used in Central Asia to describe any high mountain area of valleys and plateaux. Francis Younghusband (1863-1942), one of the most intrepid spies in the imperial contest between Britain and Russia, known as *The Great Game*, gave a useful and succinct explanation of their geological origin:

We must ... look back some hundreds of thousands of years, to the time when these mountains were first upheaved. Whether that upheaval was sudden, ... or gradual, ..., there would in either case be clefts and hollows between the unevenness which formed the various ranges of the mountain chain. Snow would fall in the upper parts, collect in masses in the hollows, and gradually form into glaciers. Then these glaciers, each with its burden of débris of rocks and stone from the mountain-sides, would come creeping down and gradually fill up the bottoms of the valleys parting the various ranges. In former times, in these Pamirs, glaciers descended much lower than they do now, and in all parts of them the moraines of old glaciers may be seen down in the valley bottoms to which no glaciers now descend. All these Pamirs were therefore in former times filled with vast glaciers, and as the ice of them melted away the stony detritus remained and formed the plains which are seen to this present day. If the rainfall were more abundant, this detritus would of course be washed out by the river flowing through the valley; but in these lofty regions, where the very lowest part of the valleys is over twelve thousand feet above sea-level, the rivers are frozen for the greater part of the year, they are unable to do the work that is required of them, and the valleys remain choked up with the old glacier-borne débris of bygone ages. Lower down, however, in the states of Wakhan, Shighnan and Roshan, where the rivers have reached a level low enough to remain unfrozen for a time sufficiently long to carry out their duties properly, the valleys have been cleared out, the Pamir country has disappeared, and in place of the broad flat valley bottom, we see deep-cut gorges and narrow defiles.<sup>2</sup>

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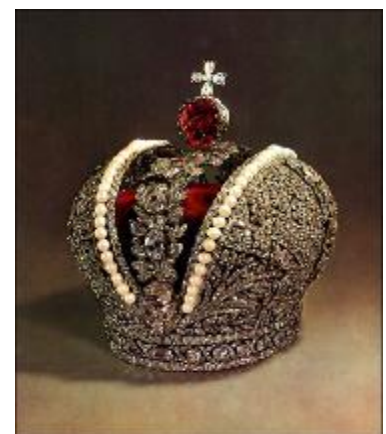
<sup>2</sup> Francis Younghusband, *The Heart of a Continent – a narrative of travels in Manchuria, across the Gobi desert, through the Himalayas, the Pamirs and Hunza* 1884-1894, London 1904, p. 231 and pp. 259-260.

The etymology and precise meaning of the name 'Pamir' are problematic. The name is encountered for the first time in the account of the journey in about 630 CE of the Chinese Buddhist traveller Xuanzang (玄奘 - ?602-664 CE) as "the valley of Po-mi-lo"<sup>3</sup> which corresponds to no known expression in modern Chinese and must have been Xuanzang's attempt to transliterate the name then used by the local inhabitants. This designation was confirmed six hundred years later by Marco Polo, who recorded the name as 'Pamier'. There are many theories of its etymology, of which the most poetic is from ancient Persian: 'poye'- 'mehr' – the land at the foot of the sun.

In English, the designation is normally in the plural 'Pamirs'. The local Tajiks, together with the Russians, French and Germans, use Pamir in the singular to describe the whole area. Colonel B.L. Grombchevsky (1855-1926), one of the first Russian explorers in the Pamirs, explained with typical Russian pragmatism that "I term the whole of the table-land 'Pamir', in view of the resemblance of the valleys to each other."<sup>4</sup>

As in the case of 'Pamir', the name 'Badakhshan' occurs first in the travel narrative of Xuanzang, as the kingdom of Po-to-chang-na, located by him in the Upper Oxus;<sup>5</sup> it is also mentioned in the 'Book of Kings' by the Persian poet Firdowsi (*Shahnameh*, i, 24) composed in the tenth century. Much earlier, however, Greek and Roman historians and geographers wrote about the lands beyond the Oxus (Amu Darya) and Jaxartes (Syr Darya) and the people who inhabited them; their maps record contemporary 'knowledge' of the Pamirs. The southern extensions of the 'Silk Road' passed through the Pamirs and, from the second century BCE to the seventh century CE, traders and Buddhist pilgrims brought back accounts of the lands near the western frontiers of China. Following the Arab conquest of Bactria in the eighth century CE, Arab travellers and geographers also contributed records of the region.

Badakhshan was famous in antiquity for its rubies and *lapis lazuli* and was the only known source of the latter. The 'balas' ruby (in gemmology, a spinel) takes its name from 'Balascian', the rendering in medieval English of the name *Badakhshan*. Probably the most famous spinels are the 170-carat 'Black Prince's ruby' worn by Henry V on his battle helmet and now in the Imperial State Crown of Great Britain; the 352-carat 'Timur Ruby', part of the UK Royal Collection; and the 398-carat stone in the Imperial Crown of Russia. The account of Marco Polo's travels in the 13th century mentions ruby mining in Shughnan; the *Lale Badakhshan*, as the spinel is known in Shughni and Tajik, is still mined today in the Pamirs.



<sup>3</sup> *Ta-T'ang-Si-Yu-Ki*: translated by Samuel Beal in *Buddhist Records of the Western World* (London: Trubner & Co. Ltd., 1884), p. 291. (Reprint by Munshiram Manoharlal, New Delhi, 2004.) Part also available on the Silk Road Seattle website: <http://depts.washington.edu/uwch/silkroad/texts/xuanzang.html>.

<sup>4</sup> *Asiatic Quarterly Review*, quoted by Dr. G.W. Leitner in *Proceedings of the Royal Geographical Society (PRGS)* Vol 14, No. 1, 1892, p.34.

<sup>5</sup> *Buddhist Records of the Western World*, p. 297.

Mentions of ‘sapphire’ in ancient texts in all probability refer to *lapis lazuli*: Pliny refers to *sapphirus* as “a stone sprinkled with specks of gold” and the Christian Bible refers to sapphires that contain “dust of gold” (Book of Job, xxviii, 6). Wherever *lapis* is found in antiquity, therefore, there is *prima facie* evidence of trade with (and human settlement in) Badakhshan. Egyptian records, for example, show that *lapis* was being imported in the late predynastic period (fourth millennium BCE) and much was found in the Sumerian tombs at Ur (Mesopotamia) and the royal palace in ancient Ebla (Syria), which date to the third millennium BCE. The most famous ancient object incorporating *lapis* is probably the funeral mask of Tutenkhamun (second millennium BCE). Written records of the Pamir region are not, however, found until much later. High-quality *lapis* is still mined in Badakhshan.



Gorno-Badakhshan has more than 10,000 petroglyphs and pictographs, evidence of human presence since the late paleolithic period (8,000 BCE).<sup>6</sup> Regrettably Tajikistan has no funds for recording, analysing and dating (and, not least, protecting) these exceptional historical artefacts. Most are (fortunately for their preservation) some distance from the main roads and many villagers are unaware of their presence.

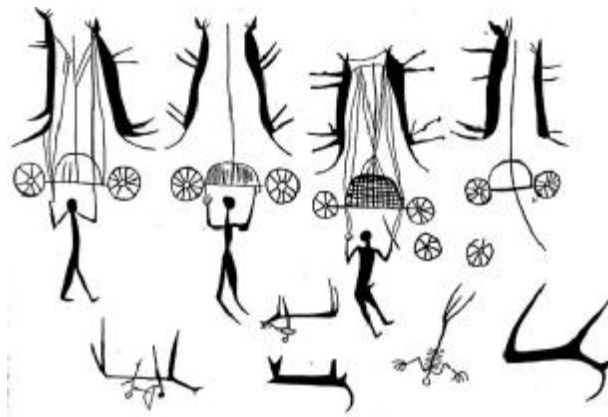


Pictographs in Shakhty cave (Murghab district)

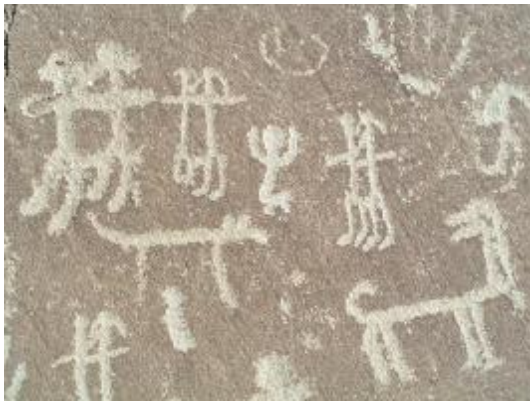
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<sup>6</sup> A petroglyph is an image engraved on a rock. A pictograph is an image painted on a rock.





Petroglyphs in Akjilga (Murghab district)



Anthropomorphic figures with dogs



Sufi poem (both from Ishkashim district)

## 2. Population growth and climatic change

Until the mid-20<sup>th</sup> century, human settlement in the Pamirs was insignificant: indeed, the high plateau of the Eastern Pamirs was - until relatively late in the Soviet period - inhabited almost exclusively by nomadic herders. As is the case with any other area inhabited by nomadic peoples, the Pamirs were far from virgin unexplored territory at the time European explorers began to make maps and surveys. Long before the time of miners of spinel, lapis and silver, silk road traders, Chinese Buddhist pilgrims, Jesuit missionaries, spies and military adventurers, the Pamirs had been criss-crossed by local nomadic herders since time immemorial. The earliest estimates of population in the Tajik Pamirs, however, were not made until the British and Russian Empires began to take an interest in the region as part of their imperial rivalry known as the "Great Game".

In 1880, Mukhtar Shah, a native explorer working on behalf of the British administration in India, estimated the total population of the Western Pamirs, including the Afghan left bank of the Panj, at some 30,000. Ney Elias, the British spy/surveyor who was the first European to explore the Pamirs extensively in 1885, estimated the population on the right bank of the river at about 4,000 in Shughnan and 3,000 in Rushan, and the Kyrgyz population of the Eastern Pamirs at about 5,000.<sup>7</sup> In 1899, a Danish expedition led by Ole Olufsen (1865–1929) estimated the population of Khorog – now the capital of Gorno-Badakhshan – at only 33 houses and 120 persons. In 1894, the first census undertaken by the Russians reported that 1,055 people lived in Murghab district. In 1908, Andrei Evgenevich Snesev (1865-1937), Russian Academician and head of the Russian military administration in Khorog, estimated the total population of the

<sup>7</sup> *Report of a Mission to Chinese Turkestan and Badakhshan in 1885-86; By Ney Elias, Political Agent on special duty*, Calcutta 1886, IOLR F111/378; Ney Elias, Journal "Pamir Journey 1885-6", RGS Archive, ref. NE 33. Gerald Morgan, *Ney Elias. Explorer and Envoy Extraordinary*, London, 1971.

Western Pamirs (i.e. territory under Russian jurisdiction on the right bank of the Panj) at 17,000 and the Eastern Pamirs only 2,000. We may reasonably conclude that until the Soviet period, the population of the Tajik Pamirs did not exceed 20-25,000.

It became declared Soviet policy to encourage human settlement in strategic border areas and population began to grow steadily. Nomadic herders in the eastern Pamirs, for example, were forced to live in an urbanised environment, leaving their houses only in the spring and summer for their yurts and pastures. A heavily subsidised system of food deliveries was organised - especially during the winter months, when the road from the Tajik capital Dushanbe was closed for 4-5 months by snow, and deliveries had to be made along what is now known as "The Pamir Highway" from Osh in Kyrgyzstan.<sup>8</sup> Best estimates of population<sup>9</sup> show a growth from some 29,000 in 1926<sup>10</sup> to 45,000 in 1950, 128,000 in 1979 and approx. 200,000 at the end of the Soviet period. During the Tajik civil war (1992-1997) the population reached a peak of some 250,000 as a result of an influx of displaced persons from other parts of Tajikistan.

Early Chinese Buddhist travellers are unanimous in their description of the Pamirs as cold and uninviting. The best known of these, Xuanzang, provided a description of Po-to-chang-na [Badakhshan] in his *Record of the Western Regions* (大唐西域記):<sup>11</sup>

It is intersected with mountains and valleys, a vast expanse of sand and stone stretches over it; the soil is fit for the growth of beans and wheat; it produces an abundance of grapes, the khamil peach, and plums, etc. The climate is very cold.



Xuanzang returning to China with Buddhist manuscripts

The Pamirs are still characterised by a harsh climate, especially on the high plateau in the east where there is little precipitation and winter temperatures can fall below  $-40^{\circ}\text{C}$ . It is interesting to note, however, that there is archaeological evidence that several millennia ago the climate was substantially milder.<sup>12</sup>

<sup>8</sup> This strategic road, of which the section Osh-Murghab was opened in 1897, was completed a few years later and was fully asphalted and open to motor traffic by 1935. It regained significance as a military supply route during the Russian invasion and occupation of Afghanistan 1979-1989 (v. Kreuzmann Hermann, "The significance of geopolitical issues for internal development and intervention in mountainous areas of Crossroads Asia", *Crossroads Asia, Working Paper Series 07*, Bonn, January 2013).

<sup>9</sup> Kreuzmann Hermann, *Ethnizität im Entwicklungsprozess*, Berlin 1996, p. 169.

<sup>10</sup> By this time the anti-Bolshevik revolt in Central Asia, known as the *Basmachi* movement, had been finally put down and stability had returned.

<sup>11</sup> *Ta-t'ang-si-yu-ki*: translated by Samuel Beal in *Buddhist Records of the Western World* (London: Trubner & Co. Ltd., 1884), available on the Silk Road Seattle website:

<http://depts.washington.edu/uwch/silkroad/texts/xuanzang.html>

<sup>12</sup> Bubnova M. and Ranov V., 'Uncovering the History of the Roof of the World,' *American Journal of Archaeology*, Vol. 65, No. 4 (Oct. 1961) pp. 396-397: "We dug up at Osh-khona more than 500 square meters of the layer which contained traces of habitation of primitive man, such as implements, campfire sites and animal bone fragments. A very interesting collection of implements dating back to the last period of the Stone Age was found. A



Ice and snow on the Pamir Highway in April 1994

### 3. Development Characteristics

The records of 19<sup>th</sup> century travellers indicate that, with poor soil, limited vegetation, primitive tools and harsh winters, the inhabitants of the Pamirs still survived through the end of the century on a subsistence economy. The establishment of a permanent Russian garrison in Khorog in 1895 introduced cabbage and potatoes as well as improved seed stock for cereals, but did nothing to change fundamentally the essence of subsistence farming and nomadic herding.

Soviet planning came late to Central Asia, especially in isolated regions such as the Pamirs. Collectivisation of farming and herds did not improve yields and the system of state farms imposed in the Pamirs provided no incentive for the population to increase production.

The arable land of Gorno-Badakhshan, the poorest and most isolated part of the poorest Republic in the Soviet Union, is not sufficient to meet the food needs of its population: valleys are narrow and most of the land area is above 2,500m; in 1992, of a total of about 16,000 hectares of arable land, only 12,000 hectares were actually under food crops. During the Soviet period, under the centrally planned economy, subsidised deliveries of food and other commodities were introduced, distorting the hard law of nature that applies to isolated and poor rural areas and is at the root of subsistence farming: as many persons can live in a given area as the land there will support, others emigrate or die. At the end of the Soviet era, Gorno-Badakhshan was dependent for 85% of its food and all of its fuel on subsidised supplies from other regions.

This dependence was deliberate. Since the progressive occupation of the Pamir area by the Russians from the mid-nineteenth century onwards, the Pamirs were of great strategic importance: first, in the “Great Game” played out between soldiers and adventurers of the Russian and British Empires, then in the contested area of Turkestan immediately after the Bolshevik revolution and finally for military access to Afghanistan after the invasion of that country by the Soviet army in 1979. Soviet foreign policy required a sedentary population as proof of sovereignty - economic migration could not be tolerated.

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study of these implements made it possible to establish that the camp existed in the eighth to the fifth millennium B.C. Soon this period will be specified. Ash specimens from campfire sites have been sent to the Leningrad laboratory of the Institute of Archaeology of the USSR Academy of Sciences, where their age will be determined by the latest methods of carbon-content analysis. How could people dressed in animal skins and equipped with primitive stone and wooden implements live in this cold austere area? Is it that the climate was milder then? Archaeologists' attention was attracted to the fact that in most cases the campfire sites were open on all sides, whereas now it is impossible to build a fire without a windshield. This led them to suppose that the winds were not so strong at that time. Besides, the ash in the sites was found to be partially of wood origin. Today, you never see a tree in the area.”

## Break-up of the Soviet Union

With the break-up of the Soviet Union in 1991, the system of subsidies ended and local leaders warned of impending food shortages. One of the first institutions to respond to the threatened emergency was the Aga Khan Foundation, a private development agency.<sup>13</sup> Since the early 1980s, the Foundation had implemented a highly successful rural development programme in the Northern Areas of Pakistan and this was initially taken as a model for Gorno-Badakhshan. International experts in food security and rural development visited the area in 1992-1993. Their conclusions were clear:

- a) no long-term development programmes could be envisaged until the short-term food needs of the population had been met;
- b) the attention paid to remote and impoverished regions such as the Pamirs under the Soviet system presented a development paradigm unlike any so far encountered by the Foundation (and probably in the annals of international development policy).

The paradigm comprised: a high level of education – including graduate level technical specialisation; a highly mechanised Soviet-style agricultural infrastructure but no financial resources for its maintenance and no fuel for its operation; a range of health and education services the cost of which was far beyond the resources of the region;<sup>14</sup> and a population size bearing no relation to the carrying capacity of the land. The collectivised centrally-planned Soviet model was unsustainable.

These conclusions had both positive and negative implications. On the one hand, contrary to experience in the Northern Areas of Pakistan, major professional and intellectual resources could be harnessed locally; and the transition to local programme management was thereby facilitated.

On the other hand, development priorities would be frustrated in the short-term by the distractions of fund-raising and logistics for an emergency food aid programme. The distractions were increased by the outbreak of civil war in Tajikistan at the end of 1992.



Trucks with humanitarian assistance on the road from Osh in April 1994

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<sup>13</sup> His Highness the Aga Khan is the spiritual head of the Shia Imami Ismailis, a branch of the Shia faith; there is a substantial Ismaili population in the Pamirs, extending to the Sarikol region of Tashkurgan province in China, the Northern Areas of Pakistan and Badakhshan province of Afghanistan.

<sup>14</sup> At the end of the Soviet era, the official figure for male and female literacy in Gorno-Badakhshan was 99% and there were more hospital beds per head of population than in most Western developed countries.

Other international agencies left the initiative to the Aga Khan Foundation, which rapidly had people on the ground and a coherent strategic concept. The first step was to ensure substantial international funding for food aid, while preparing the strategy for longer-term agricultural reform. Fortunately, donors with strategic vision were found: the government of the USA, well aware of the geo-political implications of a massive flight of destitute refugees across international frontiers; the Swiss government, always prompt to respond to humanitarian crises; the German government, developing a new-found interest in the former Soviet territories; and a Dutch NGO that happened to have a Farsi-speaking expert already in the region.

A local NGO, the Mountain Societies Development Support Programme (MSDSP), was set up in Moscow, Osh and Khorog with indigenous personnel in order to undertake procurement, logistics and monitoring for the humanitarian programme and begin planning for longer-term development. Despite the context of civil war, the Aga Khan Foundation was able to negotiate agreements with the Tajik (and Kyrgyz) governments to begin operations in the Pamirs.

### **Sustainable solutions**

MSDSP initiated negotiations with the local government of GBAO - which, as an autonomous entity, had considerable freedom (although no resources) - for the privatisation of land not being used by state farms. In parallel with the humanitarian programme, an agricultural reform programme was thus initiated, to promote agricultural production and productivity and reduce dependence on subsidised and free food. A number of other measures were also introduced with a view to increasing rural incomes and access to food through increased purchasing power.

In late 1993, MSDSP obtained a landmark decision from the local government in Gorno-Badakhshan that unused or under-utilised state farm land could be distributed to villagers who wished to become private farmers. Village-level dialogues were held throughout Gorno-Badakhshan to encourage private farming. Private farmers were assisted, on credit, with improved seeds and fertiliser and received technical assistance from trained MSDSP staff – a channel building and repair programme was initiated to extend the area of arable land available to private farmers. Improved seeds, adapted to high mountain environments, were introduced. (N.B. physical inputs were provided on credit, repayable in cash or from food produced in order to avoid a return to the false incentives of the Soviet system.)



A highly developed network of irrigation channels, bringing snow melt to lower areas

The spontaneous demand from villagers was so great that the local government decided to privatise all land in one of the biggest valleys. Significant increases in agricultural production in this valley persuaded the local government to privatise all land in GBAO and, at the height of the programme, some 25,000 private farmers were working with MSDSP in Gorno-Badakhshan. Arable land was apportioned according to family size on a village-by-village basis, without permitting sale or transfer of land title.



MSDSP advisers inspect the wheat crop

Yields of potatoes and wheat per hectare more than doubled. Within ten years, production of staple crops increased from 15% of local needs (at the end of the Soviet Union) to over 50%<sup>15</sup> by 2002 as a result of improved yields and increases in land area under food crop cultivation.



MSDSP agronomists inspecting a new variety of wheat

Wheat, barley, rye and potatoes continue to be grown as the main food crops. Seed returned in repayment of loans was made available to participating farmers for spring and autumn planting, together with fruit tree saplings. As much seed as possible was procured locally, in order to encourage farmers to market their surplus, and to inject cash into a cash-starved economy.

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<sup>15</sup> Based on minimum calorific requirements.



A young family member brings the harvest home

### **Food diversification**

A horticultural programme tested and introduced new varieties of vegetables in order to provide a balanced diet and a sustainable supply of vitamins and minerals: nine new varieties of beans and six varieties of peas were tested - suitable varieties, which are well adapted to the particular climatic conditions of the region, were identified and planted. In addition to increasing fruit and vegetable production through the provision of fertiliser, seeds, saplings, and plastic tunnels for small greenhouses, the horticultural programme also provided training and equipment for processing and preserving horticultural produce, including apricot drying. Two greenhouses from the Soviet era were rehabilitated: they are heated and irrigated all year round from nearby natural hot springs and can supply a small, but profitable market for out-of-season vegetables to the regional capital, Khorog, and other areas.

A livestock programme was implemented to address poor animal health, insufficient fodder availability and lack of organised marketing systems. A breeding programme improved livestock quality and yields of meat and dairy produce.



A yak is prepared for milking in Murghab district

In addition, small animal husbandry activities, largely managed by women, were initiated in both regions, including poultry, wool-processing and bee-keeping.



### **Village-level autonomy**

Having addressed the vital and urgent issue of food self-sufficiency, the programme could begin to deal with broader long-term economic and social development at village level. The underlying philosophy was that rural economic development is best catalysed and sustained through village-level institutions that are autonomous and transparent, and that contribute to democratic norms of behaviour and to the growth of civil society. Civil-society organisations such as MSDSP were an entirely new concept in the region in 1993.

Each Village Organisation (VO) drew up a village plan, determined village needs and priorities, managed infrastructure projects (such as mini hydroelectric plants, road and bridge construction, school repair). The VOs also created Village Funds, from which microcredit was made available for small local enterprises and small trading.





Village-level "dialogues" at the start of the programme - Both men and women and all age groups were involved



A beneficiary of the microcredit programme



"Small" traders at the roadside

Special attention was paid to women's needs - for example, internal rules of the VO require that if the leader of a VO is a man, the deputy leader must be a woman.



The success of the programme can be mainly attributed to intelligent public policy by the local government, resourcefulness and adaptability on the part of the population and a wide variety of accompanying measures by a committed international agency (in this case the Aga Khan Foundation) supported in turn by government funding from the developed world.

## **Energy**

Electricity generation in GBAO began in the 1940s; immediately before the break-up of the Soviet Union, over 70% of the energy was actually provided by diesel generators run on imported diesel fuel. This was a deliberate policy preference over the alternative of developing the hydro-power potential of the Pamirs, estimated at up to 4,000 Megawatt,<sup>16</sup> that would not only have reduced dependency on the centralised resources of USSR, but would also have been a potential source of locally-created revenue through export to other regions.

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<sup>16</sup> Breu T. and Humi H. 2003, p. 35.

Many of the rural inhabitants resort to wood fuel for their heating and cooking needs during the winter, resulting in the destruction of 70 percent of the region's forests by 2000 and a sharp increase in respiratory disorders due to smoke inhalation. In the eastern Pamirs, almost all of which is above the tree line, Teresken (*Ceratoides papposa*) is the major source of domestic fuel. The uprooting of Teresken plants, that take decades to grow to maturity, has led to desertification and wildlife reduction.



Very late in the Soviet period, planning began for the construction of a major hydropower plant on the Ghunt river near Khorog, known as *Pamir-1*, with a capacity of 28mW, but it was not completed by the time of the break-up.

By 2000, the transmission and distribution system of GBAO was in very poor shape, having been largely destroyed in the civil war. Only 15 percent of the 435km of 35kV lines was still in service. Although the power system continued to provide electricity, outages were scheduled on a rotational basis, particularly during winter, and the power cuts had become more frequent and prolonged. There was no power in most districts of GBAO in winter.<sup>17</sup>

The Aga Khan Fund for Economic Development (AKFED), in partnership with the International Finance Corporation, formed the *PamirEnergy* company in 2002 to repair the electrical infrastructure of GBAO and make *Pamir-1* fully operational.

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<sup>17</sup> *Pamir Private Power Project* - World Bank, April 6, 2013:  
<http://web.worldbank.org/external/projects/main?pagePK=104231&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P075256>

Forty mini hydro power plants have been built in the Tajik Pamirs - most by the Aga Khan Foundation - since the mid-1990s, mainly in remote areas that were unlikely to benefit from *Pamir-1*, with a capacity ranging from 20kW to 300kW. However, even with *Pamir-1* fully operational, only a minuscule amount of the region's energy needs will be supplied. The considerable solar and wind power generation potential of the Pamirs has been largely untapped. Shortage of energy has hindered the development of the region.

In the Western Pamirs, hydro-electricity and solar power must be considered the best approaches to sustainable energy solutions. In the Eastern Pamirs, communities are affected by energy poverty throughout the year which becomes critical and life threatening in the winter months. A combination of hydro and solar power in the warmer months and wind and solar in the winter months is probably the best approach in this high plateau area.<sup>18</sup> In both cases, there are not adequate indigenous financial resources for implementation of these approaches.

## Wildlife

Wildlife is threatened in the Pamirs: not only the well-known large mammals, such as the Marco Polo sheep (*Ovis Poli*) and the snow leopard, but also and certainly more surreptitiously the extraordinary butterflies of the Pamirs. Recent missions to the Pamirs reported evidence that the population of *Parnassius Autocrator*, found only in the Pamirs (and there only in three locations) and in north-eastern Afghanistan has been almost totally destroyed by commercial poaching.



<sup>18</sup> Nelson Tony, [Report on the Opportunities for Renewable Energy Provision for Communities in the Pamir Mountains](#), etc4CA, 2010.

The project of a Pamir National Park in the eastern Pamirs exists primarily on paper. Virtually no resources are available for wildlife protection and the interventions of the park personnel serve mainly as an obstacle to the promotion of eco-tourism.

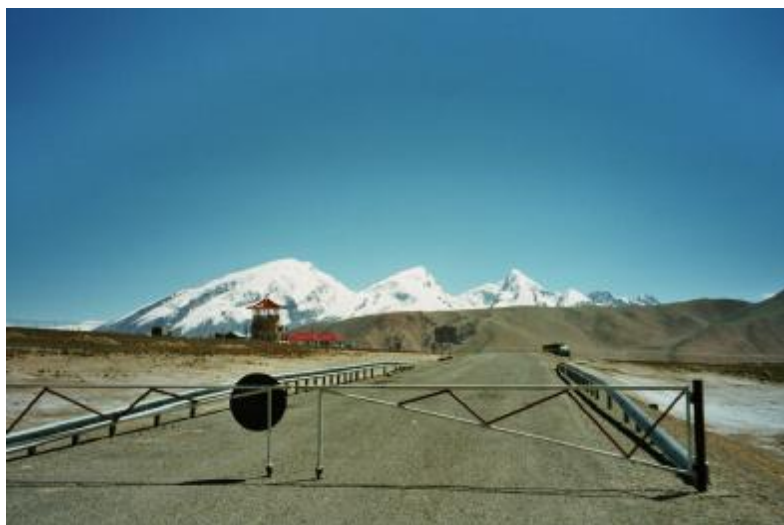
#### 4. Challenges and future prospects

As noted above, the total area of arable land in the Tajik Pamirs (available for cultivation) is only 240 km<sup>2</sup>. With a population of more than 200,000, even with the increased yields mentioned above, Gorno-Badakhshan will never be able to meet all the food needs of its inhabitants. Today, the balance of needs is met by a development that was only partially foreseeable: remittances from workers from the Pamirs who have emigrated to other parts of the former Soviet Union – mainly Moscow – and who send portions of their earnings back to their families in the Pamirs.

This, in turn, is unsustainable and has serious demographic and cultural consequences. Many villages are depopulated of young men, who return only sporadically and often never. Local traditions are being lost and cultural identity dissipated.

New initiatives are slow in coming. The three greatest resources of the Pamirs are a network of fast-running rivers, the high level of education of the population and spectacular natural beauty. To harness the hydropower potential of the Pamirs will require investments beyond the capacity of the Tajik government, but the potential to supply neighbouring countries such as China and Pakistan could provide a basis for international financing. The high level of education of the people, very low internal salary levels and the fact that increasing numbers of young people are learning English, may provide an opportunity for outsourcing services from developed countries.

Tourism - especially eco-tourism - is growing slowly, but local entrepreneurs have shown too much interest in quick profits and have been slow to raise the level of service quality, a prerequisite for partnerships with international tour operators. For the time being the Pamirs cannot compete on price or quality with other high mountain areas such as Tibet, Bhutan, Ladakh and even the Northern Areas of Pakistan. Today, the vast majority of tourists are "backpackers" with low revenue-generating capacity - so-called "soft adventure tourism". Here again, foreign investment and international partnerships could improve the situation. The 2012 opening of the border to China at the Qulma pass is a positive factor, as would be a reduction of tension in Afghanistan and an easing of border restrictions from the Afghan Wakhan into Pakistan.



Chinese border post at the Qulma pass



Afghan Wakhan

The territories of the former Soviet Union are described as "economies in transition". Some have made the transition successfully - Tajikistan has not. The challenges of privatisation have been met to large extent by an increase in corruption and acquisition of wealth by a few privileged families. The situation remains unstable. For the time being, the threat of Islamic extremism is minor but could increase with a major deterioration of the economy, especially in remote regions such as the Pamirs.<sup>19</sup>

The difficulty of achieving post-Soviet transition should not be underestimated and is illustrated by the German experience: despite a high level of industrialisation during the Soviet period and massive financial inputs from Western Germany, the economy of the eastern part of the country (formerly German Democratic Republic) is still struggling. In the case of the Tajik Pamirs, central planning and a deliberate policy of forcing human settlement in inhospitable areas, combined with limited natural resources has led to imbalances and distortions that can only be corrected in the short- to medium-term by a reduction in the pressure of population on the land, in other words by emigration.

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<sup>19</sup> In August 2012, the Tajik government sent military forces into Gorno-Badakhshan, ostensibly to apprehend four alleged criminals. This massive and disproportionate military response succeeded only in reducing the already fragile loyalty of the local population to the central government. See <http://www.pamirs.org/RECENT-MILITARY-ACTION-IN-KHOROG-NEWS-UPDATE.pdf>

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## Maps

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**Illustrations:** All by the author, except: pp. 2 and 5 (Maps) Aga Khan Foundation; p. 3 (Maps) UN World Food Programme; p. 5 (Peak Somoni) and p. 6 (Fedchenko Glacier) Surat Toimastov; p. 7 (Imperial State Crown) *The Collector* and (Timur ruby and Imperial Crown of Russia) <http://www.nihongo.com/>; p. 8 (Tutenkhamun) *National Geographic*; p. 10 (Xuanzang) Fujita Art Museum; p. 19 (Teresken) United Nations University; p. 20 (*Ovis Poli*) illustration by Nicolai Alexseyevich Severtsov (1827-1885), (Parnassius Autocrator) A. Zhdanko and (Snow leopard) Bernard Landgraf ; p. 22 (Afghan Wakhan) Andy Miller.