

## **Slovakia: Urbanization and wetland restoration: Conflict or Concord? (#367)**

The national reserve – the wetland Sur is deteriorating. Action has been taken by NGOs to initiate a project to restore water conditions in the reserve, including the interplay between water and land. Despite the projects importance, it failed to be implemented due to numerous conflicts among key stakeholders. This case illustrates the danger of EU initiatives being implemented without an active public involvement since this creates risks of low acceptance of local communities and land owners.

### **Description**

The national nature reserve Sur (NNR Sur) is located in Danubian Lowland in south Slovakia. The area was designated as a nature reserve in 1952, with the total area 1,136 ha. The site represents one of the largest areas of natural alder swamp wood (fen) in central Europe with rich variety of rare and threatened habitats, fauna and flora species.

For its importance, the area was designated as internationally important wetland under the Ramsar Convention in 1990, as a first locality from Slovakia. Meadows and seasonal floods suited its biodiversity richness. It also served as natural flood protection of small communities due to a high water absorption capacity of wetland.

The natural values of the area have been deteriorated due to many negative influences during several last decades. The most important from all negative factors was the complex drainage scheme; the new canal diverted all the creeks from the Small Carpathian Hills out of the Sur. The driving force to drain out the area was to increase arable land. However, farmers did not find this area attractive for agricultural purposes, as seasonal floods hampered their agricultural yields. Thus, local community proposed to expand urban settlements up to the edge of the nature protection zone. This resulted in critical threats to the nature reserve Sur: disturbance (noise and air pollution from local settlements), illegal dumping of solid waste, and gradual loss of protected animals that used the area as nesting place, and changes in hydrological regime in the area caused a gradual dry-up of forests.

There are, however, several disturbing factors for newly established houses: a vicinity of wetland represents a high occurrence of mosquitoes, spring and summer rains make urbanized area vulnerable to floods.

### **Action taken**

In spite of the fact that the NNR Sur is a national protected area with the highest protection regime, low attention has been paid to the managerial, organizational and financial support from the official government authorities. No strategic documentation existed for managing the reserve. Voluntary organized actions of NGOs prevailed over systemic conservation from the side of relevant governmental organizations. A local NGO Association of Nature Protection and Industry (APOP) initiated the project to restore water conditions in the reserve. Technical measures were proposed to supply the area with water. The environmental impact assessment (EIA) Study was developed to assess alternatives for intake and release of water. Impacts on individual compartments of the environment were quantified, including impacts on fauna, flora and biotopes.

An important part of the study deals with the impact on ground water and land. The results showed that the implementation of the project will have a positive impact on biotopes in the Sur. The EIA study also recommended to establish a sound monitoring system of ground water levels to serve better tools for decision makers regarding expansion of urbanized areas.

## **Conflicts in the area**

Although the wetland posed a rich habitat for wild animals, water birds and fish for local inhabitants, people saw it as a barrier to community development. Public information was limited to the fact that the NNR Sur is a protected area with several bans and restrictions of its utilization. This was obvious during the public hearing (during the EIA process) – local people did not know that the area was designated to a list of national nature reserve, Ramsar site or proposed area under UNESCO World Heritage Site.

It is an obvious failure of the Government regarding public awareness. In addition, most of the local people do not accept the importance of the reserve and do not understand the need for its protection.

In addition, the Municipal Council interest was to use the area for urban settlements that would expand current village and increase income to the municipal budget. Hand in hand with a weak management and enforcement of the environmental legislation, a massive campaign against the revitalization project resulted in cut off the project. The project turned into political turmoil between Ministry of Environment and European Commission program (LIFE program).

## **Results of the project**

Although the EIA study stated that the construction of the water management facilities would have positive impact on the NNR Sur, the Ministry of Environment did not recommend the implementation of revitalization activities. That resulted in the fact that the project endorsed by the EU (under LIFE program) was refused by the national government. In addition, the Ministry was heavily lobbied to secure private investment activities. The NNR Sur created a barrier to urban development plans. The Ministry stated that prior to any water regime adjustment, a functional monitoring system of ground and surface waters should be implemented in order to ensure that “future economic development of adjacent communities will not be hampered”. The only environmentally positive result is that an education trail was established in the NNR Sur. It comprises 7 educational panels at the 5 km tourist route. Unaccepted result is that NNR Sur and other wetlands in Slovakia are now under a careful eye of ecological NGOs. These are afraid that the same fate could happen in other areas as rapid economic growth in Slovakia brings more competition over fragile environmental areas.

## **Lessons learned and importance of the case for IWRM**

- According to EU legislation, EU member states are requested to establish the NATURA 2000 sites. However, these are designated without an active public involvement that creates risks of low acceptance of local communities and land owners.
- Although the EU LIFE project addressed the “nature protection” aspects, the water issues were a key to the solution. The integrated approach was not applied thus, nature problems were not resolved.
- Land use planning should be a significant component of implementing IWRM plan.
- Planning process must take into account not only development options within the water sector itself but also scenarios for development and relations between other sectors.
- Consequences of water management decisions in other economic sectors should be an integral part of the analyses made during the planning process.

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## FULL DESCRIPTION

History of the Sur National Nature Reserve The word “sur” is defined in the Slovak dictionary as a humid swampy meadow, but this is not accurate. It is more than 10-thousand year since “surs” were created, however, not as meadows. The base is a wide terrain depression that extends along the east slopes of the Small Carpathian Hills. The Sur is of tectonic origin that resulted in the creation of a huge “bath” gradually filled by water. The polyhistorian Matej Bel has called this space the “Bratislava Lake”.

The Sur occupied the area from Bratislava to Modra and Bernolakovo until the end of the 19th century. It created a natural protection for Svaty Jur in the period of the Turkish invasion due to its impermeability. Although the wetland posed a rich habitat for wild animals, water birds and fish for local inhabitants, people saw it as a barrier to agricultural development.

Efforts to obtain new agricultural land increased following the 18th century. In 1864, wine-makers cut down a broad swath of the sur`s forest, however, without any agricultural benefit. The acidic land did not suit vineyards. In 1892, the Water Club Sur developed a project to divert water out of the Sur. In 1896 a drainage canal was constructed. The result was catastrophic. The land obtained was acidic, the sur`s vegetation dried up and there was a risk of fires. Over time, the canal was not maintained and the water table rose to its original level.

For a long time, natural scientists have pointed out the extraordinary value of the Sur due to the existence of a rich fauna and flora.

In 1929, the core of the alder forest was designated as a protected area of 18ha. However, due to the government decision to dry out the land in Sur, most of forest was liquidated. During 1941-43, the Sur canal was constructed by political prisoners from a local army camp. Some ruins of buildings still remain at the site of the current biological station.

The new canal diverted all the creeks from the Small Carpathian Hills out of the Sur. The Sur almost dried up. Drainage works contributed to the large fires recorded in 1947 and 1962. The latter on threatened Bratislava for almost two months. Further deathblows to the sur came from farmers who intensively farmed the land.

There were also efforts to a establish swimming pool, equestrian club, and a golf course. In spite of these negative events, the activities of the scientists continued. The Sur was designated as a natural reserve in 1952. Later, several documents were produced dealing with management measures for the reserve. In Annex 3 of the Act 287/1994 on Nature and Landscape Protection, this area was included in the List of National Nature Reserves.

Several generations of environmentalists tried to solve the problem of lack of water in the reserve. Many of these activities were not implemented due to a lack of financial sources or low level of support from the competent authorities.



*Part of the wetland*

However, the most substantial problem was the fact that revitalization of the reserve would affect also the land in a vicinity of the reserve that was now used for agriculture. At the time of the designation of Sur as a natural reserve, the area was meadow and seasonal floods suited its biodiversity richness. Later, agricultural use limited the positive affects of flooding.

Despite historical attempts to ignore the natural values of “surs”, the Sur National Nature Reserve (NNR) was included into the List of Internationally Significant Wetlands under the Ramsar Convention in 1990. The area is also protected under NATURA 2000. The main mission of NATURA 2000 is to ensure the protection of the scarcest and most threatened species of wild fauna, flora and natural biotopes in EU countries. The current area is 991 ha including protected zones.

#### **Natural values of Sur: fauna**

Due to the biodiversity of the area, the fauna is rich with animal species as well. Secluded places in the alder woods create optimal conditions for the life of water animals. The area is also rich with water invertebrates, such as threatened water snails (*Valvata pulchella*, *Anisus spirorbis*). Unfortunately, *Anisus voriculus* became extinct in the Sur due to the dewatering of the locality. Especially endangered is the colorful medicinal leech (*Hirudo medicinalis*) that was frequently used in folk healing.

The alder forest is an important biotope for the reproduction of amphibian life, particularly spring frogs (*Rana dalmatina*, *Rana arvalis*) and smooth newt (*Triturus vulgaris*). Water is essential for them. When the water level is above the terrain, several species of birds might nest there. A large amount of wild ducks (*Anas platyrhynchos*) can be found here. Also, the area is the home of our biggest black woodpecker (*Dryocopus martius*) and other birds, such as *Picus viridis*, *Picus canus*, *Dendrocopos major*, *Dendrocopos medius*, *Jynx torquilla*.

The thick alder forest is a necessary nesting place in for some predators such as the common buzzard (*Buteo buteo*), honey buzzard (*Pernis apivorus*), goshawk (*Accipiter gentiles*), and sparrow hawk (*Accipiter nisus*). A black stork (*Ciconia nigra*) does not nest here, although he gathers food in the reserve. His monumental nest still remains in the middle of the forest.

There are numerous wild animals, martens and vixens are commonly found. Also, deer descend from the Small Carpathian Hills. The old moulder trees are a favorite hiding place for chiropterans *Nyctalus noctula*, *Pipistrellus pipistrellus*, and *Myotis daubentoni*. A rarity is a Nordic vole (*Microtus oeanomus*).

A local pond and gravel ponds are important biotopes for water animals such as the frog species *Rana ridibunda* and *Rana dalmatina*. The water is essential for reproduction of the *Hyla arborea* and *Bufo*

*bufo*. There is an abundance of reptiles *Natrix natrix*, *Natrix tessellata*. Zoologists have found up to 66 species of water birds, of which 16 nest directly in the reed bush surrounding the water pond.

There are protected birds marsh harrier (*Circus aeruginosus*), mute swan (*Cygnus olor*), little bittern (*Ixobrychus minutus*), herons (*Ardea cinerea*), and *Egretta alba*. Great bittern (*Botaurus stellaris*) was found again after a long time absence in 2002. The thermophilous oakhornbeam forest of the Panonian grove is preferred by insects. There are numerous species of hymenopterans that directly relay on old solitary trees.

Also, beetles occupy old decaying trees. Protected species include *Lucanus cervus*, *Cerambyx cerdo*, and *Limoniscus violaceus*. In the bush, the green mantis (*Mantis religiosa*) can be found.

Tick bushes are also a home for warblers and nightingales. The moist meadows are an appropriate place for *Crex crex*. The edge of the forest is an “El dorado” for the butterflies *Lycaena dispar*, *Polyommatus eroides*, and *Zerynthia polyxena*. Very specific biotopes in the NNR are puddles in clay soils. There are endangered crustacean *Anostraca*, *Conchostraca*, and *Notostraca*. A species *Triops cancriformis* is similar to the extinct primal trilobites.

### **Natural values of Sur: flora**

There are more than 120 species of plants included in the Red List of dangerous species; more than 50 species are recognized as scarce, vulnerable or threatened. Some types of biotopes are of national and European importance. These are mainly alder swamp woods. The uniqueness is also the fact that in the area of the Sur NNR, there are two different co-systems: alder forest and its wet meadows and swamp biotopes, and the Panonian grove that represents the last remnant of oak-wood prairie of the Danubian Lowland.

A substantial part of the NNR is covered by alder forest. The main wood is black alder (*Alnus glutinosa*). Other woods are common silver birch (*Betula pendula*), willow (*Salix fragilis*), common oak (*Quercus robur*), white willow (*Salix alba*), and ash (*Fraxinus angustifolia subs. danubialis*).

The west part of the NNR – the so-called Panonian grove represents an oak-hornbeam-ash forest with common oak (*Quercus robur*), hornbeam (*Carpinus betulus*), elm (*Ulmus minor*), ash (*Fraxinus excelsior*). It is also a place of the plentiful occurrence of maple (*Acer campestre*), and blackthorn (*Prunus spinosa*).

There are also places with a high salt content. Here, some threatened and scarce plants can be found, such as the wormwood species (*Artemisia santonicum subsp. patens*, and the other species *Bupleurum tenuissimum*, *Eryngium planum*), sea plantain (*Plantago maritime*) and aster (*Tripolium pannonicum*).

Man has created conditions for the spread of many invasive species, such as *Solidago gigantean*, *Solidago canadensis*, and *Aster novi-belgii agg.* These plants suppress and replace the original species.

### **The EU LIFE project: Restoration of the Sure National Nature Reserve**

The current critical status of the Sur NNR is a result of long-term anthropogenic impact. Despite the fact that the locality is designated a national nature reserve, the protection and management is not adequate due to low public awareness and insufficient financial and technical maintenance.

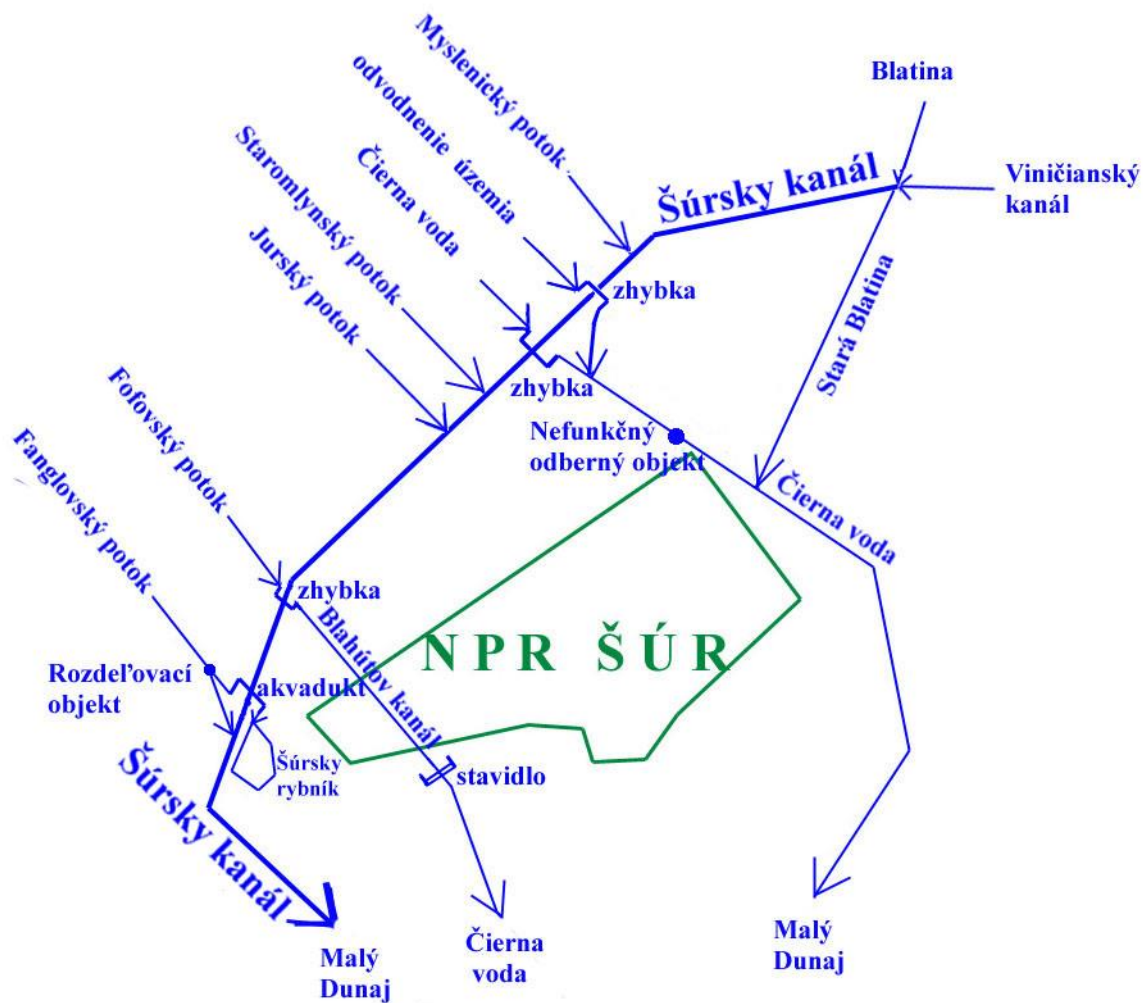
Support came from the European Union under the environmental program LIFE. In 2003, the Association of Industry and Nature Protection (APOP) that groups together 23 outstanding companies in Bratislava received a grant to implement the project “Revitalization of Water Conditions in NNR Sur”.

APOP succeeded in attracting the following partners: the Slovak Water Management Enterprise, Slovak Land Fund, Administration of Nature Protection Area Male Karpaty, and the municipality of Svaty Jur. The partners invested 3.8 mill. Sk (Slovak crowns; about 130.000 EUR) from their own sources, to add to the 11.4 mill. Sk (about 380.000 EUR) grant from the LIFE Nature 2003 program.

The main objective of the project is to restore the water regime in the reserve and to achieve the appropriate status of the scarce wetland communities of alder swamp forests. The project period is 2003 – 2007.

The destroyed and obsolete water facilities were reconstructed. The Fanglovsy creek supports the intake of water to the reserve. The Fofovsky creek passes the reserve. This creek was cleaned up and, an embankment was constructed at its end in order to trap the water in the reserve. It was also important to construct outlets on the Chlebnicky canal and to increase the dyke on Cierna Voda stream to avoid the drying up of turf-land in the reserve. In addition, the former “stukovod” (pike-canal) was reconstructed in order to hold the water in the meadows. At the same time, the facility allows the release of water in the high level period thus avoiding the deterioration of the surrounding land.

The technical design and layouts of water management facilities was developed by the Slovak Water Management Enterprise. The technical study the Restoration of the water regime in the Sur NNR was prepared in 2003 – 2004. The technical measures are an essential factor to preserve animal species and vegetation that are bound to the wetlands.



### **Rescue Program**

The Rescue program is the documentation that comprehensively analyses the stress factors and defines the causes of the threats to the wetland. It is the result of a number of studies by research and expert organizations.

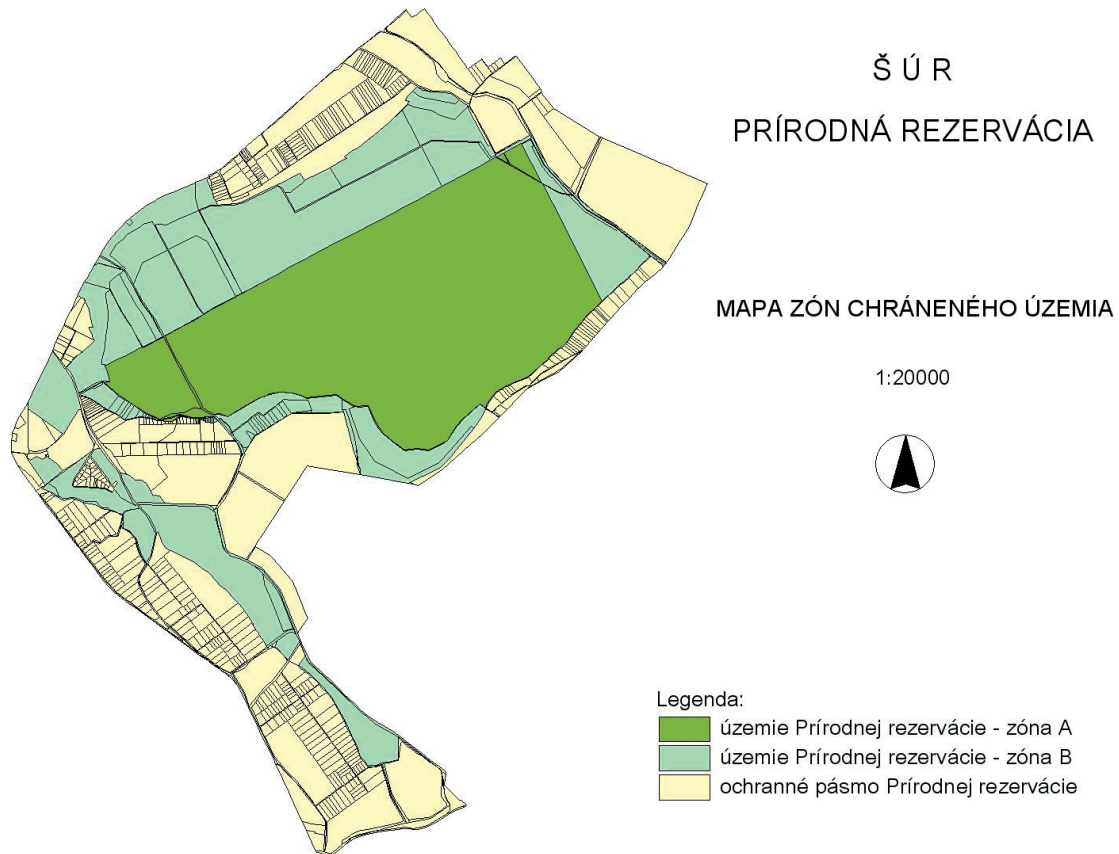
It emphasizes preservation principles. An important element of the document is a set of procedures and responsibilities for implementing the rescue measures. There are legislative and institutional measures described in the document.

Individual measures are the tasks which are important for the management of the area defined for the period 2005 – 2009. The document was endorsed by the Regional Environmental Office in January 2004.

### **Conservation Project**

The Conservation Project is the documentation that serves as the background for the designation of the protected area. There is a proposal for zoning of the area as follows: zone A with the highest 5th protection level (alder forest) and zone B with the 4th protection regime (meadows and Panonian grove).

Also, a buffer zone with the 3rd level of protection is proposed. In addition, the document lists the details on the protection measures in individual levels. The document was submitted to the Regional Environmental Office in June 2006.



### ***Environmental Impact Assessment Study***

The EIA Study was developed by experts from the fields of hydrology, geomorphology, botany, zoology, and environmental sciences.

Alternatives for intake and release of water were assessed. Impacts on individual compartments of the environment were quantified, including impacts on fauna, flora and biotopes. An important part of the study deals with the impact on ground water and land. The results showed that the implementation of the project will have a positive impact on biotopes in the Sur NNR. At the same time, the study resulted in identifying the necessary measures in order to avoid threatening the land in the vicinity of the Sur NNR. The most important measure is the installation of a monitoring system that will function as a basic tool for the operation of the water facilities.

### ***Geodetic report***

In 2004, the measurements of altitudes and location of water facilities were conducted. The report also includes identification of land properties. Total area of the reserve was measured at 528 ha (without protection zones) having more than 410 owners. The report also includes digital ortophotomaps.



### ***Information and education materials***

APOP has published postcards with the theme of the alder forest. Promotional materials, such as leaflets, stickers and posters were disseminated to all information centers in the surrounding municipalities, schools and to the general public. Also, several seminars were organized for local residents and representatives of municipalities. Frequent articles in local newspapers also ensure continuing publicity for the project. The web page [www.apop.sk/life](http://www.apop.sk/life) was regularly updated in order to provide on-time information for the public.

### ***Education Trail***

The establishment of the Education Trail is a very attractive form of education and cultural use of the protected area. The Sur NNR has been visited for a long time by botanists and tourists. The education trail contributes to the regulated entrance of visitors into the area. The main purpose is to show the natural treasures of the Sur. The trail starts at the north side of the reserve (from Svaty Jur), passes the pond, the Biological station, Panonian grove and ends in Cierna Voda village. One attraction of panels is that they show important historic milestones (documented by historic photographs from a local archive) and the current development of the area. Each panel is focused on a specific theme, such as Life in Pond, How alders breathe, Old oak remembers, Salt Soil and its protected species.



*Three mayors of local municipalities launching the Education Trail in NNR Sur*

### **Results of the LIFE project**

Although several activities were successfully completed, including the elaboration of the Rescue and Management Plan, installation of an exemplary education trail in the reserve, and the publication of high quality dissemination products, the main objective of the project – i.e. the restoration of the water regime in the Sur Fen nature reserve - was not achieved as the reconstruction and construction of water management facilities were not completed within the project time.

Unfortunately, without the completion of the foreseen restoration measures, the Sur Fen Nature 2000 site will continue to suffer from lack of water, mainly in the late summer period. The situation is made worse by the fact that massive urbanization was endorsed by the Ministry of Environment and other relevant decision-making authorities. In the near future, 4 000 new houses will be built in the vicinity of the site. It is planned that by 2010, the 1 700 inhabitants of the southern part of the reserve will increase to as many as 20 000 inhabitants. Consequently substantial effects on the immediate adjacent Nature 2000 site will be expected.

However, despite this unfortunate failure, the threats regarding the inappropriate use of non-forest land in the Nature 2000 site and the lack of awareness of the public were mitigated. The proposed zoning of the Sur Fen National Nature Reserve and identification of conservation measures in each protected zone and buffer zones provides a solid basis for transparent determination of competencies of public institutions and private landowners as well.

Nonetheless, the overall situation regarding the proper ecological status of Sur Fen remains critical and the intensive co-operation of all stakeholders is required for the necessary improvement of this site.

### **Lessons learnt**

In spite of the fact that the NNR Sur belongs to one of the most famous wetlands in Slovakia, the local community has insufficient information on the site itself and very little knowledge about the history of the locality. Most inhabitants resettled from all over Slovakia with no background about the specific conditions in the wetland area. Rural scattered settlements have aggressively expanded by construction companies to build luxury houses for a “new generation of business people”.

Environmental awareness raising and low environmental law enforcement are two main factors contributing to the failure of the project. There has been a strong believe that the restoration of the water facilities in the wetland area will bring more mosquitoes, higher probability of floods and less market value of the land. Local people saw environmental legal restrictions as a barrier to community development. It was quickly forgotten that the newly erected houses were built in the direct vicinity of the wetland that did not have any buffer zone.

The public municipal authority played significant role to cut off the restoration project with an excuse to be on the side of the local people to protect the private property of its citizens. It was a gesture that ensured a good election chances for the political representatives of the local municipality. In addition, more houses in the area meant more local taxes and more work opportunities and more business.

The management of the NNR Sur for the last 50 years relied only on enthusiastic activists. There was no systematic environmental management and coordination between sectors of nature protection, water, land/spatial planning. Surprisingly, the Ministry of Environment has decided to put aside the environmental protection in favor of urban development. The EIA study was only a formal exercise. The statement of the Ministry of Environment concluded that prior to any water regime adjustment, a functional monitoring system of ground and surface waters should be implemented in order to ensure that “future economic development of adjacent communities will not be hampered”. The paradox is that according to a current legislation, it is the Environmental Ministry that is responsible for a sound monitoring system of water resources. The Ministry avoided to take a responsibility for such “functional monitoring system”, thus, it is obvious that any future restoration plans will be almost impossible. The Ministry is faced with the problem of non-compliance with the EU water and nature protection legislations.

The generic symptom of the Slovak governmental administration is that different regulatory regimes are applied in the meantime and are in a favor of short-term solutions that are politically attractive. This project was also an example of such situation: the same ministry is the supervising body for the water management, land use planning and nature protection management. However, the responsibilities are delegated at different “powers” to local (urban plans), basin (river basin management plans) and regional (nature protection zoning plans) levels. The result is that in spite of the fact that each administrative unit employs well and highly educated staff, it is no guarantee to bring qualified decision with a long term sustainability.

Although the EU LIFE project addressed the “nature protection” aspects, the water issues were a key to the solution. The integrated approach was not applied thus, nature problems were not resolved. There are several plans and strategic documents impacting the wetland conditions – these include urban development plan, river basin management plan, land use plan, nature protection plan, however, there is lack coordination, such as:

- Land use planning should be a significant component of implementing river basin management plan.
- Planning process must take into account not only development options within the water sector itself but also scenarios for development and relations between other sectors.
- Consequences of water management decisions in other economic sectors should be an integral part of the analyses made during the planning process.

The only environmentally positive result is that an education trail was established in the NNR Sur. It comprises 7 educational panels at the 5 km tourist route. One of the unexpected results is that those local people protecting against restoration of the wetland are now protesting against enormous urbanization without appropriate infrastructure, such as a local transport, lack of sport yards, lack of children facilities, no shops and cultural facilities.