

RESULTS FROM THE GEF SGP MACEDONIA ACTIONS IN REPUBLIC OF MACEDONIA



Skopje, May 2015

Publisher: Association for culture, art and creativity DENICA, Skopje

Bul Ilinden 3/48, 1000 Skopje;

Tel 02 3127 402

e-mail: denicakultura@yahoo.com

Copy: 100 copies

Printing house: Pixel Print

Authors: Matt Jones

Zlatko Samardziev

Translated: Maria Jones

Proof reader: Ana Panovska

The publishing of this publication is funded by

The Global Environmental Facility Small Grants Programme Macedonia

www.gefsgpmacedonia.org.mk

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CIP - Cataloguing in Publication
National and University Library “St. Kliment Ohridski” in Skopje

63: 502.131.1

ISBN 978-608-245-079-7

This edition published by association for culture, art and craft Denica from Skopje

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INTRODUCTION

Dear Readers,

It has been 10 years since The GEF's Small Grants Programme first started funding local projects for sustainable development in Republic of Macedonia. In this time we have supported 99 project initiatives throughout the country in the focal areas of preserving biodiversity, preventing and mitigating the effects of climate change, reducing emissions of persistent organic pollutants – POPs and conserving international waters.

With so much achieved by our beneficiaries and their partners, and with so many lessons learnt through our experiences on the ground, this seems an opportune moment to present the aims and successes of some of the key projects the The GEF SGP has supported so far and to reiterate the principles that have guided our support.

As National Coordinator of The GEF SGP Macedonia I am proud to have been closely involved with some outstandingly committed and creative people working to achieve a sustainable future for communities and for our shared environment. And I am very glad, therefore, to present in this brochure a summary of some exemplary projects which we hope can serve as models for local projects elsewhere in the country and across the globe.

This brochure thus highlights projects that have been successfully designed to achieve sustainable and replicable results through balancing environmental conservation with the needs of local communities — providing employment opportunities for people in rural areas, for example, in jobs that help restore the health of the ecosystem.

In all the projects presented here, the building of local partnership has been a key aspect of ensuring sustainable results. I take this opportunity to thank the members of the voluntary National Steering Committee for their unique devotion and persistence to achieve the results we all have now in a sustainable way. Also, I thank the Local Self Governments that understood the priority for local environment actions and the necessity for cooperation with the local NGOs to create better local livelihood.

Expecting much and many more in the following years – The GEF SGP Macedonia will try to remain confident creator of priorities that support better environment locally thus contributing globally.

Mr. Zlatko Samardziev, M.Sc.

National Coordinator

The GEF SGP Macedonia

BIODIVERSITY

Preserving the planet's rich variety of plants and animals is an urgent global priority that has led the United Nations to designate 2011–2020 the UN Decade on Biodiversity. In the words of UN Secretary General Mr Ban Ki-Moon, the consequences of not acting now will be “devastating”—not only for the many species that face extinction but for humanity.

Vital constituents of human life—including clean air and water, food and medicines, as well as fuels, fibres, productive soils and natural control of pests and diseases—all depend on conserving the richness of our natural heritage. And while the aesthetic, cultural and spiritual value of this heritage is beyond measure, the depletion of biological diversity will have immense material costs.

Biodiversity challenges in the Republic of Macedonia

Macedonia has a rich and unique biological diversity due to its geographic complexity and combination of continental and Mediterranean climates—a biodiversity comprising some 16,000 species, including over 800 identified endemic species. Much of the country's population, especially in rural areas, depend directly for their livelihoods on preserving these species. In addition, many of the anticipated risks of climate change—including an increase in infectious diseases and natural disasters—are heightened by the reduction of biodiversity.

The major threats to biodiversity in Macedonia include rural poverty and depopulation, unsustainable agricultural practices, low awareness of the importance of biodiversity, inadequate spatial planning and inappropriate land use.

Conserving biodiversity at international and national level

At international level, the enormous challenge of preserving global diversity is being met by numerous conventions, to many of which Macedonia is a signatory, including the UN Convention on Biological Diversity. For such measures to be effective and sustainable, however, it is crucial that local actions are taken on the ground—and this is the guiding principle behind the Small Grants Programme of the Global Environment Facility: ‘thinking globally, acting locally’.

Biodiversity and the GEF Small Grants Programme

The objectives of the latest Small Grants Programme, in accordance with Macedonia's National Biodiversity Strategy and Action Plan, include the need to ‘mainstream biodiversity conservation and sustainable use into productive landscapes through community initiatives and actions’.

“With so many people struggling to make a living in the countryside and moving to the cities, old species of plants and animals are faced with near extinction,” explains the Coordinator of GEF's Small Grants Programme, Zlatko Samardziev. “For these reasons, one of our main aims has been to support the revival of traditional farming using endemic species like the Pramenka sheep, the Busha cattle breed and the Macedonian honeybee. These are sustainable projects that help local communities and at the same time conserve biodiversity—especially agrobiodiversity.”

Biodiversity projects supported by GEF's Small Grants Programme

Since it began in 2005, the Small Grants Programme has supported 41 local projects in the area of biodiversity, representing 33% of all funds granted, amounting to \$637,122, with \$791,255 raised by co-financing. Thirteen projects have been funded by the Small Grants Programme to protect domestic autochthonic and globally significant species, including:

OThe Pramenka sheep breed (Ovchepolka and Karakachanka)

The Sharplaninec shepherd dog
The Domestic water buffalo
The Busha cattle breed
The autochthonous Macedonian honeybee (*Apis mellifera macedonica*)
The almost extinct Macedonian river trout
Local varieties of apples and pears
The river fish Zingel balkanicus (once thought to be extinct)
The Silver domestic hen
The *Osmunda regalis* species of fern
Endangered species of bats
The yellow water lily

Three projects have been funded to protect and promote sustainable tourism and the management of globally significant biodiversity areas, including the Matka canyon, the Vevcani water springs and the Smolare waterfalls.

Key biodiversity projects funded by the Small Grants Programme

One of the greatest achievements of the Small Grants Programme in the Republic of Macedonia has been to link projects aimed at reintroducing indigenous species with efforts to revive local communities in rural areas. “In this way we achieve several aims at once—creating of job opportunities, reviving sustainable farming practices and reintroducing indigenous breeds,” explains Mr. Goran Trajkovski, a member of GEF’s National Steering Committee. “We have also focused on supporting projects that would enable the reintroduction of the autochthonous breeds of domestic animals, traditionally reared in these areas for many centuries and exceptionally adjusted to our climate. These projects included the support for the autochthonous Pramenka sheep breed (Ovchepolka and Karakachanka), the autochthonous shepherd dog Sharplaninec, the domestic water buffalo, the Bush cattle breed, the Silver domestic hen, the Macedonian honeybee and others. The future additional subsidies for the rearing of these autochthonous breeds of domestic animals would provide supplementary income for the local population, which is the desired result of the support and stimulation of this type of projects, as well to serve as an incentive for the local population not to desert the rural areas.”

Reviving the Pramenka breeds of sheep – Ovchepolka and Karakachanka

The Pramenka breeds of sheep are an ancient and resilient species indigenous to the Balkans—including parts of Macedonia—and an important source of genetic diversity in sheep. “The ancestors of these breeds evolved in this area in prehistoric times,” says Professor Vladimir Dzabirski from the Faculty of Agricultural Sciences and Food (FASF), “But in recent decades their population has dwindled significantly—mostly because they have been replaced by more productive but less authentic breeds. This is a pity because the Pramenka breeds can survive on little food and still provide milk for cheese, as well as wool and meat. They are also quite fertile and the lambs have a low rate of mortality despite our harsh climate.”



The Pramenka breeds of sheep, photo Mome Mladenovski

Several projects funded by GEF's Small Grants Programme have provided training for local farmers in all aspects of breeding Pramenka sheep and producing and distributing organic cheese and milk. As a result, there are now seven Pramenka Ovhcepolka sheep breeding areas that have certification for organic production, three of which are success stories from GEF's SGP Macedonia projects. "The total number of Pramenka Ovhcepolka sheep was around 3,000 by the end of 2014, compared with only 100 in 2006," says Mr Mito Kostadinovski of NGO Zlatno Runo of Makedonski Brod."

Similar initiatives have been supported by GEF's Small Grants Programme to revive Pramenka breeds of sheep in the eastern region of Malashevsko Pijanecki, implemented by the NGO Napredok in partnership with the Municipality of Pehchevo and a number of private individuals and companies. "With the skills we acquired through the project training," says local farmer Mr. Manoil Stefanovski, we were able to breed 160 lambs from the original flock."

Reintroducing the shepherd dog Sharplaninec in rural areas with new breeders

The Sharplaninec shepherd dog is a strong but calm-tempered and adaptable dog traditionally used for guarding sheep from wolves. It is uniquely adapted to the snowy heights of the Shar mountain range and is the only indigenous breed of dog in Macedonia. Tragically, this breed of dog—one of the oldest breeds in the world—was under threat of being mixed with other breeds or even lost to extinction before a project by the Macedonian

Ecological Society—in partnership with the Foundation Open Society Macedonia and the FASF—set about reintroducing selected specimens into their natural habitat.



The Sharplaninec shepherd dog, photo Nacko Savovski

Having selected pure representatives of the breed through extensive research into the DNA variability of the breed, the project went on to select breeders in the Northeastern and Southwestern regions with the expertise to raise pedigree Sharplaninec shepherd dogs in their natural environment and reintroduce them to sheep farms. Ten new sites were located and the project donated 33 selected dogs to breeders in these locations. To ensure the sustainability of these achievements, the project has introduced provisions for continuous veterinary care and appropriate food supply for the dogs and their litters.

At national level, the project successfully initiated legal changes to officially recognize the Sharplaninec shepherd dog as an indigenous breed. The project also managed to obtain approval for the provision of subsidies for farmers with a certain number of sheep or goats to keep dogs of this breed. All those who receive dogs in this way are obliged to donate puppies to other shepherds, further boosting their population.

Reviving the autochthonous Busha breed of cattle

The industrialization of cattle farming has led to worldwide reductions in the use of autochthonous breeds of cattle. In this country the population of the Busha cattle breed, which belongs to the group of cattle with short shorns—*Bos brachiceros*, a breed autochthonous to the Balkan Peninsula—has been in sharp decline for many decades. For although these fertile and hardy cattle are well-suited to the country's mountainous regions and can provide high-quality milk and meat for farming households with low amounts of food and little need for veterinary assistance, they have largely been replaced by less independent but larger cattle that produce higher yields of milk.



The Busha cattle breed, photo Mome Mladenovski

Three projects to support the reintroduction of the domestic Busha cattle have been funded by GEF's Small Grants Programme in the Republic of Macedonia. The first project—implemented by NGO Biomalesh and its partners, the Municipality of Pehchevo and the Macedonian Agricultural Advisory Support Programme—was launched in October 2007 and succeeded in creating a small parent herd of Busha cattle. A second project was funded in 2013 to establish a breeding centre for Busha cattle. Implemented by the NGO Zlatno Runo with its main partner Eko Sir doo, the project's achievements included the purchase of calves and the establishment of a database of breeding herds, as well as training courses for potential farmers of this breed.

“The new reproduction centre created jobs for the local population in a very deprived rural area of the country,” says Samardziev, “And lobbying by the project team has led to the Busha cattle being eligible for funding from the EU's Instrument for Pre-Accession Assistance. I'm very hopeful about the future for this breed.”

The third project was realized in the period between March 2013 and June 2014 in the village of Ozdoleni, municipality of Debarca in partnership with NGO Cekor Napred. Three types of Busha cattle were obtained (brown, grey and black). They were used as genetic reserves for conservation of this cattle breed, both alive and in the shape of blood and hair for the needs of the Ministry of Agriculture as a body that runs the program for protection of the autochthonous breed of cattle Busha in the Republic of Macedonia.

Protection of the Macedonian honeybee

The ever increasing demand for the highly valued bee products has motivated the beekeepers to increase their production. They have been doing this by acquiring allegedly ‘more productive queen bees’, which do not originate from the Macedonian autochthonous population (*Apis mellifera macedonica*, Ruttner 1988) of honeybees.

This several decades long and uncontrolled import of a large number of honey bees from non-autochthonous populations has continually been eroding the genetic diversity and potential of the Macedonian autochthonous population of honeybees.



The Macedonian autochthonous population of honeybees, photo Borce Pavlov

GEF's Small Grants Programme has funded two projects to revive traditional breeds and beekeeping methods. The first of these began in November 2006 and was successfully completed in August 2008, implemented by the Rankovce NGO Association of Agricultural Productions, with its partner, the Municipality of Rankovce. The key goals of this project included the preservation of the endangered Macedonian honeybee and the establishment of a training centre to help boost local production of organic honey. Training was organized in three hands-on workshops, while at the same time the project initiated the process of gaining organic honey certification. An additional benefit of the project was the planting of appropriate species of trees on ten hectares of land damaged by erosion.

A second project in April 2012 aimed primarily at increasing the population of the Macedonian honeybee through a registered breeding centre for queen bees in Sveti Nikole and a bee-mating centre in Gevgelija. With funding from GEF's Small Grants Programme, the NGO Eko Pchela Beekeeping Association—together with its partners, including the FASF and two other beekeeping associations—started off the project by purchasing bee colonies from the autochthonous population, as well as mating boxes and other equipment necessary for production of queen bees. "The breeding centre has an established program and carries out the selection and improvement of the productive characteristics of the honeybee whose aim is to contribute towards the preservation of the Macedonian honeybee and towards more productive beekeeping in the rural areas," explains Mr. Borce Pavlov from the NGO Eko Pchela.

Reviving the domestic water buffalo

Thousands of water buffaloes were once used for ploughing and transport in the Republic of Macedonia (39,000 water buffaloes in 1949), while buffalo milk provided an extra source of income for many families. The mechanization of agriculture, however, led to a drastic decline in buffaloes. "There were almost no buffalo left here when we started the project in March 2013," explains Mr. Ljupcho Tasheski of the NGO Busha, "But with help from GEF and our partner, the FASF, we managed to adapt a suitable farm near Strumica and train local farmers in sustainable buffalo breeding.



the domestic water buffalo, photo Gjoko Bunevski

"The project raised nineteen buffaloes suitable for breeding and we also collected genetic data to build up a gene bank for conservation, characterization and monitoring of the productive characteristics of the domestic water buffalo," explains Professor Gjoko Bunevski, "This research helped introduce secure legal recognition of the indigenous breed and its promotion as a valuable part of the territory's natural heritage. As a result of the project, some 60 water buffaloes are now being farmed."

Conserving the endangered Macedonian River Trout

The Macedonian river trout (*Salmo macedonicus* Karaman 1924) is found only in the Upper Vardar River and its tributaries in the Republic of Macedonia. Due to the degradation of its natural habitats the fish has been included in the IUCN's 'red list' of critically endangered species. Thanks to two projects supported by GEF's Small Grants Programme in 2008–9 and 2011–12, however, the Macedonian River Trout population is now beginning to thrive.



the Macedonian River Trout, photo Miodrag Pesich

The first of these projects, led by the Macedonian Fishing Federation in Skopje, carefully selected trout from the Belicka Mala River and the Kozjak reservoir for spawning in a hatchery in Struga managed by the Institute of Animal Science of the Fishery Department from the FASF. “In October 2009 we released 10,000 young fish into the Treska and Belica rivers,” says Mr. Miodrag Pesich from the Fishing Federation, “and in the following month we released another ten thousand into the Matka Canyon.”

A second project successfully increased the population of the river trout along the whole stretch of the River Treska, including the artificial dams of Matka, Paraskevi and Kozjak, while reintroducing the fish into the rivers Vardar, Lepenec, Kriva and Bregalnica. Generous assistance to continue increasing fish stocks after the end of the projects has been provided by the City of Skopje.

Other projects to conserve biodiversity in agriculture

The GEF Small Grants Programme has supported numerous other projects related to agro-biodiversity in the Republic of Macedonia, including preserving the indigenous silver hen and reviving traditional species of fruit such as older varieties of apples and pears that have begun to disappear over recent decades.



Chicken coop, silver hen, photo Marjan Tanevski



The indigenous silver hen, photo Marjan Tanevski



Apple and pear trees, photo Fidanco Hristov



Distribution of apple/pear trees, photo Fidanco Hristov

As well as these efforts to promote agrobiodiversity, GEF's Small Grants Programme has provided funding for projects to protect, revive and raise awareness about a number of endangered species, including two projects to conserve the Lesser Horseshoe Bat, the Mediterranean Horseshoe Bat and Schreibers's bat. Implemented by the NGO PEONI, the projects involved practical interventions to protect caves where these bats are found, as well as the production of notice boards and leaflets to inform the public about the importance of conserving these species.



Information board, cave Krstalna, Matka,
foto Ivan zezovski



Bat, photo Ivan zezovski

CLIMATE CHANGE

Climate change is set to have a complex range of negative effects worldwide, causing severe problems in such vital areas as health, agriculture and forestry, water, biodiversity, and the global economy. The Republic of Macedonia faces many of these key challenges and as a signatory of the UN Framework Convention on Climate Change the country is undertaking various initiatives at national level to reduce the emissions of greenhouse gases that accelerate global warming as well as numerous measures to adapt to and mitigate the consequences of climate change. While these efforts proceed at international and national level, GEF's Small Grants Programme in the Republic of Macedonia has made substantial progress by supporting local projects on the ground. Since it began in 2005, the Small Grants Programme has supported 36 local projects in the area of climate change, representing 44% of all funds granted for projects in the country, amounting to \$879,123, with an additional \$1,020,653 raised by co-financing. These climate change projects have addressed the following issues of concern to local populations:

- Supporting environmentally sustainable transport by promoting cycling infrastructure and introducing the first rent-a bike service in the capital city of Skopje.
- Promoting energy efficiency, including the replacement of wasteful bulbs for street lighting with new energy-efficient lights in eight towns, as well as and introducing energy-efficiency measures in 41 educational facilities.

- Promoting renewable energy sources, including the first production of biodiesel from waste vegetable oil.
- “One of the principles behind our funding—especially in such broad multi-sectoral issue like climate change—has been to support projects that can serve as models for replication on a larger scale,” says Professor Risto Filkoski, a former member of the voluntary National Steering Committee of the SGP.

Projects to increase energy efficiency

“In selecting energy efficiency initiatives,” says the Coordinator of GEF’s Small Grants Programme, Zlatko Samardziev, “we’ve paid special attention to supporting model projects that demonstrate effective techniques and achieve savings—savings that will be reinvested by municipalities in implementing further measures to cut greenhouse gases. This is particularly the case with the refurbishment of buildings, which are amongst the biggest consumers of energy.”

Some 40% of energy worldwide is consumed by buildings, as well as 25% of the world’s water. Heating, air-conditioning, lighting and other energy uses of buildings account for a third of all greenhouse gas emissions, making this sector one of the largest generators of GHGs worldwide. At the same time, the energy-efficiency technology and know-how already exist to reduce the environmental costs of buildings by at least 30%.

“One of our top priorities has been to refurbish local primary schools and kindergartens for higher energy efficiency,” explains Mr. Vladimir Karchicki of the NGO Proaktiva in Skopje, “because in this way we directly improve the learning environment for children, making their school buildings safer and healthier while generating savings that can be channelled into other educational improvements.”



Solar collector in the school Sinisa Stoilov, Zrnovci, photo Zaklina Golceva

Many of the country's kindergartens and schools have suffered from a lack of investment in infrastructure over past decades. This has led to high levels of energy wastage resulting from defects such as old and ineffective doors and windows, inadequate ventilation and insulation, as well as outdated, expensive and unhealthy forms of heating.

Typical of the numerous projects funded by GEF's Small Grants Programme to increase energy efficiency is the refurbishment of kindergartens in the towns of Radovich and Vinica. Implemented by the NGO Center for Local development - CELOR and the NGO Agro Vinka Association of Women Farmers, in cooperation with the Municipalities and the kindergartens, the projects first identified the main areas for improvement in energy consumption and then undertook the following measures: installing new doors and windows with better thermal insulation and automatic door-closing mechanisms, installing new energy-saving light bulbs, closing energy-wasting vents in the roof and providing better sealing of water taps and pipes.



Installing new doors and windows with better thermal insulation and automatic door-closing mechanisms in several schools in Veles, photo Vase Ackoska

An important aspect of all the building refurbishment projects funded by GEF's SGP has been demonstrating and raising public awareness of the environmental and cost-saving advantages of greater energy efficiency and the urgency of implementing measures to mitigate the effects of climate change.

Similar projects have been funded by GEF's SGP in kindergartens and primary and secondary schools in Skopje, Veles and Radovich, in municipal and educational buildings in Arachinovo, and in the municipality of Zrnovci, where a solar water-heating collector system was installed for heating local schools, and hybrid collectors were installed for the first time in a kindergarten in the municipality of Kocani which simultaneously heat up water and produce enough electric power for lighting — all resulting in savings of at least a third of annual energy costs.

To ensure the sustainability of these achievements and create conditions for similar future efforts, the projects have also helped build up the capacities of the grantee members and the wider public through awareness-raising, training and developing networks of contacts with representatives of municipalities, government agencies and other potential co-financers.

Another area that accounts for a significant proportion of energy consumption by local governments is the vital responsibility of street lighting. "Outmoded technology for street lighting is a problem that affects the majority of municipalities," explains Mr. Stole Georgiev of the NGO CELOR of Radovich, "And this further contributes to excessive CO2 emissions and energy costs." If the municipalities direct their means correctly towards renovation of street lighting, they would be able to make great savings and also contribute towards the reduction of the emissions of greenhouse gasses.

“This is another case in the focal area of climate change where we have focussed on funding projects that can provide a model of best practices for others to follow,” says Samardziev. One such model project was implemented in the Municipality of Vrapchishte, where the NGO Eco Action, Tetovo replaced the old and wasteful fixtures of the streetlights in the main settlement of the municipality with energy-efficient light bulbs. “The new bulbs are not only more efficient in terms of energy costs and reduced greenhouse gas emissions,” says Ms. Hristina Vasilevska of the NGO Eco Action, “they’re also more effective at lighting the streets, making for a safer environment for traffic and pedestrians. The fact that they work with advanced sensors means they never use unnecessary energy, making huge savings for the municipal budget.”



Street lighting in the Municipality of Vrapchishte, photo Hristina Vasilevska

The awareness-raising and informational activities of these projects have encouraged the implementation of numerous other projects throughout the country, including in Delchevo, Novo Selo and Gevgelija, supported by the SGP. “The promotional activities of the street-lighting projects have had a knock-on effect all over the country, especially because neighbouring municipalities have seen for themselves the savings and environmental benefits of switching to energy-efficient bulbs,” says Samardziev.



Replacement of old and wasteful streetlights in with energy-efficient light bulbs in Municipality of Delcevo, photo Toni Stojmenovski

Promoting renewable energy

With carbon dioxide emitted by the use of fossil fuels being the leading driver of anthropogenic climate change, promoting the switch to renewable energy sources is one of the most pressing challenges of the 21st century. Supporting projects that promote renewable energy has thus played a key role in the efforts of GEF’s Small Grants Programme to combat climate change.

“In the projects we’ve funded for promoting and adopting renewable energy sources, the emphasis has been on

making use of locally available resources,” explains Professor Sanja Popovska-Vasilevska, a member of the NSC, “These include waste products that can be recycled such as cooking oils and biomass, as well as natural resources like hot geothermal waters and solar power. In this way we’re raising awareness of the untapped potential of accessible materials for generating energy at local level.”



Using natural resources like hot geothermal waters for heating the local school St Kiril and Metodij, Kocani, photo Zlatko Samardziev

Converting solar energy into electricity through photovoltaic methods is one of the world’s fastest growing technologies, driven by the urgency to reduce GHG emissions and encouraged by the falling cost of photovoltaic technology. In line with this global trend, GEF’s SGP has striven to fund projects that integrate the use and promotion of solar energy wherever feasible, especially in schools and other institutional buildings with high energy usage and costs. Many of the energy-efficiency refurbishment projects funded by the SGP have thus included the installation of solar panels to complement existing power sources, as in the Kochani kindergarten project and the Bosilovo primary school, while at the same time the Programme has also funded projects specifically intended to serve as models of solar energy use.

Biodiesel is a biodegradable fuel that produces significantly less greenhouse gases and other pollutants than petroleum-based diesel. It can be manufactured from virgin oils or waste vegetable oils and animal fats. “The environmental benefits of using biodiesel instead of fossil fuel are well known. There is an abundant amount of waste vegetable oil throughout the country that can be converted fairly easily into biodiesel to ensure a safer environment and reduce maintenance costs,” explains Mr. Blagoj Mihailovski of the NGO Zvezda, an organization of people with disabilities in Makedonska Kamenica, “The introduction of production facilities for this fuel have also generated jobs and trained local people in useful new skills.”



Biodiesel as biodegradable fuel, photo Nikolco Kolev

An innovative project to produce biodiesel from waste vegetable oil from local restaurants was carried out in Makedonska Kamenica, eastern Macedonia, by the NGO Zvezda in partnership with the British Embassy, EVN Macedonia and several NGOs and restaurants, including McDonalds. The biodiesel was used in the agro-machineries by local farmers. This is the first ever production of biodiesel in Republic of Macedonia.

The project achievements led to upscaling the production and use of biodiesel in the eastern municipality of Probistip by the NGO Mashinski Krug. This is an excellent example of cooperation and the combined benefits of biodiesel production and use. The Mashinski Krug, in partnership with the Municipality of Probistip and Agrozito doo, planted over 20 hectares of heavily polluted land with rapeseed oil for producing biodiesel. Almost 2,500 kilogrammes of rapeseed were harvested in 2012 and delivered to the local biodiesel production facility installed by the project for conversion into biodiesel. The 450 litres of biodiesel produced at the facility by six trained volunteers was then distributed to local farmers for use in agricultural machinery.

“These two projects are another example of an initiative and cooperation with multiple benefits that can be replicated on a much larger scale”, says Mr. Nikolcho Kolev of NGO Mashinski Krug. “The project has also enabled the use of polluted land for growing rape seed crops intended for biodiesel. These crops are not only useful for biodiesel but also help in the process of decontaminating the heavy metal content in the soil.”

Another SGP-funded project to promote renewable energy sources was supported in Berovo in eastern Macedonia. Implemented by the National Association of Private Forest-Owners, together with the Netherlands Development Organization (SNV) and the Municipality of Berovo, the project made use of forest biomass to replace crude fossil oil for heating a local primary school, installing a boiler for using biomass and thus reducing CO2 emissions from fossil fuel.

Promoting sustainable transport

The transport sector is a leading contributor to anthropogenic climate change and urban air pollution throughout the world, with CO₂ emissions from petrol combustion accounting for well over 20% of all greenhouse gases generated in many countries. In the Republic of Macedonia, GHG emissions from transport are increasing exponentially, with accompanying problems of congestion as well as many forms of air pollution.



the rent-a-bike scheme in Skopje, photo Julijana Daskalov

“The Small Grants Programme has focused its funding in this area on what we know is the single most effective solution to traffic pollution,” explains Samardziev, “And that solution is to facilitate the wider use of bicycles for commuting. Many of our towns and cities, including the capital, Skopje, are highly suited for cycling. However, the motorised traffic culture and the lack of adequate cycle lanes have prevented many people from using and switching to bicycles.”

In many areas of Skopje these projects have transformed the cycling experience, with cycling paths clearly marked with signs and red paint. Moreover, the rent-a-bike scheme has helped to shift the public’s perception of cycling from a merely recreational or sports activity to a functional means of transport. Implemented in 2009–10 by the NGO Ecosvest of Skopje, in partnership with the City of Skopje, the Municipality of Karposh, and the NGOs Proaktiva Skopje, To4ak, Skopje and Extreme sport/Bike shop Skopje, as well as the British Embassy, the rent-a-bike scheme—the first ever such scheme in the Republic of Macedonia—procured an initial 110 bicycles suited for urban transport and made them available for hire at highly affordable prices at three central points in the city and. Their number increased and there were seven such points in 2013.

The rent-a-bike project was further accompanied by a large-scale publicity campaign, including dedicated websites, TV and radio advertising and a wide range of promotional materials. “The immediate results of the project and the public response were exceptional,” says Mrs. Julijana Daskalov of Ecosvest, “Within only a week of launching the scheme, citizens had rented the bikes for over 500 hours and a massive amount of interest was

expressed on social media. It's no exaggeration to say that many people believe the cycle paths and the rent-a-bike scheme are amongst the most important and beneficial innovations ever undertaken in Skopje."

A crucial and ongoing aim of these combined projects to promote cycling is that of encouraging other towns and cities in Macedonia to adopt similar measures and integrate the coordinated intermodal transport.

PERSISTENT ORGANIC POLLUTANTS

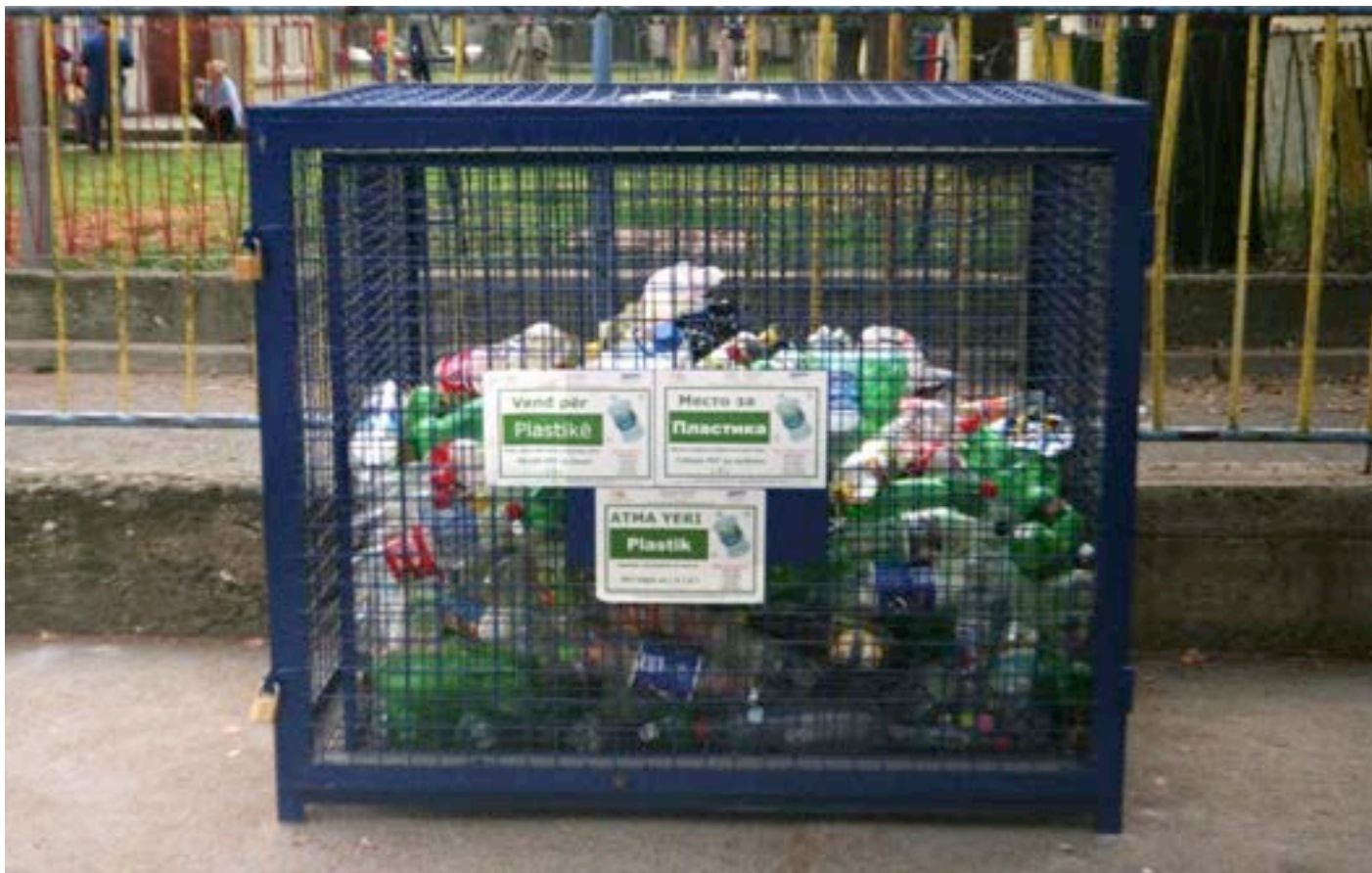
The accumulation of persistent organic pollutants (POPs) in the atmosphere has ruinous effects on human health and the environment. Mainly produced and emitted through the burning of plastic waste and the use of solvents, pesticides and pharmaceuticals, these non-biodegradable organic compounds can cause cancer and reproductive problems as well as severe damage to ecosystems.

Efforts to reduce POPs are being undertaken at international and national level in accordance with the 2001 Stockholm Convention on Persistent Organic Pollutants—a convention ratified by Republic of Macedonia in 2004. The Global Environment Facility (GEF), together with the UN's Industrial Development Organization (UNIDO), has since assisted the country in preparing a National Implementation Plan to reduce POPs. As the Stockholm Convention itself specifically recognizes, however, the most effective means of reducing POPs is through coordinated projects at local level—a task to which GEF's Small Grants Programme is eminently suited.

Plastic waste has long been a major pollutant in this country, largely as a result of low public awareness of the damage caused by dumping and burning plastics, the lack of coordinated systems of collection and insufficient cooperation between citizens' associations and municipal authorities. Approximately 30% of all urban waste is plastic waste, and because communal waste is self-combustible this can lead to fires at dumpsites releasing POPs into the atmosphere.

"Our guiding principle in funding projects to reduce POPs has been—as in all our main areas of activity—to set up models of sustainable practices for replication on a larger scale," explains the National Coordinator of the SGP Zlatko Samardziev, "So as well as supporting awareness-raising activities and practical measures to improve the collection and separation of plastic waste we've also focussed on projects that facilitate cooperation to ensure sustainability and demonstrate effective practices."

The most extensive model projects funded by the SGP have concentrated on the collection by schools of domestic plastic waste in the form of empty bottles for recycling. Schools were selected for their potential to engage and inform large numbers of pupils, parents and teachers, while the collection of bottles was selected because the plastic they are composed of—polyethylene terephthalate (PET)—is in greater demand by recycling facilities than any other thermoplastics. The high value of PET, which can be shredded and cleaned to make other products such as greenhouse-covers, means that recycling can generate income for collectors and transporters, providing a strong incentive to help ensure the sustainability of recycling efforts. In line with the SGP's commitment to supporting participatory projects that strike a balance between the needs of the environment and the need to enhance the lives of local people, the main bottle-collecting projects funded in Macedonia have thus been designed to produce revenue for schools, municipalities and NGOs while also creating jobs for unemployed people from vulnerable communities.



Контејнер за собирање на пластична амбалажа во ОУ Рајко Жинзифов, Скопје, фото Билјана Стевановска

The first of these school bottle-collecting projects was carried out in the Municipality of Chair in Skopje in 2008–9 and demonstrated the effectiveness of SGP’s model approach, providing a basis for major upscaling in later projects. Implemented by the NGO Training for Sustainable Development (ORT) in cooperation with the municipality, this project organized pupils from five local schools into teams of collectors. Some 9,000 children, parents, teachers, municipality employees and other volunteers became involved, with wide media coverage and informational materials distributed in Macedonian, Albanian and Turkish to raise local and national awareness of the harmfulness of POPs and the benefits of recycling. The amount of PET collected by this project is over 3,000 kg per year.

“The first project successfully addressed a major challenge of transportation,” explains Ms. Biljana Stevanovska of ORT, “which was how to reduce transport costs so that collecting the bottles and taking them to recycling facilities could be profitable. The solution we found, with the help of SGP, was to purchase inexpensive devices for crushing the bottles to reduce their volume. These devices can be operated easily by children themselves, using their feet or hands to force the bottles into the smallest possible size.”

In designing the logistical details of the Chair project, the leaders of the initiative were able to draw upon the experience of the SGP’s very first POPs initiative carried out in the country’s north-eastern municipality of Kratovo in 2007–9. That earlier project, implemented by the Sonchev Rid Rajkovac Citizens’ Association and partners, had demonstrated the economic feasibility of collecting PET by improving the infrastructure for collection throughout the region and by facilitating closer cooperation between the civil sector and local authorities. As well as creating a network of 13 bottle-collection points, the Kratovo project had also financed the purchase of a used truck to collect PET from four municipalities and successfully raised public awareness through an informational campaign and the use of attractive promotional materials.



Educative campaign for plastic bottle collection, photo Biljana Stevanovska

Following up on these two PET projects and making use of the lessons learned, in 2012 the SGP funded another schools-based project in Skopje. This project expanded in scope even during the course of its implementation. Originally intended to cover 12 schools in the municipalities of Chair and Centar, the popularity of the activities led to the inclusion of two additional municipalities—Karposh and Aerodrom—and a total of 29 schools. The project made optimum use of promotional and educational materials to engage some 20,000 students in recycling activities and to inform over 30,000 citizens about the negative effects of POPs. These activities included highly popular competitions of sculptures made from plastic bottles—gaining widespread national media coverage of over a thousand sculptures.

“The project really took off and we finally collected and sold almost 6,000 kg per year of plastic waste for recycling,” says Ms. Stevanovska, “The money made from selling the bottles was then shared with the schools to enable them to buy school equipment.”

In addition to replicating the Kratovo and Skopje school projects in Gevgelija and Bogdanci, the SGP has also supported different projects to reduce POPs in Strumica, Prosenikovo and Kuklis in south-east Macedonia and Debar in the west. The project supported by SGP in Debar not only collected bottles from four schools but also established four collection points for plastic bottles used by restaurants and purchased three mopeds with trailers for collecting plastic waste, providing jobs for local unemployed people



Собирен пункт за пластична амбалажа, Дебар, фото Шуип Марку

INTERNATIONAL WATERS

In the focal area of international waters, the Global Environment Facility's Small Grants Programme in the Republic of Macedonia has provided support primarily to projects to help restore the health of the ecosystem of Lake Prespa in the south-west of the country—a lake shared by Macedonia, Greece and Albania.

Lake Prespa is one of the most ancient freshwater lakes in the world, with a unique ecosystem that has evolved over five million years. Today the area of the lake basin situated in the Republic of Macedonia provides a habitat for more than 2,000 species of fish, birds, mammals and plants. The survival of this invaluable biodiversity depends directly on the health of the water, which has suffered greatly over the last 40 years—above all from pollution caused by unsustainable farming practices, including excessive use of fertilizers and pesticides and the dumping of waste.

A number of large-scale projects to restore the health of the lake basin are being undertaken by UNDP in cooperation with the Government, the Global Environment Facility (GEF) and the Swiss Agency for Development and Cooperation (SDC). Meanwhile, GEF's Small Grants Programme has focussed on funding smaller-scale projects on the ground to help local farmers adopt more sustainable agricultural practices and thus reduce the amount of pollutants being released into Prespa's vulnerable ecosystem.

“In Prespa we've been supporting efforts that aim directly at the chief causes of lake pollution,” says SGP's National Coordinator Zlatko Samardziev, “and those are the over-use of chemical fertilizers and pesticides and the dumping of harmful waste, especially the plastic packaging of these pesticides and fertilizers.”

The SGP-funded projects in Prespa not only exemplify the effectiveness of small-scale, low-cost, self-sustaining and inclusive projects in bringing about positive changes in local behaviour and raising awareness in communities; they also provide an excellent example of how SGP can help coordinate and encourage the efforts of local NGOs to complement projects being implemented by UNDP, GEF and other bodies on a larger scale.

Several projects funded by SGP in the Prespa Lake region have shared the same objective of providing local farmers with improved information about the most appropriate times to protect their crops against pests and the most appropriate types of pesticide and fertilizers to employ. “The aim is to ensure that farmers make optimum use of the minimum amount of chemicals,” explains Mrs. Frose Gjorgievska, “so that less pollutants contaminate the soil and wash out into the lake.”

The first of these projects, implemented in 2006–7 by the Union of Associations of United Apple Producers (Obedineti Agroprouizvoditeli) in partnership with the Municipality of Resen, installed 30 pheromone traps in 5 locations as well as 2 automatic agro-meteorological stations covering 800 hectares of apple orchards. Located in protected areas by Lake Prespa that provide vital habitats for birds in this region, this system of traps and stations detects the density of pests and diseases harmful to apple production. The collected data is then sent immediately to farmers, signalling to them the most effective times to use pesticides and indicating when pesticides are not necessary.



Installed pheromone traps во Ресен, photo Frose Gjorgievska

“Fruit farmers in this area have traditionally sprayed according to the calendar, uninformed as to the actual need or lack of need to spray,” explains Mr. Ljupcho Krstevski, “And this is both wasteful and harmful since it results in excessive and often ineffectual use of pesticides. What we’ve done here is to train farmers and other local people to make use of the data captured by pheromone traps as a guide to the best times to spray.” The detection and signalling system installed by the project builds upon and complements similar initiatives being undertaken by UNDP and GEF in Prespa. This synergy has resulted in a total of five automatic agro-me-

teorological stations now operating in the Prespa Lake Basin, with ever-greater efficiency in methods of informing farmers through smartphone apps and social media. The result of these combined efforts has been an annual reduction of between 20–30% in the amount of pesticides used per year, helping to protect the local ecosystem and at the same time saving money for farmers.

Other SGP-backed initiatives to reduce the amount of polluting chemicals used in Prespa have provided soil analysis data to farmers to inform them about the most appropriate—and least appropriate—fertilizers to use in their orchards. Through workshops and informational campaigns, local farmers have additionally been educated in the importance of achieving the most effective and least harmful mix of fertilizers. Again these small-scale efforts to reduce soil contamination and the run-off of pollutants have been able to make use of the larger ongoing project to restore Lake Prespa by collecting data from the laboratory established by GEF and UNDP.

As well as providing farmers with state-of-the-art monitoring data, projects funded by SGP have also focussed on encouraging and training farmers to produce and use organic compost. By helping farmers to make use of biodegradable waste instead of dumping their apples, these initiatives have led to a significant reduction in the use of chemical fertilizers. The recent establishment of a composting facility in Resen by UNDP and GEF will further reinforce the shift towards more sustainable farming practices.



Campaign for hazardous waste management, photo Ljupco Krstevski