



Best LIFE Environment projects 2011



LIFE Environment

Environment



Andrzej Muter

*LIFE Environment "Best of the Best"
coordinator 2011
Wydział ds. Projektów UE,
Departament Ochrony Przyrody,
NFOŚiGW (EU Projects Unit, Nature
Protection Department, Polish
National Fund for Environmental Pro-
tection and Water Management)*



Foreword

This is the eighth time that the LIFE Environment Awards have taken place, this year rewarding the most outstanding LIFE projects that were completed by the end of 2011. The aim of the awards is to shine a light on the most notable of the many worthwhile projects co-funded by the LIFE programme: those that provide a blueprint for others of what well-designed, well-executed, innovative and inclusive projects should look like..

With the valuable input of my fellow National Focal Points from the other Member States, this year for the first time I was responsible for coordinating the process of picking the winners, which followed the by now well-established selection procedure (see page 2). The selection team consisted of 21 evaluators from 15 Member States. The two "Best of the Best" projects selected focused on innovations in construction and eco-friendly power generation respectively; the three "Best" projects targeted agricultural and textile industry waste, as well as a project to recultivate two urban lakes in a Polish city.

I was very proud and pleased to see the latter being recognised, as it is the first project from my country to receive a "Best" LIFE Environment project award. It has also been very pleasing to see the importance of the LIFE programme being widely recognised and celebrated in this, its 20th anniversary year. The LIFE Awards are a continuing demonstration of the value and value-for-money of this carefully targeted funding stream. It proves that LIFE continues to support meaningful projects whose efforts and impact resonate long into the future.



BEST LIFE
ENVIRONMENT
PROJECTS 2011

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Poland: Recultivating urban lakes in Gniezno

An innovative project in the city of Gniezno has transformed the condition of two urban lakes for the better.



Summer bathing at Winiary Lake is now safer thanks to LIFE

Gniezno (population: c. 70 000) is one of the oldest and historically most important cities in Poland – its impressive cathedral hosted the coronations of two of the country's earliest kings in the 11th century, amongst other notable events.

As in many parts of Europe, 'progress' in 20th century Gniezno came at the cost of environmental degradation. "We have three beautiful lakes in Gniezno and over a lot of years, from the beginning of the 20th century, there was agglomeration pressure, so they became polluted. It was 100 years of devastation," says Jadwiga Trzcińska, joint coordinator of the 'Lake recultivation in Gniezno' project.

The municipal authority had been monitoring the condition of the lakes for a number of years and – aware that their condition was deteriorating – resolved to do something about it.

The biggest problem was the presence of phosphorus (P) in the lake sediments, which caused eutrophication, damaging fish stocks and leading to harmful blooms of bluegreen algae. Standard methods of recultivation¹ involve pumping sediment from a lake mechanically. However, as Ms Trzcińska explains, for Gniezno, where the lakes are located in the heart of the city and are shallow, this was seen as "very dangerous", firstly because of the possibility that it could spread the phosphorus throughout the lakes and "spoil the whole ecosystem" and secondly because of its potential impact on the city's cathedral: "It is located on the hill, and the hill is full of water, so if we take the water from the lake we could destroy the hydrological system inside the hill. And the whole town could collapse!"

¹ Recultivation is the process of making raw mineral soils fertile again through bioengineering and refertilisation

Trying something new

The joint coordinator and her colleagues at the municipal authority investigated alternative solutions and proposed a new method of recultivation for the two lakes within their remit – Winiary Lake and Jelonek Lake (the third lake in central Gniezno is privately owned).

Co-funding from the LIFE programme was secured for the innovative approach and the 'Lake recultivation in Gniezno' project set to work in February 2009. The first stage of the project involved assessing the condition of the two lakes and their catchment areas. As a result of this assessment, it was decided to first recultivate a retentive pond connected to Jelonek Lake and a ditch linking the pond to the lake. Reed beds were removed and banks rebuilt to capture run-off before it entered the water course.

The second phase of the project was the most important: deactivating the phosphorous in the bottom sediment. To achieve this, the project used two chemical compounds - PIX 111 and Phoslock – as a coagulant; this enabled a kind of 'phosphorous capture' to take place. Prior to application in the two lakes, it was necessary to analyse the chemical composition of the bottom sediment to determine the correct proportion of coagulant to be used.

Application was outsourced – by public tender – to a Poznan-based company, PROTE (Technologies for our Environment), which used a special boat to inject the coagulant into the bottom of each lake. GPS coordinates taken during prior monitoring provided a means of checking that the coagulant was being applied in the right place and in the right quantity.

The problem of bluegreen algae was addressed by placing bales of material on the sides of the lakes to prevent them regaining phosphorous from run-off.

Fish and plants

Once the coagulant had been added, the project team changed the fish stocks of both lakes. Cyprinidae (carps, bar-



*The presence of white-water crowfoot (*Ranunculus aquatilis*) is a sign of the lakes' improved condition*

bels etc) and Percinidae (perch) were netted and relocated to other lakes – more than half a tonne of fish in total. These species, which feed on zooplankton, were then replaced by pike, at a density of 1 000 individuals per hectare, to improve the overall aquatic ecosystems.

"The next step was to introduce macrophytes," says Ms Trzcińska. Some 7 000 plants in total were introduced to the two lakes. "Those plants help to take phosphorous from the water – they are very important," she explains.

"All the actions were checked and monitored simultaneously, so all the time we knew what was going on." Alongside continuous monitoring, continuous communication with the citizens of Gniezno was important to the success of the project. Initially, "people were very surprised, especially by the boat," recalls Ms Trzcińska. "They were swimming in the lake and everybody was asking 'what's going on?'. We had to translate

The innovative LIFE Environment project in Gniezno has achieved notable improvements in the water quality of both urban lakes (pictured: Jelonek Lake)



and we had to communicate and talk and talk that this is for the good of these lakes and that now we are grateful," she says. Talking also meant asking people not to feed aquatic birds in and around the lakes whilst the recultivation was going on.

LIFE co-funding also enabled the creation of recreational zones around the two lakes where citizens can relax or go for a swim. Although people already swam in the lakes, "before it was dangerous; now it is safe," says joint project coordinator, Piotr Wiśniewski.

Results and replicability

In line with its targets, the LIFE Environment project in Gniezno has achieved notable improvements in the quality of water in both lakes: total phosphorous content in the water decreased to 0.047 mg P/dm³ in Winiary Lake and 0.113 mg P/dm³ in Jelonek Lake (the goal was 0.1-0.2 mg P/dm³); Secchi's disc visibility, a measure of water clarity, increased to 0.9 m in Jelonek Lake and 2.9 m in Winiary Lake (target: 0.6-1.0 m); whilst levels of chlorophyll were reduced to 11.4 ppm in Winiary Lake and 19.8 ppm in Jelonek Lake in 2011 (one year after the end of the project - the planned value was 15 ppm). Furthermore, bluegreen algae have not been observed in either lake since the deactivation of the bottom sediments.

"We cannot compare the two lakes because they have a different history, different ecosystems: Jelonek Lake was polluted by factories but Winiary Lake didn't have any connections to the factories. Those lakes are different, but the results of the project are the same in each," notes Ms Trzcińska.

For her, one of the most memorable outcomes of the project occurred one fine spring day during the first year of implementation: "It was a miracle - one day the whole of Jelonek Lake was covered in a rare plant - white water-crowfoot (*Ranunculus aquatilis*). We were very surprised and very happy."

Bluegreen algae has not been observed in either lake since the deactivation of the bottom sediments (pictured: Winiary Lake)



Photo: Justin Toland



Photo: Justin Toland

Project coordinators Jadwiga Trzcińska and Piotr Wiśniewski in front of Winiary Lake

The municipal authority continues to monitor water quality after-LIFE: "Two times a year we check if the parameters improve or decline - and they are stable," notes Ms Trzcińska. "If we had not done the project and had such high temperatures outside (30 degrees Celsius on the day of the interview), both lakes would be covered by dead fish because of eutrophication" she says.

LIFE funding was crucial to the city being able to carry out the groundbreaking project actions. "Without the money from the EU, from the LIFE+ programme we couldn't do it - it was the only chance to implement this method. LIFE+ saved our lakes, because for us, spending so much money would be impossible," highlights Ms Trzcińska.

Gniezno is not the only beneficiary of this project however. The recultivation methodology pioneered by the city and disseminated through various events during the course of the project, including a conference attended by more than 100 local government representatives, has since been applied by two municipalities elsewhere in Poland. It has also been the recipient of several awards, including the Polish government's "recultivation of the year", as well as LIFE Environment "Best" project status. "We are very proud of this method," says Ms Trzcińska.

Project number: LIFE07 ENV/PL/000605

Title: Lake recultivation in Gniezno - Recultivation of Jelonek and Winiary lakes in Gniezno by inactivation of phosphorus in bottom sediments

Beneficiary: Town of Gniezno

Contact: Piotr Wiśniewski

Email: piotrwisniewski@gniezno.eu

Website: http://gniezno.eu/strona32wqf435ge/index.php?option=com_content&task=view&id=2587

Period: 01-Feb-2009 to 30-Nov-2010

Total budget: €432 000

LIFE contribution: €216 000

