

Ukraine
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Empowering Communities to Adapt to Climate Change

Case Studies

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Кейс-стаді



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Case Studies



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Reducing the risk of local flooding

Kamianske city, Dnipropetrovsk region, Ukraine

July 2016 – March 2017



Background

Kamianske is a city of regional importance in the Dnipropetrovsk region, where almost 240,000 people live. Kamianske is located on the banks of Dniprodzerzhynsk Reservoir, in the middle reaches of the Dnipro river, below the dam of the Middle-Dnirovsky Hydroelectric Power Station, 35 km west of the city of Dnipro.



Kamianske is a powerful industrial center

Over the past few years, the city has been adversely affected by climate change impacts, in particular heat stress, the threat of flooding the areas during heavy rainfall, deterioration in the quality of drinking water, and increase in the frequency and intensity of droughts.



Climate change impacts

Kamianske is a powerful industrial center with a high level of harmful anthropogenic impact on the environment and a complicated ecological situation,

which is further exacerbated by the adverse impact of climate change.

Because of a large number of industrial enterprises, the ecological status of Kamianske is quite poor. The city is among the top ten cities in Ukraine with the largest amount of harmful emissions into the atmosphere. In Kamianske, there is a serious problem of radioactive contamination of the surrounding territories, which is connected with the consequences of the activity of the former Prydniprovsky Chemical Plant.



The problem of local flooding was solved on location Burkhana Street

According to the data of long-term observations in the city of Kamianske, the annual rainfall for the period 1991-2015 remained practically unchanged, compared with the period 1965-1990.

However, there was a significant redistribution of rainfall: in general, during the winter, and also in April the amount of rainfall decreased, whereas in August and in autumn the amount of rainfall increased.

"The storm drain cannot cope with such a quantity of rainwater and territories and buildings are flooded. Many houses in Kamianske are destroyed by regular underflooding and rot," says Yulia Yanchenko, a representative of the NGO "Voice of Nature".

Firstly, general rainfall is not enough to properly hydrate the soil, and secondly, there are very noticeable changes in the intensity of rainfall. In recent years, there have been frequent cases when the amount of almost a month of rainfall and more, falls in several hours, and then there is a long period of no rain at all. Thus, the city is most vulnerable to underflooding and heat stress.



Cleaned drain channel on Burkhana Street in Kamianske

The reason for flooding is also the fact that storm drains are built according to construction standards that do not take into account the issues of recent climate change and an increase in the amount of rainwater that falls in one event.

Overview of Intervention

The intervention is based on the participatory developed local Adaptation plan and is supporting up to 50,000 people living in the target area. The problem of local flooding was solved on few locations and city residents do not suffer from flooding in these areas. In parallel with this project, the City Council on this principle cleared the four more areas in the city and plans to continue.

A competition was held to select specific locations for the implementation of adaptation measures within the city. All residents concerned about the problem of local flooding of their houses and house territory, were invited to participate in the competition. In addition, local residents had to be willing to participate in the implementation of these projects.



Special high-pressure apparatus for storm drains cleaning of rain and meltwater

Four locations were selected on a competitive basis in the city, where the works of reconstruction and cleaning of storm drains were undertaken.

Now, these territories are not being flooded during the rainy season and in the spring period of melting snow. The problem of local flooding was solved on four locations, namely: 1) Burkhana Str., 21; 2) Friendship of Nations Avenue, 53A; 3) Marshova Str., Bulavina Str. (restoration of the work of a storm drain system of an open type); 4) Nikopolska Str., 40.

Together with the city council, the environmental organization replaced storm water inlets that did not work in the city because of the end of expiration date. The NGO chose this solution because engaging local people in the process in the future can help to control situation and react to issues in time.

"We also bought special high-pressure apparatus for storm drains cleaning for rain and meltwater. In the future, we plan to help local residents with the cleaning of storm drains by involving specialists and using this device," said Yevgen Kolishevsky, an Executive Director of the non-governmental environmental organization "Voice of Nature".

After the end of the project the City Council, the implementing NGO and the company "Akvateh" concluded a tripartite agreement on the use of the device. According to the document, the company maintains and uses device for free. This company has been cooperating with city council for a long time. According to the terms of use of the device, "Voice of Nature" will annually tender the use of specific high-pressure apparatus for the cleaning of storm drainage systems.

The information brochure "Adaptation to climate change is a necessity" was produced for dissemination of the experience made by the city of Kamianske in developing a Local Climate Change Adaptation Action Plan among other cities.

Lessons learned

1. Each city/village has each own specific Kamianske is a big industrial center with a big number of different ecological problems including emissions of industrial dust and harmful substances into the atmosphere. On the stage of discussing adaptation activities before the beginning of the project, public activists considered the option of installing solar panels to obtain alternative energy, because of the price of the panels, easy installation and visibility for locals such type of the adaptation effects. However, due to the abundance of industrial objects and their emissions, the surface of the panels would be daily covered with a layer of graphite and would be ineffective. Therefore, the idea was abandoned.

2. Involve all relevant stakeholders

For many years, the problem of flooding in the city could not be solved. The right decisions were found after involving all affected people on the floodings of the buildings after heavy rains and a proper assessment of the real reasons of such floodings, for example, garbage filled, not large enough or no at all rain water drainage systems. After that the activists together with the local government managed to find the right decisions for each location selected. The same activities could be implemented in other city districts affected the same way from flooding.

3. Dialogue between the city government and the population is very important

At the beginning of the project the population of the city was skeptic about implementing adaptation activities due to the fact that the city authorities had a passive position about local floodings of the buildings for a long time. A new city Major was elected 6 month before adaptation activities started in Kamianske. So, it was a good opportunity for the affected people to solve problems with the newly elected Major and great opportunity for him to show his open mind and readiness to solve problems of his community. The implementing NGO took an active communication role between the newly elected Major and active citizens in solving problems with storm drains systems. Active citizens could explain the affects of local floodings for their buildings and the Major could involve specialists from different local government institution in developing activities to solve the problems of local floodings. It was a very fruitful and effective cooperation.

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Effective management of rural area: Settlement of buffaloes and Planting energy willows

Orlivka village, Reni district, Odesa region, Ukraine
June 2016 – March 2017



Background

The village of Orlivka is located 300 kilometers from Odessa and 3 kilometers from the border with Romania. Three thousand people live in the village, and the main resources are land and water. The village is located in the south of the historical region of Bessarabia. This project supports approximately 3.000 people living in the target region.

Because of close proximity to Romania, people speak mainly Romanian, and most residents in Orlivka consider themselves ethnic Moldavians.

Within the community, two types of landscapes are generally distinguished: steppe and wetland.

Despite its location near large water bodies, the village of Orlivka, like the vast majority of rural settlements in the south of Bessarabia, already suffers from a shortage of water resources, primarily drinking water, eutrophication of water bodies with a decrease in water quality and loss of their fish productivity. There has also been an increase in the number of natural disasters and dangerous natural phenomena: storms, tornadoes, drought, hail and temperature increase. In addition, part of the territory of the rural community is under threat of flooding in case of heavy rainfall, as well as from the Danube during extreme floods.

On the territory of the community, and Reni district, the tourist and service infrastructure is undeveloped. At the same time, the village has a high potential for tourism due to its location near the Danube and the presence of large lakes, in particular Lake Kartal, which is a wetland of international importance and is under the protection of the Ramsar Convention, and is rich in historical, cultural and archaeological heritage.



Carpathian buffaloes

Overview of Intervention

Based on the local Adaptation Plan local officials, activists and local people decided to set up an Ecopark for the integrated use of resources in the village as an example of effective management in a changing climate. The ecological park was created on the territory of a wetland of international importance "Lake Kartal", as a model for the conservation and integrated use of natural resources of the floodplains, combining tourism, grazing, fishing, and energy plantations with the restoration and preservation of the local landscape and biological diversity.

The impacts of this park should include increased employment opportunities, better and more economical management of local resources, as well as new economic developments within the community. An experimental herd of Carpathian buffaloes was transferred from Zakarpattia region

"We brought the buffaloes from Transcarpathia. They were specially selected for us by the German ecologist Michel Jacobi, who moved to Ukraine to revive the breeding of buffaloes. There they look exotic, but here organic. Once buffaloes lived here," says Ihor Studennikov, an Executive Director of "The Center for Regional Studies".

This breed of cattle is well adapted to current climatic conditions and resistant to the manifestations of climate change, and thus introducing a new activity for the residents of the community and the region. About 5 people got work after the project. The shepherd watches the buffalo herd every day. The milkmaid is also required for the animals and a person who harvests biomass. In future, local people will work here and produce mozzarella from the buffalo milk.

"These animals are natural ameliorators, which by eating aquatic and near-water vegetation, including invasive species of flora that have emerged as a result of climate change, protect against overgrowth of the strait, contribute to the diversity and mosaic of landscapes, and thus serve to improve the biological potential of the territories," explains Oleg Diakov, a Senior Research Fellow at the NGO "Center for Regional Studies".

The herd is supposed to improve the condition of the local ecosystem that has already begun to experience the impacts of climate change as the buffaloes act as natural ameliorators.

Also, two hectares of the so-called energy willow were planted on the territory of the village in order to have fuel for the installed boiler later on.

In the village, conditions were created to increase the employment of the population based on effective and careful treatment of local natural resources and the economic development of the community through the introduction of new types of economic activity, such as eco-tourism, recreation, buffalo management, willow and reed harvesting.



Hectares of the so-called energy willow were planted on the territory of the village

"This year, for the first time we heated this building with pellets from wastes of straw and sunflower. A few years ago it was not heated at all here, because we simply did not have money for that", – says Mikhailo Kuvanzhy, a village headman of Orlivka. - „Next year we plan to heat with the chips from willow branches."

In autumn 2016, the Information center opened in the culture house where you can learn about effective measures for adaptation to the effects of climate change in the region of the Danube Delta.



Pellets made from willow

Lessons learned

1. Traditional activities could become good adaptation measures

In the Danube region, the cultivation of willow for firewood was an old tradition, which eventually fell into decay. Activists have suggested using willows again for heating municipal buildings, but now in the form of special pellets. In addition, willow plantations will absorb excess moisture during heavy rains and prevent flooding of the village that is also adaptation measure.

2. Do not be afraid of experiments

The idea to bring a herd of buffaloes to Orlivka was born after brainstorming: what should be done to reduce the water vegetation and to clear the silted areas. Using special equipment for these goals is very expensive for small village. But ecologists and naturalists have recalled that on the nearest Romanian territory there are herds of buffaloes which clearing the rivers and eating excess vegetation. Same buffaloes lived in Orlivka territory less than 100 years ago; therefore, it was decided to return them on the territory of the village.

3. Involving of specialists is very important

The idea to re-settle buffaloes from Transcarpathia to the south-west part of Ukraine was very risky. Thus, a specialist was involved to help the locals to adapt to the animals, and the animals to local humans. Along with the buffaloes, a German specialist, Michel Jacobi, who grew buffaloes in Transcarpathia, came to Orlivka and explained the behavior of animals.

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Early detection of fires through video surveillance

Ivano-Frankove village, Lviv region, Ukraine

June 2016 – December 2016



Background

The village of Ivano-Frankove is unique for several reasons. It is surrounded by the Roztochia Natural Reserve on one side, and the Yavoriv National Park on the other, and between them there is a cascade of eleven ponds.



Video surveillance on the dome of the St. Volodymyr Church

Over the past five years, the number of forest and peat-bog fires has increased here by 50%. Air pollution occurs, as a result of the fires and in particular due to greenhouse gas emissions that are huge in Ivano-Frankove. Community residents also feel the need for timely warning of extreme and hazardous weather events, which lead to a growing number of injuries, deterioration of health and decreased work performance.

Also, the longest European Highway E 40 – connecting France, Belgium, Germany, Poland, Ukraine, Russia, Kazakhstan, Uzbekistan, Turkmenistan and Kyrgyzstan – crosses directly the village. The community is adversely affected by significant smoke pollution at the time of peat-bogs burning, which is leading to reduced traffic safety. At the same time, according to the forecasts of meteorologists, the number of hot days, and subsequently fires, will increase due to climate change.



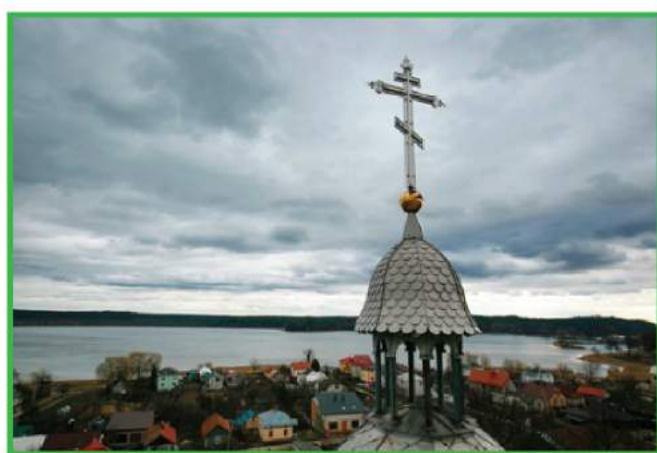
Forest and peat-bog fire

According to the "Plan for adaptation of local communities of Yavorivshchyna (Yavoriv region) to the effects of climate change", by 2050, the average annual air temperature will have increased by 1 – 1.7 °C (in summer – by 1.9 °C and in winter – by 1.5 °C) compared to the last 30 years. This will shorten the periods with temperatures below zero. It is expected that the seasons will change more quickly.

Extreme and hazardous weather events such as storms, tornadoes, hurricanes, heavy rains and snowfalls, snowbreak, thunderstorms and hail will occur more frequently and will have greater destructive power, especially in populated areas.

Overview of Intervention

Based on the recommendations in the local Adaptation plan a video surveillance system was installed at the highest point in the area, which is on top of the St. Volodymyr Church.



St. Volodymyr Church

In online mode it should detect fires in the forest and marsh areas adjacent to the village, which have nature protection status.

Video surveillance can be viewed online on the website of the organization goo.gl/dWT8CL. Cameras cover

forest areas and marshland with a special nature protection status – the Nature Reserve “Roztochia”, Yavoriv National Park, the adjoining forest tracts of the training and production forestry complex in Stradch, and a cascade of ponds through which migration of waterfowl goes. The area of the survey is about 3,000 hectares.



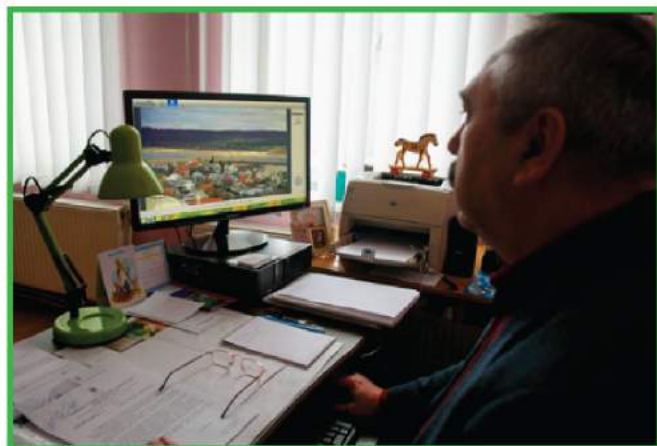
Video surveillance system

"We had a situation where with the help of video from the cameras we could find hooligans who committed offences in the village. Therefore, this project is multifunctional and helps to solve several challenges at once," a local activist and resident of the village, Volodymyr Drabchuk.

"The peculiarity of the village location lies in the fact that it is blown by the winds from all sides, so when the dry grass lights up, in a few minutes the flame can cover several hectares. Therefore, we offered to watch the area around the village with the help of video cameras on a twenty-four hour basis. The tallest building is the church, so the cameras were installed on it," says Lesya Bilka, a project monitor and representative of NGO "Gostynets".

In addition to the established video surveillance system, a fire prevention and management plan for the community of the village of Ivano-Frankove was developed.

Moreover, an information and monitoring center was opened in the village. This was equipped with a computer for displaying video surveillance and an information board located on the building of the village council in the very center of Ivano-Frankovo. Video allows for a survey of an area of over 3,000 hectares.



Information and monitoring center

The new fire management plan helps to find the shortest way to fireplace. The problem of the village is that many streets have been renamed; often firefighters cannot find their direct way. Even the village itself is called different; many people say they live in Yaniv as the village had such a name until 1946. Moreover, the streets are very narrow and if someone fails to park, the car with rescuers cannot drive.

"If there is a fire, people call 101 and get through to the district fire department, there is no direct number to us. That is, a person calls Yavoriv fire department and explains to the dispatcher what and where is burning. And here begins the most difficult thing: districts and streets people call differently, but in this situation every second matters. Thus, only a management plan can solve this situation," explains Maksym Kalach, a rescue worker of the local fire station.

This project supports approximately 100,000 people living in the target region.

Lessons learned

1. Select best place for installation equipment

It is very important to select an appropriate place for the web-cameras for the community to have the most of outcome of it. It has proven the dome of the church to be an appropriate place as it is (1) the highest point of the village and can oversee most of the area and (2) due to the fact that people in the Ivano-Frankove are very religious, cameras will likely not be stolen. The installation as such was quite challenging because of the height and specific construction of the church and the activists for a long time could not find a team with special equipment to install the cameras. Finally decided to invite people who have permission and techniques for mounting cameras on height.

2. Awareness raising of local community

To gain the trust and ownership of the community it was very important to explain what climate change is, how people might feel it and why cameras will be installed on the church dome. A photo contest of unusual weather events in the village was held to show how people live can be affected. Also, the pastor of the church tells parishioners about climate change and why it is important to adapt to them after each Sunday service.

3. Free access for information to all

At first, access to the video from cameras was given to the village council and rescuers only, but with time activists realized that the pictures will be interesting to villagers and even scientists in the Natural Reserve. Thus, it was decided that each group of stakeholders could use video for their own needs: monitoring fires, city order, traffic, weather, etc. Free access helps to increase the ownership of people and increases the number of people for whom this project would be beneficial.

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Restoration of wetlands

Roztochia Nature Reserve, Ivano-Frankove, Lviv region, Ukraine
June 2016 – March 2017



Background

The Roztochia Nature Reserve in Yavoriv district, Lviv region was created in 1984 with the purpose of preservation and scientific study of the unique landscapes of Ukrainian Roztochia. The area of the nature reserve is more than 2,000 hectares.



Nature Reserve "Roztochia", Ivano-Frankove, Lviv region

On the territory of the local community of Yavoriv district there is the main European watershed dividing the rivers to the Black Sea (the Dniester basin – the Vereshchytsia river and the Stavchanka river) and the Baltic Sea (the basin of the Zakhidny Buh river) – hence the name of the territory "Roztochia".



The largest marshland "Zalyvky" in the Roztochia Nature Reserve

In this regard there is a significant flow of water from the forest hills that dominate the local terrain. Therefore, only individual lakes and peat bogs are the main accumulators of moisture necessary for sustainable land use.

Since the process of artificially draining the largest marshland "Zalyvky" started more than 50 years ago, there have been considerable changes in the unique flora and fauna that are located on the territory of Roztochia.

In particular, conditions for spawning of local fish and frogs have changed, and a large number of Red List plants are under threat. The change in the hydrological regime has affected biodiversity and further development of the territory. Considerable forest cover (56%) and the presence of meadows (27%) that require stable hydrological nutrition characterize the region of Roztochia.



The diverse fauna of the Nature Reserve is represented by 43 species of mammals

The main threat to the whole region is an increase in average air temperature of 1.7 °C (compared to the last 30 years) and, as a consequence, an increase in the number and intensity of droughts.

This phenomenon will have the most significant impact on the health of the local population, the most important sectors of the local economy (primarily agriculture and forestry), as well as the ecological sustainability and biological productivity of natural (including protected) ecosystems.



In 2011 UNESCO established the Roztochia Biosphere Reserve

The frequency of spring and summer droughts has increased, and accordingly, the number of fires and the threat of their increase on peat bogs. All these negative effects, intensified by climate change, limit the adaptive capacity of the community in the Javoriv area.

Overview of Intervention

Aiming to restore the natural hydrological regime, the local community carried out a renaturalization of the peat bog.

"On the territory of the swamp beaver family settled that swam to Ukraine from Poland. Beavers are natural design engineers that restrict the distribution of alien species of flora and fauna. They chew up non-quality wood and clean up the territory of the swamp", – said Ihor Horban.

The natural functions of the largest peat bog "Zalyvky", which is concentrated on the territory of the local community of Ivano-Frankove, have been restored, thus the risk of fires on peat bogs and in local forests has decreased.

"Restoration of the hydrological regime of the swamp plays an important role in the stability of the microclimate on the territory of Roztochia. Local forests and oak forests require a large amount of water, which, in fact, is provided by a swamp. Already this spring the swamp was filled with water and became a place for spawning a number of fish: loach, red carp, pike," – said Ihor Horban, a Coordinator of the projects "Public Institute for Nature Protection".

In the upper part of Zalyvky, culverts with a diameter of 40 cm were laid, through which the territory of the swamp now receives water from the river Stavchanka. This water is distributed over the territory by a system of newly laid or cleared old ditches, which once distributed the water in through the wetland. Moreover, on one of the central reclamation canals, four dams were built that hold back water in the riverbed and raise the water level in it by an average of 20 to 40 cm,

thereby slowing the flow velocity as well as the flow rate of the river flow.

With the help of restoration of the hydrological regime, the local animal and plant population is restored, which maintains the ecological balance of the natural environment in the reserve and throughout the territory of Roztochia.

This project supports approximately 100.000 people living in the region. Wetland "Zalyvky", located near the village, often was damaged by fire and polluted the local air during the drought. During the burning of the peat bog, the residents of Ivano-Frankove suffer from smoke, and the atmosphere – from the emissions of carbon dioxide, which in turn has an even greater impact on climate change.

Lessons learned

1. Use of easy and simple measures

Before starting, the project experiences of other communities facing similar challenges were analysed as the risks in Roztochia are not unique. Solutions that will maximize the benefit for this territory, but in the same way very simple measures - that could be easily done by Natural Reserve workers, were chosen.

2. Using an ecosystem approach, the opinion of experts on flora and fauna is very important

For starting, any works on territory of the Natural Reserve NGO "Public Institute of Natura Protection" had to get the special approval from the Scientific Council of the Natural Reserve. Before the excavation, a series of studies of the impact of works on flora and fauna of Natural Reserve were developed and several meetings with scientists and representatives of the Natural Reserve were held. Only after that permission to start working was given.

3. Bear in mind the condition of the location

All types of works on the territory of wetlands are very difficult even if you use easy measures as building small dams or digging pipes, because of the unstable soil. Thus, workers had to build and dig with their own hands; vehicles could not drive close enough, so workers had to use horses to deliver building materials to the swamp.

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Collecting rainwater for household use

*Bogdan village, Rakhiv district,
Zakarpatska region, Ukraine
October 2016 – April 2017*



Background

The village of Bogdan is a high-mountain settlement located 12 km from the district center of the city of Rakhiv. It has 4,905 inhabitants and 1,296 households.



Kindergarten in Bogdan village

The Bogdan village council includes two settlements – Bogdan and Breboy. On their territory, there are two forest areas of the Carpathian Biosphere Reserve, two experimental farms of the State Enterprise of Rakhiv Forest, two schools, two health care institutions, a preschool educational institution and a cultural center.



High-mountain settlement Bogdan

The number of days with abnormal rainfall has increased in recent decades, especially in spring and autumn. During these periods, a big rise in water level in rivers and streams as well as groundwater leads to the risk of flooding.

Thus, during the flood of 1998, 120 households were flooded in the village, in 2001 – 143, in 2008 – 150, in 2010 – 161, in 2015 – 173, and in 2016 – 180. At the same time, every year within six months, 110 households along Shevchenko Street have suffered from lack of drinking water.

"We used to have spring and autumn floods, but in the example of 2008 and 2013, we have summer floods and even winter floods," says Olga Smetaniuk, a coordinator of the NGO "Tysa".

Another consequence of climate change is an increase in extreme weather events and hazards such as snow and avalanches that often lead to death of people and cause considerable damage.

They are caused by abnormal rainfall, terrain features, snow and erosion processes. In the village of Bogdan and its surroundings, there are eight places with a significant risk of avalanches.

Overview of Intervention

The main problems of the community are mass unemployment, population migration, and poor road conditions.

The biggest problems, as the events of recent years have shown, are destructive floods, mudflows and, at the same time, lack of drinking water that is caused by intensive climate change in certain parts of the village in summer.



Reservoir for collecting rainwater

Due to lack of information about the impact of climate change on this territory, people react and adapt themselves slowly to the challenges of nature. Thus, information stands with an evacuation plan for emergencies and notification schemes were prepared for each community of the Rakhiv district. Each community developed an individual action plan for adaptation to climate change in order to be better adapted and prepared for future natural disasters.

To reduce the risk of floods, the channel of the Kvasny stream along the Dovbush street in the village of Bogdan was cleared and 30 artificial cascades for reducing the rate of water flow during floods were built on it.

Based on the participatory developed local Adaptation plan it was decided to install a reservoir to save drinking water and to conduct educational sessions in the kindergarten. The aim is to teach children from childhood on how best to take care of nature and treat natural resources economically.

"Now, children in the kindergarten use rainwater for domestic needs, in particular for flushing the toilet. From childhood they learn how to use water sparingly and treat it with care, thus understanding the fact that some villages are already experiencing a shortage of drinking water in the Carpathians," says Maria Milchevych, a head of the kindergarten in the village of Bogdan.

Excess of collected rainwater from the reservoir in the kindergarten goes into the fire-fighting reservoir, which is located nearby on the territory of the military unit.

The reservoir built in the kindergarten holds 1,000 liters. Excess of rain water flows into the fire-fighting



Rainwater use for domestic needs

reservoir, which holds 10,000 cubic meters of water. Location on the territory of the military unit ensures the protection of the reservoir from outside interference, and facilitates access for fire engines. This project supports approximately 5,000 people living in the village.

Lessons learned

1. Community involvement

Before the implementation of practical activities within the project in the village of Bogdan, activists carried out information work on climate change adaptation in all villages of the region. This helped the local community to better understand local risks and inspired people to engage in the adaptation project. The Regional Climate Change Adaptation Strategy that had been previously developed and approved by the Regional Council was very helpful in this process.

2. Awareness raising of local authorities

Before choosing the location of the intervention to implement activities, it is important to have meetings with respective local authorities and other important stakeholders to take ownership. This was done in several villages of Rakhiv district with discussions on local climate change challenges and potential adaptation measures. As only the head of the village council in Bogdan expressed interest in collaboration further awareness raising is required in the region to understand the importance of adaptation measures and to take ownership. On presentation of the project's results with participation of all village heads of the Rakhiv district, a lot of participants said that earlier they did not associate actual natural disasters with climate change.

3. Visibility of adaptation measures

The kindergarten in Bogdan was chosen for the installation of reservoirs to collect rainwater. There are several reasons for this: Firstly, to teach children how to respect water resources from childhood on, since the region already suffers from a shortage of drinking water, and to take care of the nature. Children are disseminating the information how to use rainwater for household needs in their families.

Secondly, the kindergarten is located in the center of the village and many inhabitants could see the work, for example, when the fire truck is collecting water from the nearby reservoir and not from the far and difficult to reach river, as before.

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