Thirteen environmental stories from Central Asia

GRID
Arendal

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Bees, oil and radiation...

This collection of 13 environmental stories from Central Asia was compiled by UNEP/GRID-Arendal as a 'by-product' to our everyday work strengthening environmental information systems in the region. We have realized that official state-of-the-environment reports, indicators and even glossier - mainly western - journalistic products are unable to transmit real sentiments, fears and frustrations of people 'on the ground'. In a region where there is both economically and politically little room for investigative environmental journalism bridges need to be built. Thus we are increasingly engaging ourselves in providing linkages between the official information, media and public groups through workshops, roundtables, and in-depth media tours.

We hope that these stories by Central Asian journalists, officials and environmental activists, - as a starter - provide enjoyable reading and food for thought.

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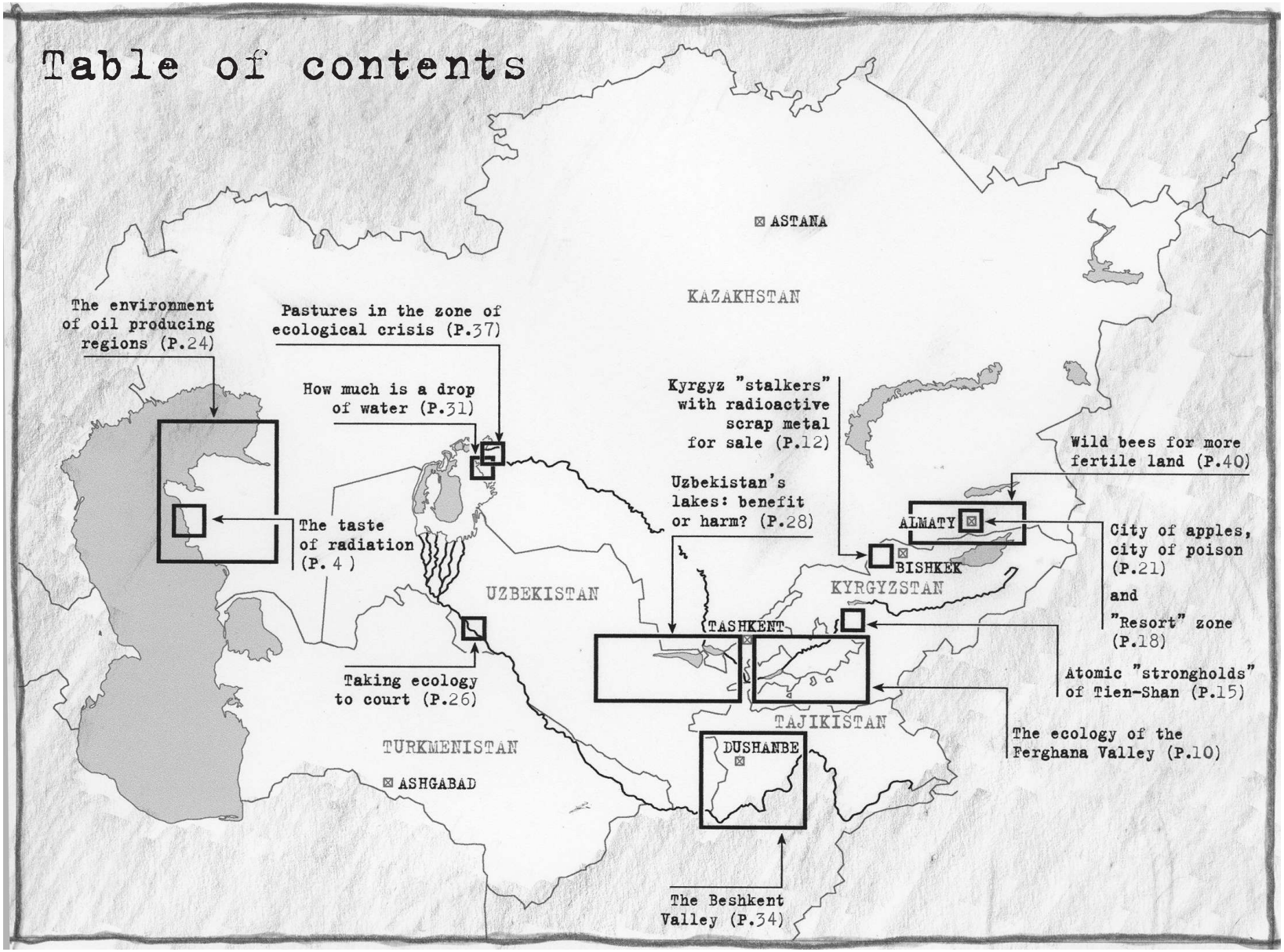

The taste of radiation

by Alexander Gabchenko,
'The Moscow News', Almaty.

The Moscow News, for which I am a correspondent, has uncovered a future burial site for radioactive wastes. Under the Soviets the people of Kazakhstan knew nothing of Melovoe. Even now all they know is that KazAtomProm plans to build a nuclear burial site on the site of one of Melovoe mines.

I drove some 30 kilometres from Aktau in a Russian-made "Zhiguli"car, battling against a piercing wind from the steppes. Suddenly huge man-made hills appeared. The hills were dumps of uranium from mine No. 2/3. They are not so dangerous. According to the local sanitary and epidemiological station (SES), the level of gamma-radiation is no higher than 15 microroentgens per hour.

In 1993 the extraction of uranium-containing phosphorites was stopped because it was no longer profitable. The plant was destroyed in 1995. Since then the radioactive hills have remained silent.

The car braked at an inspection area. There was a precipice of 2x3 kilometres, and huge machines that looked like spiders trapped in the corners of their webs. The silence was eerie.

- Can you imagine how noisy it was here before?!, Aleksey Cherskoy said in an undertone.

He is a trade unionist who worked as a driver of the "Belaz" lorry at this plant for 25 years.

When the uranium extraction stopped, I learned, mines No. 2/3 and No. 5 (30 km apart) were supposed to be closed down temporarily. Nobody knew how to do it. The exposed layer of uranium was simply covered over with earth. This was all that was done by way of deactivation.

I calmed myself down after the shock of discovering this. I reminded myself that the contaminants of uranium-containing phosphorites are dangerous only after long exposure. It means that if I don't breathe deeply or put autunite in my pockets, I won't be in any danger.

I climbed down a trench left by a giant excavator. Now I was face to face with the uranium. There was a layer of ore 15 centimetres thick. It was black and dry. There were precipices 110 metres high and gigantic machines the size of houses. All for the sake of 15 centimetres of slippery powder - powder that can destroy civilization!

- You'll live, Cherskoy reassured me: There are only 60 micro-roentgens an hour here...

It's a high dose, but not dangerous. At the far end of the excavation there's a group of guys from

Karakalpakstan who actually live right on the open uranium field. They work for a bag of flour almost. They cut an excavator into metal scrap for one Chinese company."

- But it's radioactive?!, I said.

- It doesn't matter, he answered. The Chinese pay for it. It's the most important thing to our bosses.

When rain lashes the clay path leading to the mine, the Chinese manager cannot go down it, sometimes for days at a time, to give water and food to the Kazakhs from Karakalpakstan who work there. What, I wonder, do the people working at the bottom of the mine, isolated from the outside world, think about? Do they know how dangerous it is for them and for their hildren?

I tried to breathe calmly and went back to the car. It was time to leave. To build a modern plant for the burial of radioactive wastes a great deal of money is needed. And you need to recover the infrastructure from mine No. 2/3 that was closed down.

Koshkar-Ata Lake

Mines, railway and plants are situated at Aktau's industrial zone; they used to be part of the Caspian mining and smelting complex. The nuclear power centre provided them with electricity. The centre concentrated uranium by extracting plutonium-239 from uranium ore as well as desalted water. It provided the Soviet Union with the energy for its "nuclear shield". The system belonged to the ministry of middle machine design (later known as MinAtomEnergoProm of the USSR). It did not depend on the republic's own government

or other ministries and organizations. All these sites are the source of the problems. They are radioactive.

Koshkar-Ata Lake has existed for the last 30 years. The people of Aktau call it "the dead lake" and point it out to passing guests on their way from the airport to the city. There are no birds or any sort of life in the lake. Only camels are able to drink this water without visible consequences. But scientists have not done research into the effect of the water on animals and on people using their hides or meat.

The soil is grey tinged with green. There is no sign of footprints. Scientific data show that the water reservoir is filled with heavy metals (partially with thorium-232). In some places the level of gamma-radiation reaches 50 - 60 micro-roentgens an hour. There is no information about research into the effect of this on people.

It is possible that phosphoric gypsum, formed as a result of the production of phosphoric fertilizers, is saving the people of Aktau. This substance has covered the lakesides, which means that the dust from the bottom of the dead lake is not at present active. So the danger is not as great.

What will become of Koshkar-Ata Lake? For now, we do not know. Probably it will dry out completely. Then it will be necessary to remove the 1.5-meter thick layer of soil and bury it like it was done in Chernobyl. Or perhaps scientists will find other ways to neutralize it. They could use one tested method: start the production of phosphoric fertilizers. That is currently a very profitable business. And it would mean that more phosphoric gypsum would be wasted into the Koshkar-Ata, and the water level of the lake would rise until it was no longer dangerous.

Our own 'Chernobyl'

Our own small "Chernobyl" is another of Aktau's sights. It is situated on the site of a chemico-hydro-metallurgical plant (CHMP). Gamma-radiation of the plant during the uranium processing reaches 11,000 micro-roentgens an hour; its average level is 200 micro-roentgens per hour. After the plant was closed, there was no deactivation. The major part of the equipment (about 15,000 tons) has non-removable radioactivity. This dangerous machinery is kept in the open, insufficiently guarded. Bit by bit, it gets stolen from the plant - and on an industrial scale.

U. Choporov, an inspector, says:

- A fence section is pulled down by truck. Then they move to the contaminated ground and take the metal.

Where does the metal disappear to? It is hard to understand.

- Thieves are attracted by the equipment, which is made from high-alloyed steel with a nickel content of 20-90%. Some say that Aktau's hot scrap is transported to Iran, because our Caspian neighbours are very interested in contaminated metal.

This version sounds reliable since local places will not accept radioactive metals for at least one year. Now the sanitary inspectors have another problem. Small pilferers dump "dirty" metal parts near residential districts when they cannot get the local place to take them.

Imagine what would happen if a child was playing nearby metal irradiated at thousands of micro-roentgens (the average is 10-12 micro-roentgens per hour). Sometimes radioactive water containers are found in

summer houses. Their owners water their own vegetable gardens using these containers. These enterprising summer residents even use rubber belts from uranium mines, radiating at 40 micro-roentgens per hour, for building their garden paths.

There are many sorts of radioactive materials and they are cheap, so people build garden sheds and sandboxes for children out of them. And, in Aktau, no one usually complains about the bad ecology.

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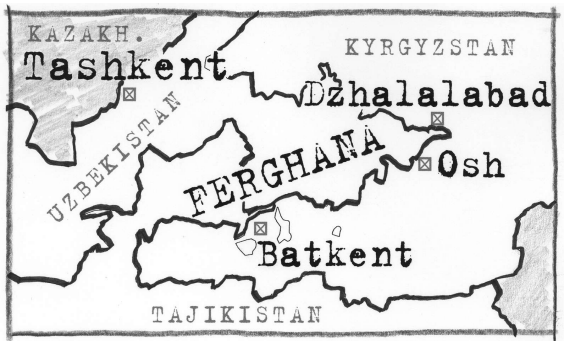
The ecology of the Ferghana Valley

by Sodik Muminov and Vladislav Poplavsky,
'The ecological bulletin', Tashkent



The average density of population of the Ferghana valley is 100 persons per square kilometre; in the Uzbek part of the valley, it is more than 300 people a sq km. The valley is one of the most densely populated places of the world, and the high birthrate creates tension in the social, political and economic spheres. The complicated ecological situation has made it necessary to develop an integrated programme of action by all the republics.

There needs to be a commission composed of representatives from these republics, with the ability and power to solve these problems. The cost of this commission will be justified because it can resolve the fate of more than 10 million people. The urgency of the problem was recognized in Kyrgyzstan (Conception of the Sustainable Human Development, 1997) and included in the National Plan of Action on Environment Protection in Uzbekistan (1998), as well as in the activity of

the International Foundation ECOSAN (Tashkent), its branch in Kyrgyzstan and other places.

But in spite of efforts by many countries, organizations and foundations, the situation in the Ferghana valley has not fundamentally changed. Well-intentioned acts by local governments have not helped either.

The reason for all the anxiety is the concentration in the southern oblasts of Kyrgyzstan (Dzhalalabad, Osh and Batkent) of tens of tailing dumps and dumps containing significant amounts of radioactive elements, arsenic, antimony, mercury, fluorine, thorium, cyanides and so on. In regions near former and current mining and smelting plants, there have been adverse side-effects: an increase in illnesses due to radiation, signs of gene pool violation etc.

Integrated action by Kyrgyzstan, Uzbekistan and Tajikistan is therefore urgently required to solve these long-standing ecological problems. Joint efforts are also needed to combat drug addiction and stop the transportation of drugs and contraband through these countries. The significance of the documents that have now been signed cannot be overestimated. Every citizen in these three countries realizes the historic significance of the joint programmes of collective action to combat the threatened ecology of Central Asia.

Unfortunately the ambitions of the political leaders of these states - who seek personal control and a smaller financial contribution - are preventing the implementation of these programmes for improvement in the Ferghana valley.

Kyrgyz 'stalkers' with radioactive scrap metal for sale

by Aleksei Ermolov
Press-center of the Mininstry of the Environment and Emergency Situations, Kyrgyz Republic, Bishkek.

Ten armed policemen are currently guarding Kyrgyzstan's largest storage facility for uranium production wastes, in Kara-Balta, to protect them from local "stalkers" on the hunt for nonferrous scrap metal in radioactive dumps. About 40 million cubic metres of uranium production wastes have now been stockpiled.

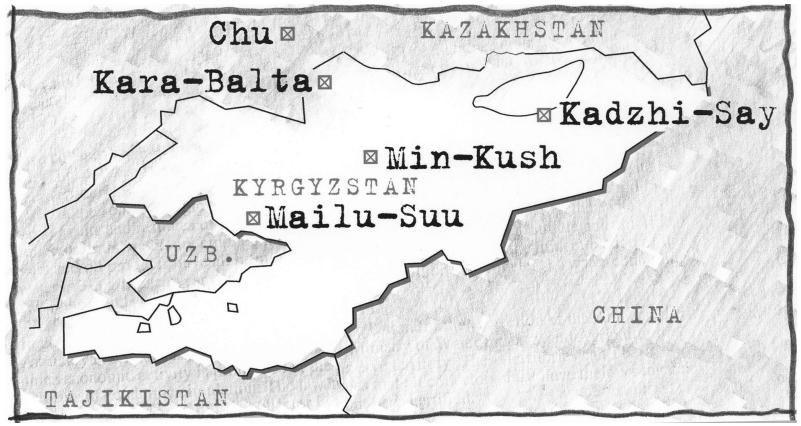
The landscape is almost lunar. Everywhere there are radioactive hills and beaches. There are also 20 settlements, each with more than 100 people, in a radius of 20 km around the tailing dump. Many radioactive beaches are exposed, without a layer of inactive ground, and small radioactive parts are easily blown away by wind from the dumps.

At the plant dump there are barrels for chemicals, fragments of chemical glassware, pieces of metal, multicolored piles of used reagents. There are narrow trenches among the piles of technological trash. Somebody was digging, looking for something: industrial wastes like factory chimneys, metal objects, disused equipment with a high radioactive content are buried here. Much of the equipment that has been thrown out is made of stainless steel and nonferrous metals.

Below the slope of the pit poor people, looking like homeless, see us and scatter like cockroaches. One of them, hunting for radioactive metal, dives into something that looks like a shelter of branches built directly on the open slope of the pit. We catch him. He introduces himself as Sanyok. He is a representative of the "local stalkers", as the scavengers of radioactive dumps are referred to in Kyrgyzstan.

He is unemployed, handicapped, alcoholic, covered with ashes and soot - and radiation too. We asked him whether he was afraid of radiation. He replied that dying of starvation was worse, though he used to be afraid of radiation just like other people. In those days, he had worked at the repair plant.

When he became handicapped, he lost his job. Starvation pushed him to climb under the electrified wire to collect radioactive scrap metal. Why not, he said, if it earns you good money? How much can he dig a day, we ask? It's like playing cards, he replied: sometimes you're lucky, other times you burrow like a mole all day and find only some nasty aluminum pan.



The people who live here are all poor and homeless. They cook on dirty pans, and prepare a kind of drug from extra-strong tea in tins and broken cups. Sometimes there are more than 40 to 60 people here, including women and children.

A protection agency official who had accompanied us appeared. A dosimeter sang and clacked in his hands. Sanyok stared with interest at this unknown device with a figure of 450 micro-roentgens per hour on its indicator board: it meant nothing to him.

The management of the KGRK tries to stop uninvited guests. But the barbed wire gets cut and torn down, and guards are physically threatened. Profits from gold affinage and enriching Kazakh uranium will be not be enough to deal properly with the uranium monster inherited from the USSR. Top priority work on the recultivation of the dump is estimated at 150,000 US dollars.

Meanwhile "stalking" seems to be becoming a real business in Kyrgyzstan. In Min-Kush and Kadzhi-Say, people dig up the radioactive dumps in the hope of finding metal. In Mailu-Suu they excavate the site of the old concentrating mill for producing uranium, which was demolished and buried. And now this radiation fever is spreading from Kara-Balta along the Chu valley, which is a land of plenty.

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"Atomic strongholds" of the Tien Shan

by Aleksei Ermolov
Press-center of the Mininstry of the Evironment and Emergency Situations, Kyrgyz Republic, bishkek.

Kyrgyzstan is full of ghost towns, former places known as centres for secret organizations ("mailboxes") or "atomic strongholds" in the Tien Shan mountains. Small towns which served the old Soviet empire impeccably have lost their relevance and purpose, and have withered away. Yet there are still people living in them. Towns like Min-Kush, Shekaftar, Ak-Tuz, Mailu-Suu, Sumsar, Kadzhi-Sai are not just dots on the map - they are our history.

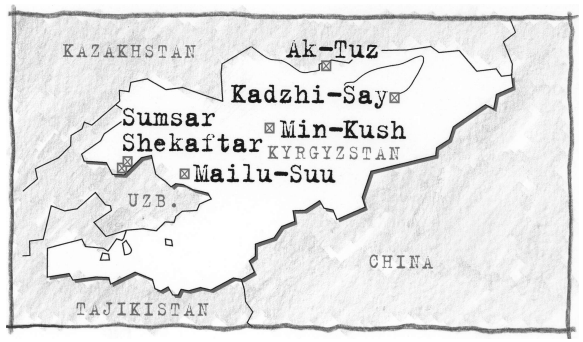
The town of Mailu-Suu is located in the south of Kyrgyzstan and has a population of 26,000. It has a number of geo-ecological problems which need to be solved urgently. The concentration of tailing dumps in this region (in Mailu-Suu they are situated almost within the city limits) is becoming dangerous due to active tectonic and erosion processes. Landslides could shift the uranium dump into the rivers. Should that happen, it would be an eco-catastrophe that would transcend borders and affect the whole of Central Asia. The protective layer of tailing dump would become degraded, dams would lose their resistance, nuclides will be released.

During 22 years of exploitation (from 1946 until 1968), more than 100,000 tonnes of uranium concentrate

were extracted from the uranium mine. That would have been enough for a few atomic bombs. Radioactive wastes with total mass of 4 million tonnes have been stored in 23 tailing dumps. The capacity of tailing dumps is 2 million cubic meters or more than 4 million tonnes by mass.

The basic radionuclide of wastes is radium. According to some estimates the total activity of tailing dumps in Mailu-Suu has reached 50 thousand curies. Taking into account the time it would take for the thorium and uranium contained in the tailing dumps to decay, the uranium dumps will remain radioactive for a thousand years. Serious miscalculations about the location of storage for radioactive wastes, their design methods, exploitation and control are the main sources of ecological concern in Mailu-Suu. But the true ecological danger has been under-estimated, partly on account of short-term economic profits.

Many tailing dumps, as well as mud storage, were built directly in river flood-land. Now the dams have been washed away and radionuclides have entered the river. Landslides have been activated and threaten to force out the contents of tailing dumps into the Mailu-Suu River, which is inflow of the Karadarya and the Syr-Darya Rivers (Uzbekistan). This will cause the contamination of huge areas of land. The Mailu-Suu river is used for watering in agriculture and drinking water.



Emergencies at tailing dumps and their dams - some with catastrophic consequences - have occurred in many countries (USA, Chile, GDR, USSR). The tailing dump Nr.7 in Mailu-Suu broke in 1958. As a result of this accident about 600,000 cubic m of radioactive pulp were wasted into the river and distributed over dozens of kilometres. The radioactive mudflow caused human death and the destruction of industrial and ordinary buildings. The worst damage was the contamination of huge areas in the river's undercurrent, where the local population cultivated rice. Even though the parts of the flood lands contaminated with deposits of radionuclides were later cleaned, rice is characterized by the ability to accumulate radionuclides.

Technically the problem of radioactive tailing dumps is easy to solve. Moreover, a number of tailing dumps only require rehabilitation measures - and this has been started by the Ministry of the Environment and Emergency Situations of Kyrgyzstan. Some tailing dumps need to be moved due to landslides or washing away by river flow. There are work plans and technical and economic assessments of each unit threatened with breaking. The limitation is the lack of sufficient funding. But investors are being actively sought and many countries want to assist - including, probably, Russia.

Wonders will not happen for as long as we continue to exploit nature and our own lives so ruthlessly. The futures of towns such as Mailu-Suu are a case in point: if we do nothing today, we increase the risk of their destruction.

The experts say that we need 25 million USD to solve the problem of the uranium dump in Kyrgyzstan. But this sum is simply not available in this small post-Soviet republic. Russia and the European Union are trying to help find a solution to the problem. But it is a long way away from the complete readjustment of Mailu-Suu's tailing dumps.

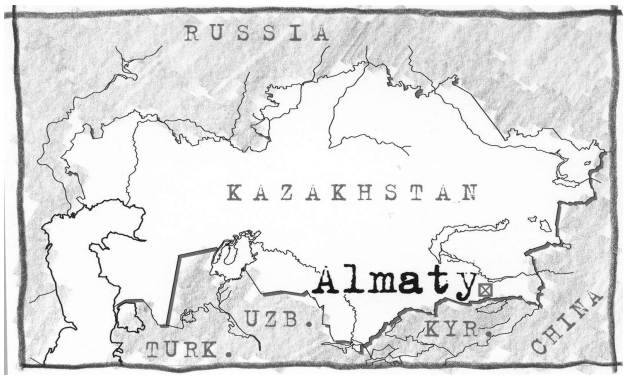
“Resort” zone

by Milena Yershova,
'Caravan weekly', Almaty.

People in Almaty say the Institute of Nuclear Physics (INP) is the most dreadful place in Kazakhstan. They say you can see dogs with two heads, men and women bald from radiation, and children that look like monsters. We went to the INP to investigate.

Radioactive waste arrives at the INP each week; it comes in small amounts, from different places, including the town. Today only 350 m^3 out of 2 thousand m^3 of storage space remain available. The main part of the INP is the atomic reactor - a metal tower with an atomic heart at its centre, which is surrounded by water for constant cooling, then by a protective layer of thick lead. The volume of the reactor is only 4 kg.

As our visit continues, we come to a separate, specially controlled zone. This is where the radioactive waste is buried. Deep underground is a pear-shaped, hermetic



bulk covered all over by a thick layer of stainless steel. Liquid radioactive wastes mixed with concrete are dropped into this bulk. “This is a gift to our offspring”, said our guide, Aleksei Chakunin, with pride. “Who knows what use they will find for these things? The main danger now is thieves! They stole the winch with which we lower the waste underground. It must be hanging in the garden of somebody's weekend cottage, shining at night.”

Not far away from this burial ground there is a cistern for transporting liquid radioactive wastes. It made of lead and weighs several tons. There has also been an attempt to steal it: one of the residents of Alatau settlement decided to move the cistern to his ‘dacha’ and use it for watering, in spite of all the warnings of radiation and signs saying “mortal danger”. Residents from the settlement tell us how one man paid with his life for his curiosity and thoughtlessness: a young man found a large, attractive container which had apparently been stolen from the institute. Disregarding all the signs, he opened it with a gas cutter. The contents of a small lead barrel discharged radioactive wastes. Six months later the man died and fellow residents received a dose of radiation.

How could this happen, we asked? The deputy director of the INP, Adil Tuleushev, answered: “What this man did is a crime. Even if he didn't steal the container but simply found it, he must have seen the signs saying ‘Danger! Radioactive’. Our people don't hesitate to rob collectors' cars, so to steal a lead container is no big deal. Our safety system is well thought-out; it's secret and reliable enough but there is no complete guarantee anywhere - least of all against fools!”

It is interesting that such a dangerous institute, which workers at the INP consider a “resort”, was

built within city borders. My interlocutor gave his views about the decision of Kazatomprom's president, Muhtar Djakishev, to bury lower radioactive wastes in Kazakhstan: "Presumably the burial place will be at the exhausted uranium mines of the former Prikaspiiskii mining and smelting enterprise. It is possible that what we call the wastes could, in fact, become valuable fuel. Radioactive wastes as such do not exist. But finding a use for them is another question. At present we don't know how to convert radioactive remains into fuel for an indefinite period of time.

"It was the same with petrol until we thought up a way to utilize it. In my opinion any country that accepts nuclear fuel for storage will be acting wisely. In 10 years this will earn it unexpected wealth. Scientists look 50 years into the future and understand that it is necessary to treat the atom as an energy resource for the future. People have more chances to die from the ·wrong· development of our civilization than from the atom."

Strangely we didn't see any anomaly during the whole of our time at the Institute of Nuclear Physics. The environment, animals and people are all quite normal. Currently there are 700 people working for the INP, 30% of them women. There is no special legislation regarding women's employment, in contrast with the West, so women of childbearing age are not prohibited from working here. And the men are said to be potent, with at least two to three children per family. So perhaps it is not so strange that this place should be thought of as a "resort"?

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City of apples, city of poisons

by Milena Yershova,
'Caravan weekly', Almaty.

In the last few years the problem of nuclear and chemical waste in Kazakhstan has increased on a world scale. In addition, there is a new problem - that of solid domestic waste. Mountains of non-treated refuse are poisoning its cities year on year, exuding a saprogenic stench and turning them into hideous sights.

For years local officials in Almaty have tried to solve the problem of how to utilize solid domestic waste. But in spite of these efforts, more than 700 tonnes of untreated refuse are taken from Almaty each day to a special range nearby. This problem is urgent, despite the reassurances of local officials that the range is only 14% full. Official data show that each year this "refuse city" is growing by 305,000 tonnes - and simple addition shows that in five years it will reach 1,525,000 tonnes. In 10 years time the range will be transformed into a three million ton refuse mountain. Not a gift for posterity! It has long been clear that the city, a megalopolis by Kazakstan's scale, urgently needs a refuse processing plant. Talks have been going on for a long time, but have led nowhere.

So far none of the proposals made are likely to succeed. This is strange, because many people would

like to settle the problem. This year the Association of Enterprises for the processing of solid domestic wastes and many other private firms have presented projects for the Department of Environment Protection to consider. At the moment an Italian project, Balapress, has aroused the greatest interest among ecologists.

One line of this project comes to USD 630,000. The productivity of processing is 20 tonnes per hour. This is hard to undervalue. It means that 700 tonnes of refuse that are produced daily could be processed by the machine in 35 hours. Two lines of Bala-press are able to process the same amount in 17 hours. So it is strange that the government cannot find USD 1,260,000 to buy the equipment that would solve the refuse problem.

We decided to find out the position of the municipality (akimat). So we sent an official inquiry to Mr. Viktor Khrapunov, the mayor (akim) of Almaty City. The akimat's opinion was that the utilization of solid domestic wastes is indeed urgent for the city. To help solve the problem, it is planning this year to give 54 million tenge (about USD 350,000) from the state budget. But it has refused to fund the building of the refuse processing plant from the national treasury due to the cost. It believes that a private commercial organization could solve the problem much faster, since waste utilization should be directed at a future processing industry.

But it is no secret that the costs of buying equipment are high and the project may not therefore be profitable. The akimat considers that building a processing plant for secondary refuse treatment is not profitable, though experience elsewhere in the world shows the opposite. Refuse processing and secondary production form profitable, stable business in the United States

- for example, 77% and 85% of domestic wastes are used as a secondary source in Seattle and New York, respectively. In Karagandy City (Kazakhstan) the benefit that can be derived from a garbage-can has been assessed, and the building of a new enterprise for the production of equipment for refuse processing has been started.

"Hydromex process" technology will be used at the plant. That will make it possible to convert all types of wastes without preliminary separation, including the heaviest ones: polyethylene, wastes of tyre production, wastes from the carpet industry and sewerage system. Experts estimate that the new enterprise will provide jobs for 3,500 of Karagandy's inhabitants, with a minimum salary of 30,000 tenge.

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The environment of oil-producing regions

Sapar Bazarbaev,
Ministry of the Natural Resources and Environment Protection, Kazakhstan, Kokchetau.

The oil industry is intensively developed in Kazakhstan but not all oil producing enterprises at present observe the environment protection legislation of the Republic of Kazakhstan.

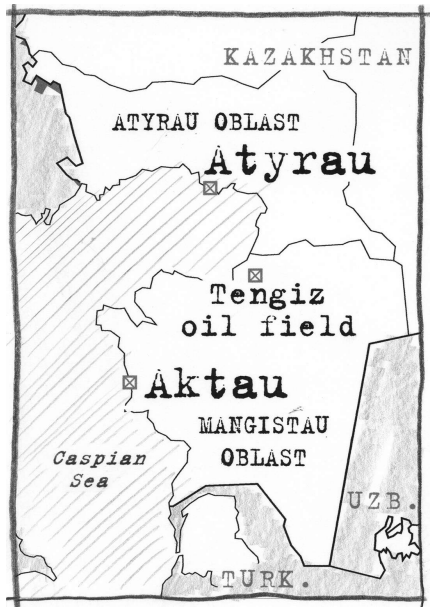
Abnormal pollution of atmospheric air is occurring with the burning of casing-head gases. Oil floods and oil from oil depositories pollute the soil. At the exploring, drilling and exploitation fields of hydrocarbon sources, 70-80% of plants around each drilling within a radius of 500-800 m have disappeared. The land area polluted with oil from deserted, exploratory oil wells is significant.

In Atyrau Oblast more than 1.3 mln ha of land have been polluted by mazut. On some oil fields the thickness of such mazut-spoiled ground is as much as 10 metres. In Mangistau Oblast about 4,000 hectares of land have been polluted with mazut.

There are 580 oil depositories containing 279,773 tonnes of oil: 148 technological and 432 emergency ones. In 1999 alone 755 breaks in oil pipes occurred. The ground was polluted by 1,756.56 tonnesof oil.

In addition, a huge amount of layer and mine water are wasted during oil production. For example, 1 billion cubic metres of water were wasted by the oil fields in Atyrau Oblast. The situation became severe in the pre-Caspian region due to a flood from units of the oil and gas complex. Due to the pollution of seawater, the numbers of fish, seals and waterfowls all decreased.

Nevertheless, oil-processing enterprises are carrying out environment protection action. During 1999, for example, 13 oil depositories were destroyed, 17.06 hectares of land were cleaned of mazut and 12,397.5 tonnes of oil products were pumped out of oil depositories. At the Tengiz field 897 hectares of land were restored and transferred to other lands.



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Taking ecology to court

by Izzet K. Aimbetov,
Union for the Protection of the Aral and the Amu-Daria, Nukus.

The Amu-Daria is one of the most polluted rivers of the world. The main reason is the amount of drain and collector water discharged into it - at present the water from 48 collectors. Each year 10 cubic km of drain water are emptied into the river.

One of these collectors (Beruni) is situated in the south of the Karakalpakstan Republic, Uzbekistan. This collector passes through the Baday-Tugay reserve, which is home to 148 Bukhar deers (recorded in a Red Book) and dozens of unique, threatened species of plants.

The collector has been working since 1978 and supplies 80 thousands hectares of irrigated lands in the southern regions of the Karakalpakstan Republic. Annually more than a million tons of salts and residues

of pesticides and fertilizers used in agriculture, together with collector drain water, are emptied into the Amu-Daria. Nitrates, nitrites, sulfate and chloride salts and oil products have all been observed in the drain water; and the mineralization of the water is 3-8 g/l. Each year the collector empties 270 million cubic meters of water containing 1,350 thousands tons of salts into the Amu-Daria.

In 2001 the non-governmental organization, the Union for the Protection of the Aral and the Amu-Daria (UPAA), issued a writ against the Ministry of Water Industry and Agriculture since economic activity is prohibited at the reserve territory. These territories can't be subjects of economic circulation. The law states that all collectors must have passed an environmental impact assessment. The Beruni collector has never been assessed.

The UPAA writ demanded that collector work should stop. The defendants replied that there was a project to stop the discharge of drain water into rivers, but that there were no funds to implement it.

The judge referred the case to the State Committee for the Nature Protection of the Republic of Karakalpakstan, which recommended that the project be speeded up in order to stop the discharge into the Amu-Daria. The committee noted that, at the present rate, the discharge would not be stopped until 2030.

After hearing the public prosecutor's opinion and studying the documents, the court decided to dismiss the case. The UPAA then appealed against the ruling. The appeal went before the Economic Court of the Republic of Karakalpakstan, where it was rejected. The UPAA is now preparing to appeal to the Economic Court of the Republic of Uzbekistan.

Uzbekistan's lakes: benefit or harm?

By Sodik Muminov and Vladislav Poplavsiy,
'The Ecological Bulletin', Tashkent.

Uzbekistan's ecological situation has recently attracted attention: saving and protecting the region's water resources, and their integrated management, are now seen as a priority. In the Dzhizak oblast, the most serious problem is the Arnasay-Aydarkul lake system.

This system was formed as a result of the discharge of more than 21 km³ of water from the Chardarynsky reservoir in 1969. The lake system's administrative location is in the territory of Navoy and Dzhizak oblasts. The system's borders are the Kyzyl-Kum sands to the north, the foothills of the North-Nuratau mountains to the south, and the Golodnaya (Hungry) steppe to the east. The total length of the lake system is 170-189 km and its width ranges from 10 15km to 40-45 km at its eastern edge.

After the collapse of the Soviet Union the new Central Asian republics started to establish independent systems for water and energy consumption. For example, from 1993 Kyrgyzstan began to use the Toktogul reservoir at the Naryn River (whose area is 184 km² and usable volume is 19.5 billion km³) for its energy.

The intensive discharge of excess water from the Chardarynsky reservoir into the Arnasay-Aydarkul lake

system also began at this time. The water level was 237 metres at the beginning of the 1990s, and increased to 244 metres by 1998, its surface area was 3,039 km² and its water volume was more than 31 km³. The submerged area was 1,074 km² and many motor roads, wells, sheepfolds and fishing camps were flooded.

The maximum mineralization, which is a characteristic for bays with a slow water cycle, is 9.04-10.4 g/l. An increase in mineralization from the eastern to the

western part of the Aydarkul Lake has been observed (5.04 - 8.82 g/l).

Different sources indicate that annually about 2.0 km³ of collector-drain water is wasted from irrigated territories of the Golodnaya steppe into the Aydarkul. The amount of atmospheric precipitates is 0.2-0.3 cubic metres. The discharge from the Chardarynsky reservoir is 2.0-2.5 km³. The annual evaporation is 2.5-2.9 km³. Thus, leaving to one side the ground inflow of the north Nuratau foothills, an increase in the volume of the lake water and the flooding of new pastures can be expected in the near future. Each additional cubic kilometre of water will increase the

water level by 0.2-0.3 m and flood of 50-70 km² of territory.

Any change in the development (increase or decrease of volume) of the Arnasay-Aydarkul lake system will have a negative effect on land and water resources, plant and animal life, hydro-meteorological conditions etc.

This could mean a change in hydro-dynamical and hydrochemical indexes of ground waters, the development of various exogenous-geological processes, the desertification of territory, the formation of salt marshes, a change in physicochemical properties of soils, flooding and the salinization of irrigated areas.

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How much is a drop of water?

By Oksana Tarnetskaya,
The Ecological Press-Center, Almaty

The people of the small villages of Karateren and Tastak, lost in the middle of the deserted Pre-Aral region, need clean water. Here uncleaned water from the Syr-Daria River is used for drinking. Driven by water-carrier machines, it contains chemical compounds used to increase crop capacity that are harmful to people's health.

For the people of this region, water is not just a source of life but a basic source of infection and intestinal disease, especially in summer. Poor quality water, as well as air containing dusty salt dredges and chemicals, cause chronic illnesses among the local population. The illness level in this region is twice the country's average index: more than 70% of women under 50 suffer from chronic anaemia; and children from the Aral region have five times more diseases of the blood than in the rest of Kazakhstan.

People do not boil water because of the high cost of coal, which increases the risk of illness. Meanwhile the cost of coal encourages the harmful felling of saxaul and aggravates the ecological situation in the Aral region. The use of electricity to heat water is also a problem due to its cost - and electricity in

these villages is available at best from six to eleven in the evening.

The employees of the local non-governmental organization (NGO), Kosaral, from the village of Karateren, have found a simple and effective remedy for this problem, which would provide the population of the two villages with good quality drinking water.

Recently this NGO (headed by Myrzash Isaev) has implemented some useful projects. With the support of the Canadian Embassy, the village water supply was improved by purchasing a water-carrier machine and building water reservoirs. Though the village is some kilometers away from the Syr-Daria River, the access of the local population to water became relatively easier.

Trees and bushes have been cultivated with the help of the villagers. The water usage system has been improved (with the support of UNDP and IFAS). The new project consisted of acquiring and setting up solar water heaters and waterdesalinating plants to meet the domestic needs of the population from Karateren and Tastak.

The project was implemented through financial assistance from the Small Grant Program under the Global Ecological Foundation, along with the corporation Erkin K. The activity of this corporation concerns the development, production and implementation of sets with solar energy use. One employee from Erkin K has a patent to invent a solar water heater and water-desalinating sets. These are cheap and easy for production and exploitation.

Before the start of the project, experts from Erkin

K studied the possibilities of solar collector use in this region. They demonstrated that solar energy flow was suitable for industrial use.

All 30 families from Tastak, the local school, hospital, and the most indigent families from Karateren became the lucky owners of 50 solar water heaters and water-desalinating plants. To simplify their use, they were given technical information for exploitation and maintenance of the solar sets.

Water heaters and water-desalinating sets make village life easier: costly coal buying, felling of saxaul and tamarisk, and sickness rates, have all decreased. The villagers now have drinking water in spring, summer and autumn.

Now the staff of Kosaral are trying to pass on their own experience to other neighbouring villages. This interests the local administration, and in future it is planning the organization of small-scale production, introduction of renewable energy sources for water heating and provision of administrative, residential and industrial buildings with drinking water in the Aral and other neighbouring regions. The use of water cleaned by sublimation in the solar desalinating plant can partially help to solve the problem of protecting

The Beshkent Valley

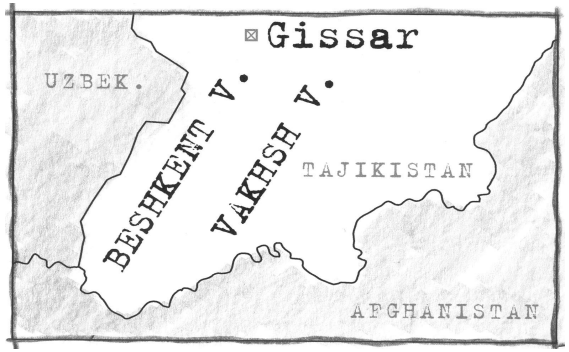
by Timur Nazarov, *(Environmental Scientific-Production and Information Center 'Tabiat')* and Tadjiniso Nosirova, *(Ministry of the Environmental Protection of the Republic of Tajikistan, Dushanbe).*

In the 1930s, under the Soviets, the country tried hard to establish its own independent cotton-growing. The valleys of Central Asia, including those of Tajikistan, were intensively developed. But the shortage of land and the very low population in the developing areas were largely responsible for limiting this initiative.

To solve the problem, a plan was implemented for the inhabitants of the mountain regions to migrate to the Gissar and Vakhsh Valleys and the flat regions of northern Tajikistan. The results were tragic in human terms, but the main objective (their independent cotton-growing) was achieved.

By the beginning of the 1980s cotton picking in Tajikistan grew to about a million tons; the inhabitants of the valley took advantage of the greater farming potential and became more prosperous than Tajikistan's other populations.

Unfortunately the Vakhsh Valley, formed at the deviation of the "old sea" (the Tetis), contains a large amount of soil salts. In Soviet times a complex system was developed in order to make the salinity level suitable



for plant growth. The disadvantage was that this method was only suitable to a large-scale economy, though that was not yet apparent at the time.

After the collapse of the Soviet Union there was civil war in Tajikistan, and it was especially violent in the Vakhsh Valley. Large-scale production, farming and improvement efforts declined. Collectors became overgrown with rush and reed mace, and pumps ceased to work.

As a result fertile lands were salted and could no longer be used for crop rotation. This affected the living standards of the population of the valley, and of the Tajik people as a whole.

The Southwest parts of the Vakhsh and Beshkent Valleys are an example. Towards the end of their rule, the Soviets invested heavily in the development of the valleys. Since the Beshkent Valley lies lower than the Vakhsh Valley, all the ground water from the Vakhsh flows into the Beshkent Valley. It has caused the formation of lakes in natural cavities, some of them 10 metres deep; and swamping, secondary salinity and an increase in the level of underground water have also occurred. The population of the Beshkent valley is one of the poorest compared with population of other valleys of the country.

Even so, their living standard is higher than that of most mountainous regions, which cannot compete with the valley in terms of their areas of ploughed land.

So a plan was developed to enable the mountain people to migrate to the valleys, especially those with a low population. Beshkent was one of these valleys.

The new programme is similar to that introduced in the 1930s, though it has important differences: it is carried out on a voluntary basis; and the regions themselves are responsible for supporting the immigrants.

The plan has had mixed results. The melioration system of the territory has not been yet re-established; the problems of washing and restoration of land fertility have not been solved; there are still social problems; and the immigrants have no experience of farming flat land.

Despite the efforts of government and international organizations, the situation became worse because of the degradation of ploughed land. At present the valley's productivity, in terms of its crops, is nowhere near what is required for a reasonable standard of living. Nor does sanitation meet proper health standards -- a situation made worse by an insufficient supply of drinking water for the migrants.

The population of the valley could, we hope, do much to help improve their standard of living through their own hard work, perseverance and desire for a better future. But it is crucial that their efforts are supported.

For this, communal organizations must be created, using traditional methods of self-government. The Beshkent valley could then become a model region for organizations concerned with sustainable development and the eradication of poverty. And the population, as well as the organizations, would benefit.

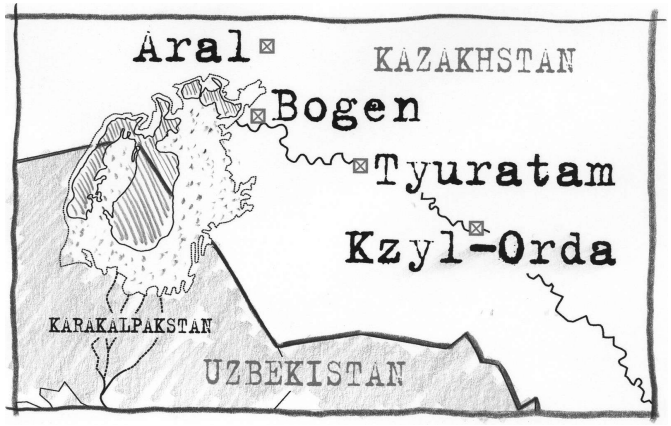
Pastures in the zone of ecological crisis

L. Ya. Kurochkina and D. Toilybaeva,
Institute of Ecology and Sustainable Development, Almaty.

The Aral Region is a crisis zone, whose effects are visible in the economic life, ecology, social policy and living conditions of the area. The problems of rehabilitating the region's ecology relate to sea drying, lack of drinking water and widespread pollution of local water supplies. Pasture development is also an urgent problem.

The situation of the Aral Region's pasture economy is linked to the deterioration of living conditions: the destruction of fishing due to the drying up of the sea as well as the destruction of the old system of cattle and camel breeding. The unfavorable weather conditions (periodical drought, jutes, strong winds and hot summers) form the preconditions for soil destruction and pasture degradation given the unsystematic, non-regulated cattle pasture and the private economy.

The time of the hereditary herders, who used the pastures following the traditions of the ancient nomads, is now over. The inhabitants of faraway villages have gone back to the private economy, but they tend cattle near their homes and do not use the



distant pasturelands of the old system. In this way the area of low-grade lands is increasing around the populated areas. Thorny bushes or harmful and toxic grass, which are not fodder for animals, have replaced useful plants.

The soil has been destroyed through compression, salinization and conversion to sand. The moving of salts and sands has increased. One of the most telling example is cattle breeding near Bogen village in the Aral region in the Kzyl-Orda oblast, 120 km to the south of the city of Aral.

Since 2000 a project called Pastures: Pasture Eco-System Management has been carried out in this region. One of its tasks is concrete assistance to the herders of Bogen to develop and to improve the pasturelands. The project is being run by UNDP consultants and local inhabitants of Bogen with the support of the akimat.

The problem of optimizing pasture use and limiting the degradation process is solved by the organization of a simple pasture cycle that takes into account seasonal changes and the condition of the pastures. A cartographic scheme has been used as a model,

enabling the change of places and date of breeding without expensive cattle-pens. Roads and valleys form breeding borders, as do traditional landmarks of relief and types of pastures.

The local community pastures the cattle at the distant pasture (4km to the south of Bogen) equipped with a well and wintering. The private cattle are pastured over eight months. Each day the animals are moved from village to watering place (at Tuschebas Lake) and back (9 km each way). In the winter the sheep are kept in pens.

The problems we have elaborated above do not just concern herders, but also aul (village) akimat, as well as akimat at the local and region level, and NGOs working on water consumption.

The public's interest in the fight against desertification is heightened by their increased knowledge of the state of the environment and of the means to protect their own land from degradation. This was discussed by the Convention, project Pastures and a plan of action on the fight against desertification.

We hope that the environment and the use of pastures around Bogen village will improve. We also hope that the implementation of the Pastures project and the active assistance of the local akimat will lead to a sustainable increase in the prosperity of the local people.

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Wild bees for more fertile land

By Natalia Ryssakova
Naurzum – Southern Branch, Almaty.

Decreasing the natural biodiversity of fauna and flora is one of the main causes of land degradation. Bees play an outstanding role in this biodiversity. The richness and stability of flowering – pollinators, grass, various wild fruits and berries – depend on the prosperity of this group. By contributing to saturated pollination, bees increase the yield of apples, berries, melons and gourds and other cultures by 50-300%. The size and quality of fruits and seeds are increased. But domestic bees cannot do all of this alone because one of the most valuable feed cultures, alfalfa, is pollinated only by wild bees.

Now the habitat of wild bees is being destroyed everywhere due to the system of land use. Their gene pool is being undermined, and they are entering the category of rare and vanishing species.

An Almaty-based non-governmental organization, Naurzum – Southern Branch, is conducting a project known as "The conservation and regeneration of the number and biodiversity of bees in the foothills and lower mountain belt of Zailiiskii Alatau and their use as pollinators of crops" ("Wild Bees"), supported by SGP/GEF.

Intensive economic activity in this region is causing growing degradation of the natural environment and the pauperization of agribiodiversity. All species of

wild bees are suffering in particular. Even common species have grown rare and in some places they no longer exist.

The long-term aim of the project is the conservation and regeneration of the bees' fauna in the area occupied by the largest megapolis, Almaty, together with its suburbs. The area of the national natural garden, Ile-Alatau, is being used for the project.

The first task is to take action to regenerate the

diversity of species and the number of single bees in nature. The success of this depends on the active participation of the whole population. Therefore a special effort has been made to change the thinking of local people, who do not understand the value of invertebrates and would do away with most of them, including wild bees and their habitats.

One of the main dangers that the wild bees are facing is the destruction of their customary nesting places. There is an effective method for conservation of wild bees by creating artificial nesting for them, in some

countries put on the industrial basis.

For may years its evaluation for the local conditions was carried out at the Institute of Zoology of the Academy of Sciences, in Kazakhstan, under the supervision of Dr. T.P. Marikovskaya, who was a scientific supervisor of the project Wild Bees of the SGP. The issue of concern is cultivation and accretion in nature of autochthonous species of bees-pollinators adapted to local conditions.

During the project one thousand of artificial nestings of three types were produced. They were placed in 14 different parts within the activity zone of the project - in the national garden, in farms and in weekend cottage husbandries.

The processes of nesting by different species of bees were monitored. The results were recorded by photo and video. There was educational work and an information campaign, which included the publication of an information booklet about the project, a poster, a colour brochure entitled "Conservation of rare species of wild bees". Special attention was paid to young people, who care about what sort of world they will be living in.

The availability of the artificial nesting method for solving the problem of the conservation and regeneration of the number of wild bees was demonstrated. The bees actualize appropriate reproductive potential that promotes their accretion in both the natural and the agricultural environments.

A total of more than 14 species of wild bees occupied the artificial nestings, including mass pollinators of fruit (berry), vegetable, alfalfa and clover cultures. Four of the species are endemic to Central Asia and Kazakhstan. Seventy per cent (about 750

units) of the nesting places were occupied and the intensity of occupation was from 10 percent to 100 percent. It is possible to use part of the nesting settlements for re-settling some of the species in areas lacking in bees, including farms and other husbandries.

The results of the project are important to society. Only a narrow circle of people used to know about the need to prevent the disappearance of large numbers of bee species: now society as a whole is learning about it. The project has acquired partners - peasants and farmers - who could take part in the further development of the project after the donor funding has expired; this is an indication of the social significance of the project.

To demonstrate the profits of wild bee cultivation, a model husbandry was set up on the base of ASSY farm in 2001, with the support of ISAR. About 100 artificial nestings occupied by different species of wild bees were placed here in spring 2002. We have reproduction sites in the mountains, where the active formation of nesting colonies of different species occurs.

We cannot expect quick commercial results since the number of bees is not large. The formation of work nesting colonies takes time. Obviously the work we have started needs to be continued and extended. It requires the support both of local organizations and of external donors. This summer, Sert-Ltd company from Aktau extended charitable support.

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