



INTERNATIONAL PROJECT JUNE 2011
„MUREȘ RIVER GREENWAY CONCEPT „
TÂRGU MUREȘ, ROMÂNIA



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Abstract

This Booklet represents the results of the IMLA Master Students and their International Project at Târgu Mures, Romania. The whole project work took place directly on site from 4th until 24th of June 2011. The IMLA students were a diverse bunch of young professionals (Architecture and Landscape Architecture) from Bangladesh, China, Germany, India, Nigeria, Romania and Saudi Arabia. This interdisciplinary and international group created unique concepts for creating rehabilitation proposals of Mures River banks and the river valley in correlation with the urban-rural areas from Târgu Mures city to Sângeorgiu de Mures. One result is a comprehensive joint analysis of all students which illustrates the weakness and opportunities of the site. It’s a basic for the three created concepts and hopefully helps to see and understand that this site is more than a no man land. The concepts are dealing on the one hand with green way concepts and on the other and they also provide an alternative landuse of this river valley. Moreover the students worked out ideas of funding. It was a complex task of dealing with ecology, sociology and economy. The imla course hopes that this unique site, north of Târgu Mures won't end up as a new housing area of real estate industries. They are convinced that there is an opportunity to develop a “new green head” of Târgu Mures which provides people an identical place of recreation, nature, tourism, income and life quality.

1. INTRODUCTION

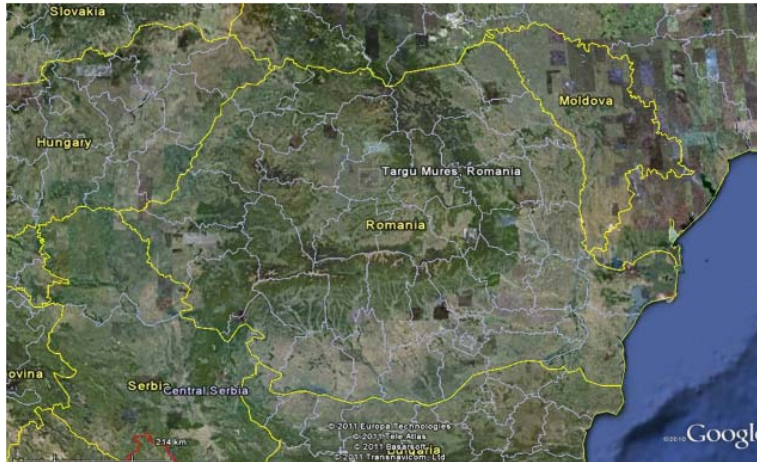


figure 01: location of Târgu Mureș in center of Romania [google map]



figure 02: location of project site next to Târgu Mureș [google map]



figure 03: aerial image of proposed project area [slight changes were possible]

1.1 Site description

Târgu Mureș (pop. 145,000) is the county seat of Mureș County in north-central Romania. It is the 16th largest city in Romania. Geographically, Târgu Mureș is distant 346 km from Bucharest, 515 km from Budapest and is located in the Mureș River valley. The city spreads out from Fortress Church in the center of the town, built in the 14th century, to form an area of 49.3 square kilometers. The city is located at the centre of the historical region of Transylvania. It lies at the junction of three geographical regions of Transylvania, the Transylvanian Plain, Mureș Valley and Niraj Valley and is at 330 meters above sea level. The city extends onto both banks of the Mureș river, however, the downtown area and the greater part of the districts are located on the left bank. The Cornesti-plateau is the city's highest point at 465m above sea level. The city has a substantial ethnic Hungarian minority, some of whom identify as Székelys. Since 2003 some Székely organizations have been campaigning for the city to become the center of an autonomous region again.

1.2 Definition of problem

The stretch of the Mureș River running between Târgu Mureș “Weekend” urban recreation area and the community of Marosszentgyörgy / Sângeorgiu de Mureș on the city's northern perimeter is rich in potential as an urban greenway. However, in its current state, it is completely lacking in any ecological, aesthetic or functional continuity. No infrastructure is provided for recreation or for pedestrian or bicycle transit. The landscape has no cohesion or visual connection to the river or to the surrounding areas. There is a need to develop a completely new image for the area, appropriate proposals for regulatory modifications and designs for new facilities in target areas on the site, determined in cooperation with local officials. Proposals should be designed with the goal of incorporation into Marosszentgyörgy's master plan, which is currently in process.

1.3 Project Task

To create a greenway concept along the Mureș River between the weekend holiday area and Sângeorgiu de Mureș. Students should seek to transform what is currently a no-man's land into a recreational zone welcoming for cyclists, pedestrians and others. The planning process will devote special attention to all elements of the greenway, including its approaches from all directions, designated community areas, relation to the water, and any as-yet-undiscovered potential. Planning should be done with consideration to the image and culture of the local community as well as to the character of the local landscape. The concept should provide a completely new image for the area, appropriate proposals for regulatory modifications and designs for new facilities in target areas on the site, which will be determined at the beginning of the workshop in cooperation with local officials. Proposals should be designed with the goal of incorporation into Sângeorgiu de Mureș and Târgu Mureș master plans, which are currently in process.

Expected content of design proposals:

Details of the assignment, including the number of drawings, scale, etc. will be discussed individually in on-site consultations with instructors as well as with local government officials. In general, the concept is expected to contain:

- * General principle [text]
- * Goals [text]
- * Concept plan [images]

2. JOINT ANALYSIS

Sketches, schemas, cross sections and visualization on an adequate scale will illustrate the design proposals in conception, details and materials. The design proposals will address the following issues:

- * more usable for children, elderly, etc.
- * Determination of the site's ,gates to give visitors a sense of arriving and leaving a well
- * defined place, as well as determining those important intersections and areas of the site that should be significantly enhanced with new design elements.
- * Development of a vision for the site's spatial organization as well as its amenities and facilities and overall image.
- * Development of proposal for furnishings, other objects (lighting, etc)
- * Creation of a concept for the site's signage and means of communicating with visitors
- * Suggestions for flexible/changeable installations or elements for seasonal or occasional events or festivals

1.4 Project Schedule

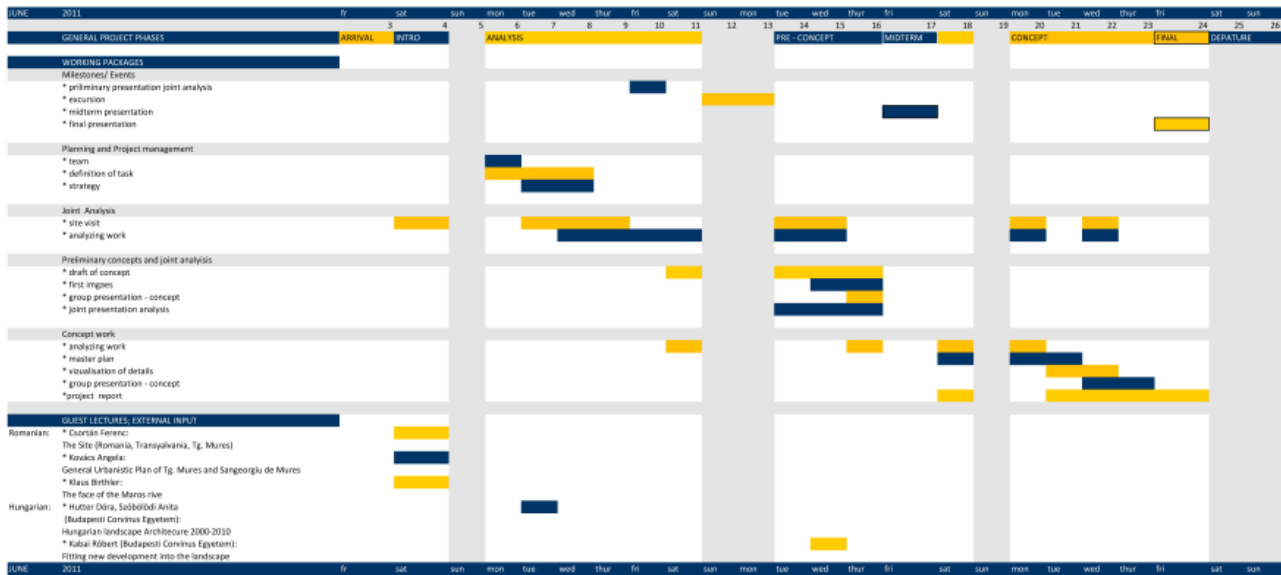


figure 04: overview time schedule

During the whole project, students were directly located in Târgu Mures. They had an own working studio at the weekend area of the city – next to the project site. The first week was an organized studio room by the city. And during the last two weeks students were working in another studio room, organized by the head gardener of the weekend area, Mr. Levente Mathiassy. Students got a first impression of the area on 4 th of June with an introduction by the city and other involved persons. During planning and project management students organized themselves in groups, discussed with the supervisors the task and decided to make a joint analysis to save time and getting a holistic impression of the site. Each group created their own time schedules and strategies. On 10 th of June they had to present the preliminary analysis results and had first discussion about their group concepts. Afterwards they started developing ideas, finished the joint analysis and presented this at the midterm presentation in front of the municipality. With the feedback of them students started developing the master plan and concept visualization. These were finally a public presentation on 24 th of June at the municipality hall. The project was accompanied by guest lecturers from Corvinus University Budapest. Moreover there was a chance to get to know more about the region by taking advantage of Mr. Albert Fekete who organized a two day excursion. All in all a very comprehensive project with a high work load on the one hand and a high experiencing factor on the other hand.

2. 1. Environmental Aspects

This project deals with the Mures river and its valley. Therefore we have a look on hydrological aspects and the existing biotope structures and soil conditions, which are specific for the area. Moreover there are information about the current protection status - by law and visual by analyzing on site.

2.1.1 Hydrology

_Mures River bed

General information: The Mures has a Length of 766 km. It's spring is in the East-Carpathians (850 m ü. M.) and the river ends in Theiß in Szeged(75 m ü. M.). This means there is a height difference of 775 m. The catchment area in Romania is 27.832 km² and most water was measured in Arad with 177 m³/s.

_Flood and Groundwater level

The main areas exposed to flooding, due to the emergence of brooks and rivers from the river beds, are between the communes: Stânceni-Ruîi Munîi; Petelea-Sântana de Mures; Sânpaul-Iernut; Iernut-Bogata; Cheîani. The Flooding frequency is yearly. The last serious floods were in 1932 / 1970 / 1975.

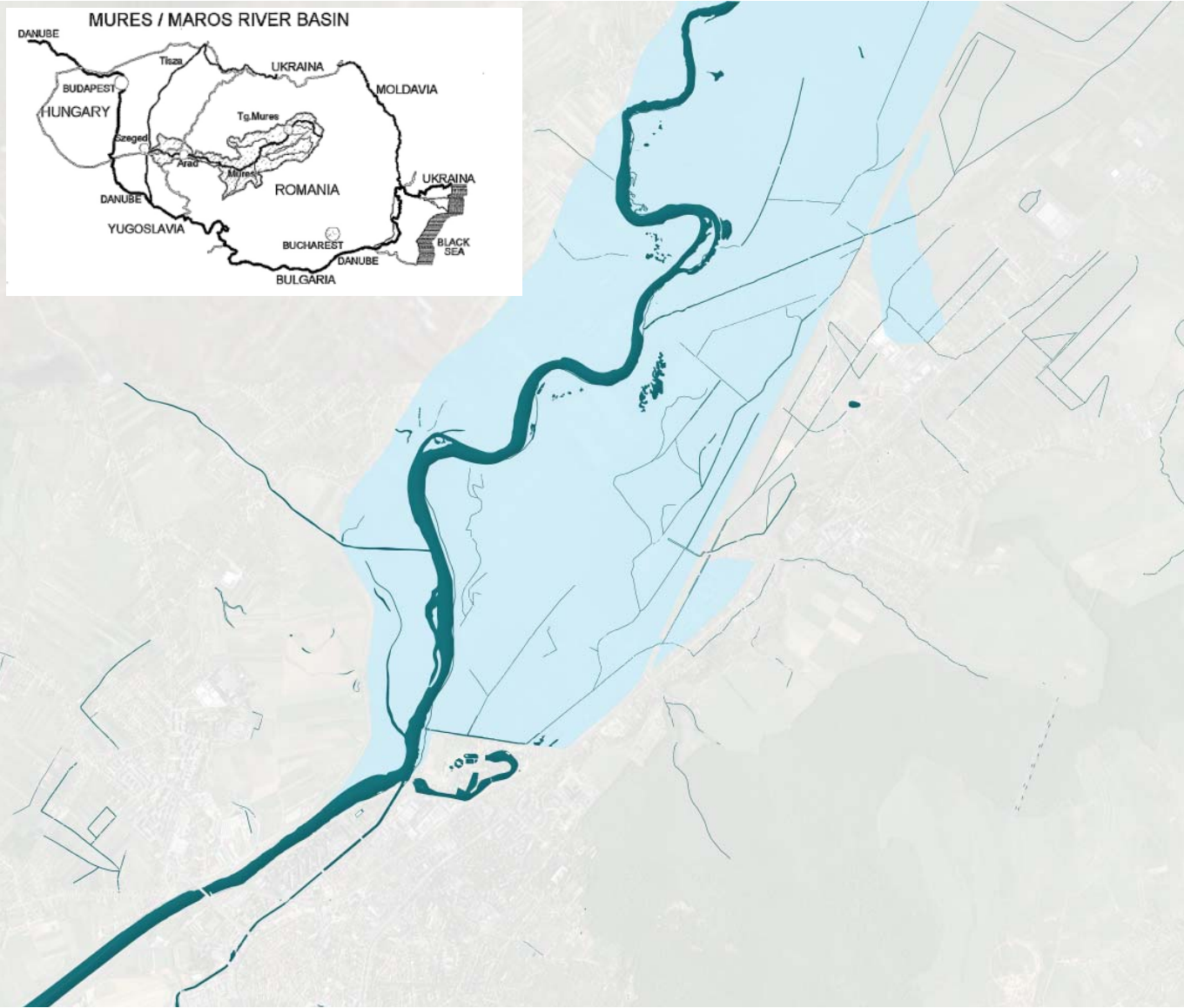


figure 05: Mures river basin - catchment area

figure 06: potential flooding area - Târgu Mures and S

2. JOINT ANALYSIS

_Water Pollution

River:

Within the period 1986 - 1995, the majority of the cases of accidental pollution occurred in industry and agriculture. Five accidental pollution cases occurred it the downstream section of the river (Hungarian part) the past ten years. The pollutants, which caused serious pollution waves, were nitrate, ammonium, oil,cyanide and heavy metals. Since 1990, the number of accidental pollution cases has decreased in Romania due to the shut-downs of the great ago-zoo technical bases. The repopulating of a few farms created a few wastewater problems since 1994. Most of the accidental pollution cases are still caused by chemical industries, mining and metallurgical industries. (Local Agenda 21, plan for sustainable development of Mures County, Târgu Mures)
Result:

Nowadays mainly agriculture and industry pollutes the river, but the pollution continuously decreases since the last decade. Site visits show that there is a potential in pollution by garbage dumping.

Groundwater:

Main problems are related to intensive contamination of aquifers with organic substances, ammonia and, especially, bacteria. The most intensive cases of multiple quality depreciation were identified in the rural village area, because of the lack of the necessary sewerage facilities. As a result, the liquid wastes directly pollute the shallow groundwater (through water closets and sewers which are not waterproof), as well as indirectly (from waste deposits, improvised garbage holes, etc.).Leakage and seepage loss from the fertilizer or chemical industrial estates in Târgu mures. There is contamination by nitrate, nitrite, ammonia, chlorides, sulphates, sulphides, cyanides, caustic soda etc. in alluvial or fissured shallow, and even deeper aquifers, and severe deterioration of groundwater quality.

HYDROLOGY_The flood plain in the focus area has a lot of ditches and small canals. The groundwater level fluctuates seasonanl between 0.50 and 2.50 meters, in close connection with the water level of the river.

2.1.2 Soil

In the hilly and plateau area there is forest dark brown, in some places there is clay-alluvial, and forest brown chernozem soil are predominant, while at the base of the slopes there are eroded and colluvial soils. In the Transylvania Plain, the brown forest soils and especially the levigated chernozems are predominant, the black humid hayfield soil, coastal yellow and eroded soils, levigated chernozems phreatic humid and gley and humic-gley isolated.

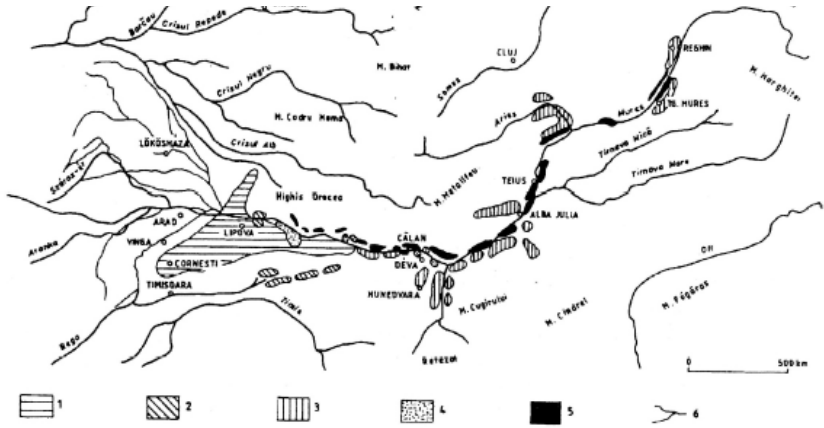


Fig.4. Terraces of the Maros in Transylvania and the traces of its old bed on the Hungarian Plain (source: OHV map). 1. Levante pebble deposit; 2. Günz terrace traces; 3. Mindel terrace remnants; 4. Riss terrace remnants; 5. Würm terrace remnants; 6. Old Holocene Maros bed lines

figure 07: Terraces of Mures River, in Transylvania

SOIL_The Focus area around consists mainly of gley and humic-gley with sediments of the river on top. An important source of soil - and groundwater pollution can be the waste-water purification plants, when because of frequently filling up of their drying beds, large amounts of sewage sludges are deposited directly on the soils, not far from the river.

2.1.3. Biotopes

There are no concrete data about the species living there (flora or fauna), still, the existing willow trees (Salix alba) and some reptile and amphibian species would match the purpose of nature conservation, otherwise, this entire natural corridor might suffer change and loss in future, due to interrupted links of wildlife and their trophic chains. Keeping its character and enhancing ecosystems will be even more efficient when combined with the rest of natural surroundings, other creek banks and linked hedge corridors in the more dry areas.
During the former days, nature had to suffer, due to the human activity pressure (dam constructions, resource extraction (minerals/stones) etc.) and the consequences might not be seen now as strong negative ones, but on the long run, such interventions in natural surroundings will lead to destruction of a precious and extinct natural heritage, therefore, in this 21st century, people should reconsider the exploitation of mineral resources in the minor valley, the inadequate hydro-technical constructions, in order to ensure the needs for biodiversity development.

_Protection Status

Open Space P.U.G. Regulations

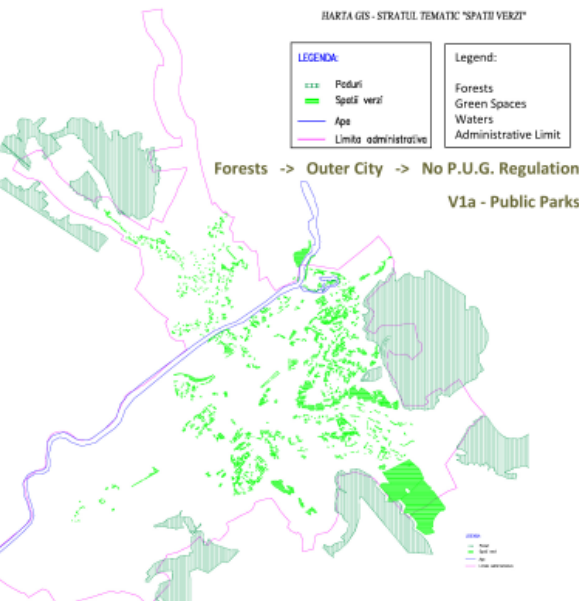


figure 08: Târgu Mures Green Spaces GIS Map
source: <http://www.tirgumures.ro/>



figure 09: Water Course and Wetland Protection Area along the Mures River

If V1 stands for Public Green Spaces as Parks and Gardens in City Center or Residential Areas, and V3 for Public Green Spaces as Recreational Areas (in fig. 2 the shoreline of the “Weekend” area), then V4 is the abbreviation in the General Urban Plan (called P.U.G.) for the Protection of Water Courses and Wetland Areas. This is not much, when it comes to buffer zoning, since it’s only 5m wide on each river side.

Other Protection Designated Green Areas identified in the P.U.G. abbreviation are:

V5 - Protection Corridors for Technical Infrastructure

V7 - Forests and Forest Plantations for Slope Protection

V8 - Forests and Planted Stripes for Sanitary Protection

2. JOINT ANALYSIS

_Wet land sections

Transect Walks (1 - 6) have been made along the riverscape in order to analyze the natural surroundings of the area and to evaluate the potential this might have.

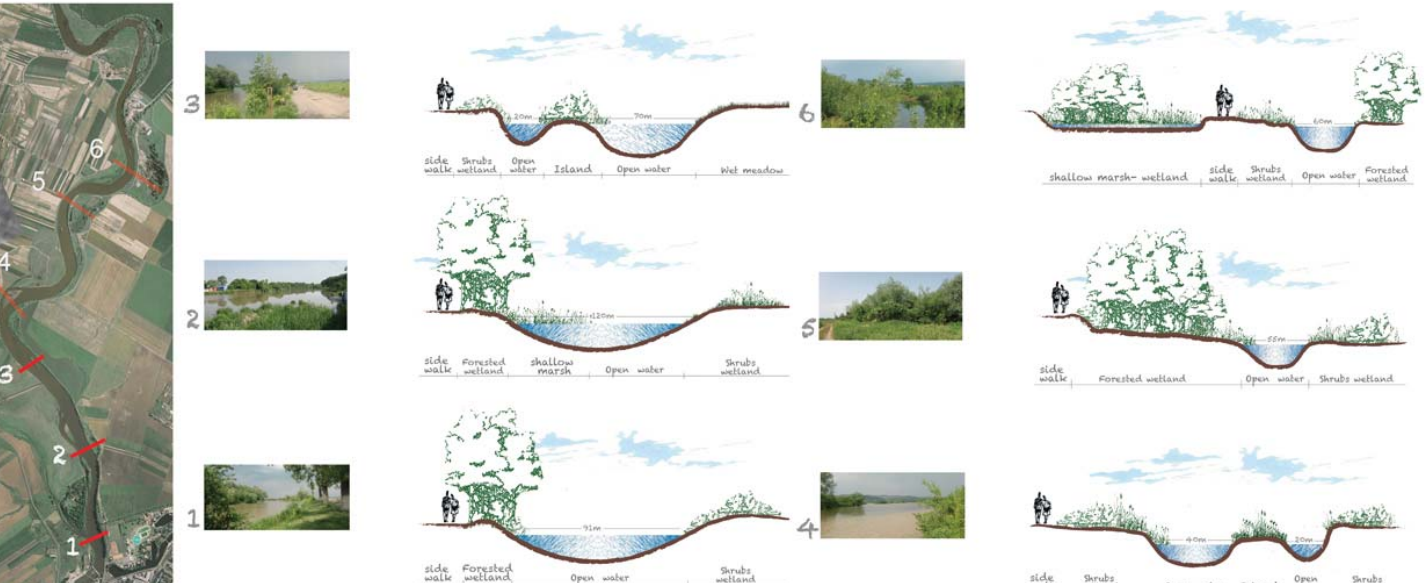


figure 10: wetland sections along Mures river - diversity in landscape patterns

LANDSCAPE PATTERNS_The results are impressive, since on a linear distance of only 5 km we could observe a wide variety of patterns with high concentration of natural richness.

2.2. Settlement and land use patterns

2.2.1 Settlement patterns

_Zoning

Târgu Mures

In the south-west of the project area, along the river Mures, there is a mixture of residential areas, green spaces and industrial areas.

The green areas along the river with its significant block buildings should be connected with the project area as a green belt along the river. Furthermore is living nearby water very attractive and stands for high living standard. This area offers a possibility to develop a unique "green quarter" in Târgu Mures.

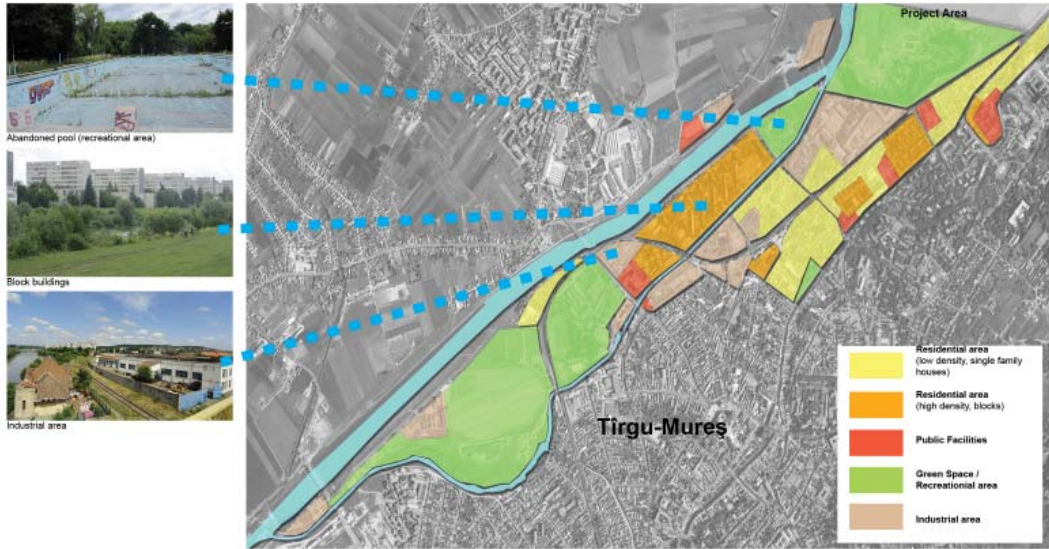


figure 11: Settlement zoning of Târgu Mures

Sangeorgiu de Mures

Sangeorgiu de Mures is an example for a city that has developed along the national road. The city has mainly residential areas. It is striking that the houses along the national road in the first row are mostly small farm houses fulfilling needs for self-subsistence. But there is a change going on. A new generation of housebuilding with 1-2 floors and a garden with lawn, flowerbeds and shrubs in front of it. One of those "2nd row" house-area is leaping into the project area, which is flooded at certain times.

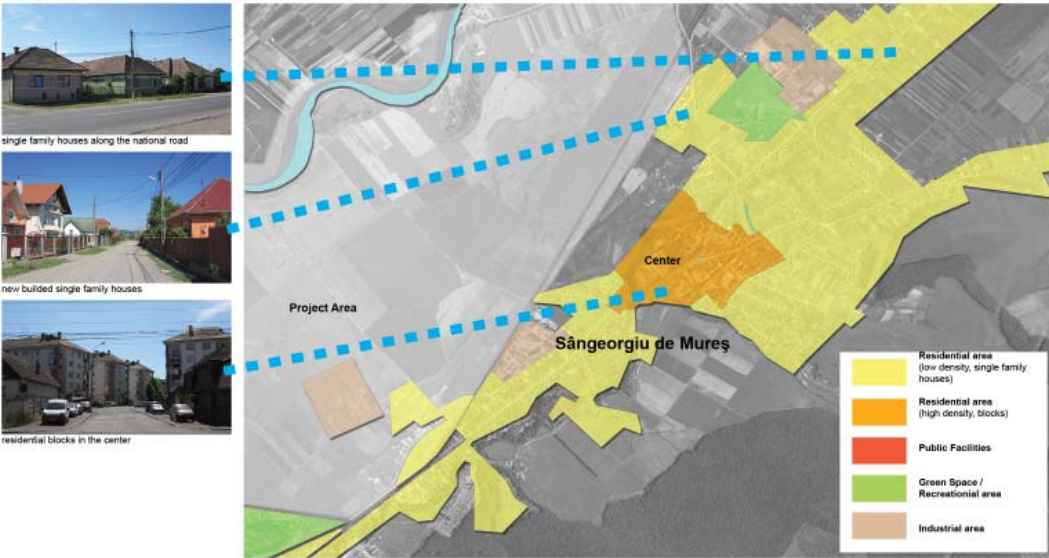


figure 12: Settlement zoning of Sangeorgiu de Mures

_Structure

Târgu Mures

Buildings are in white color, open space is in black color.

In the past the city development was not focused towards the river Mures.

A „City Island“ with significant block buildings located directly at the river banks, just separated by a small canal offers a lot of open space and could be an area for further residential housing. The canal and also the railway track work as a barrier for access to the river.

Sangeorgiu de Mures

Buildings are in white color, open space is in black color.

Sângeorgiu de Mures is a typical example for a city developed along a national road. There are just 2-3 rows of houses and then following farming land, meadows or forest. Pathes into the nature are short.

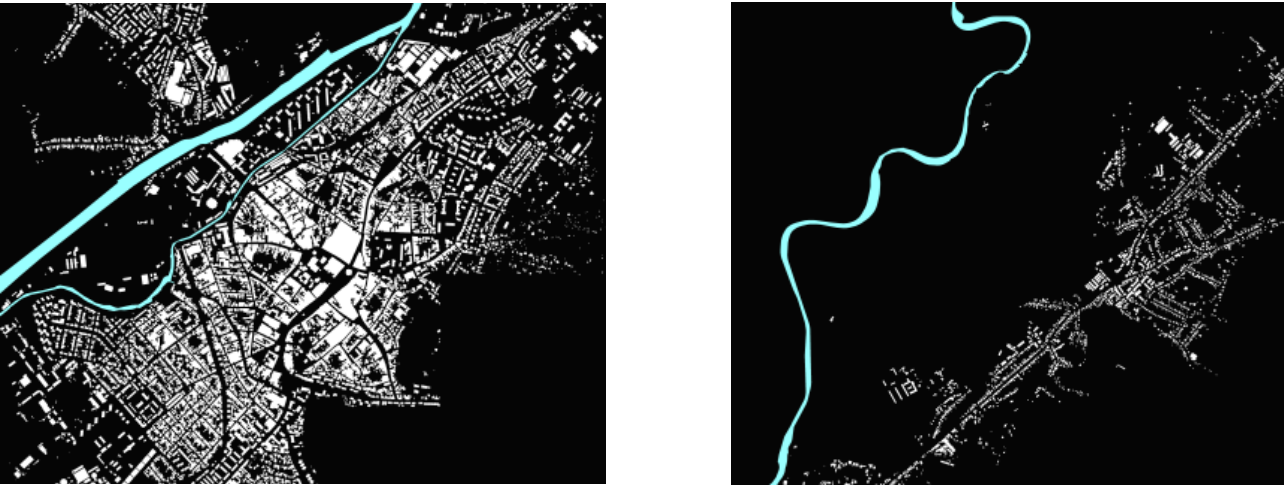


figure 13: Settlement Structure of Târgu Mures and Sangeorgiu de Mures

2. JOINT ANALYSIS

_Road conditions



figure 14: overview road sections A - C

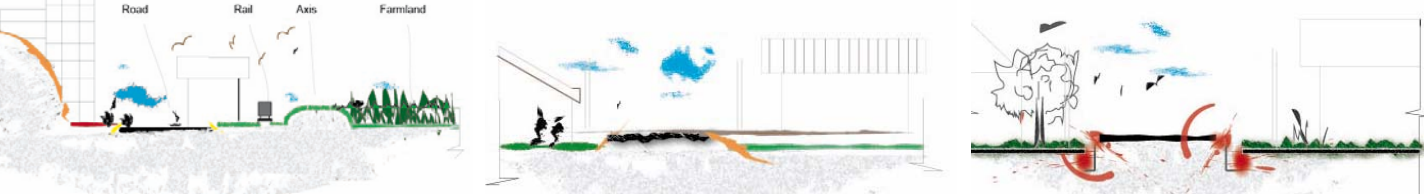


figure 15: Section A - C (from left to right)

Section A-A represents an example for the national road nr. 15. We notice the cutting of the hill for high-rise urban development which we believe is not encouraging in keeping the landscape scenery/skyline. Also, the flood protection embankment is not used at optimum as shown in the photo above.

Section B-B represents a smallroad from the national road to the river. The road has no fixed pavement and you cannot imagine if you follow the road you could enter a very nice area along the Mures river.

In Section C-C below, we notice the presence of smelling sewage open-gutter on both sides of the road. The left side canal is also visible from the photo above and we believe this type of situation is not encouraging people to use the route.

ROAD CONDITION_There is a need for signs to get an attention by people for a recreation area of Mures river or future touristic aspects. There is a need of pedestrian pathways and biking trails along the national road or alternative variation which direct people from the town/ village to the river. A closing of the canal along the road and the construction of a pedestrian and/ or bicycle route on top could be a space saving solution to increase the accessibility to the river.

_Noise Map

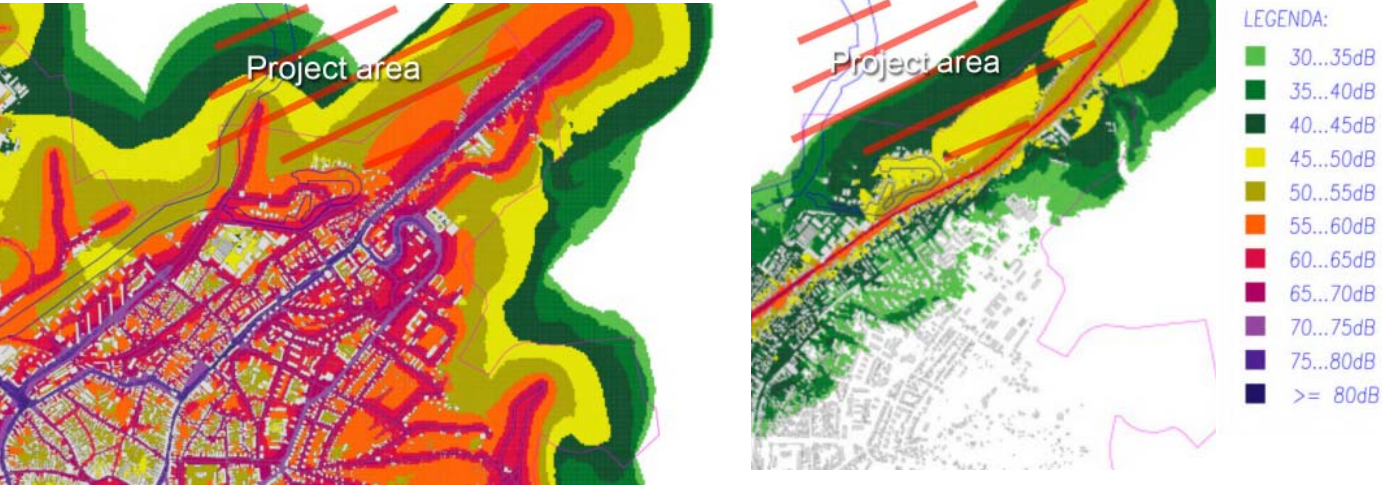


figure 16: noise maps of of Târgu Mures and Sangeorgiu de Mures

NOISE POLLUTION_Within our project area there are only two type of noise, we have to take into consideration: traffic noise and railway noise.

According to a study initiated by the municipality of Târgu Mures 35,5% of the population is exposed to noise from 65-85dB overday. 66,5 % of the population is exposed to noise from 50-75dB overnight.

2.2.2 Land use pattern

Landuse - region

The predominant form of land use in the region is agriculture with almost 53 percent.

Landuse - project area

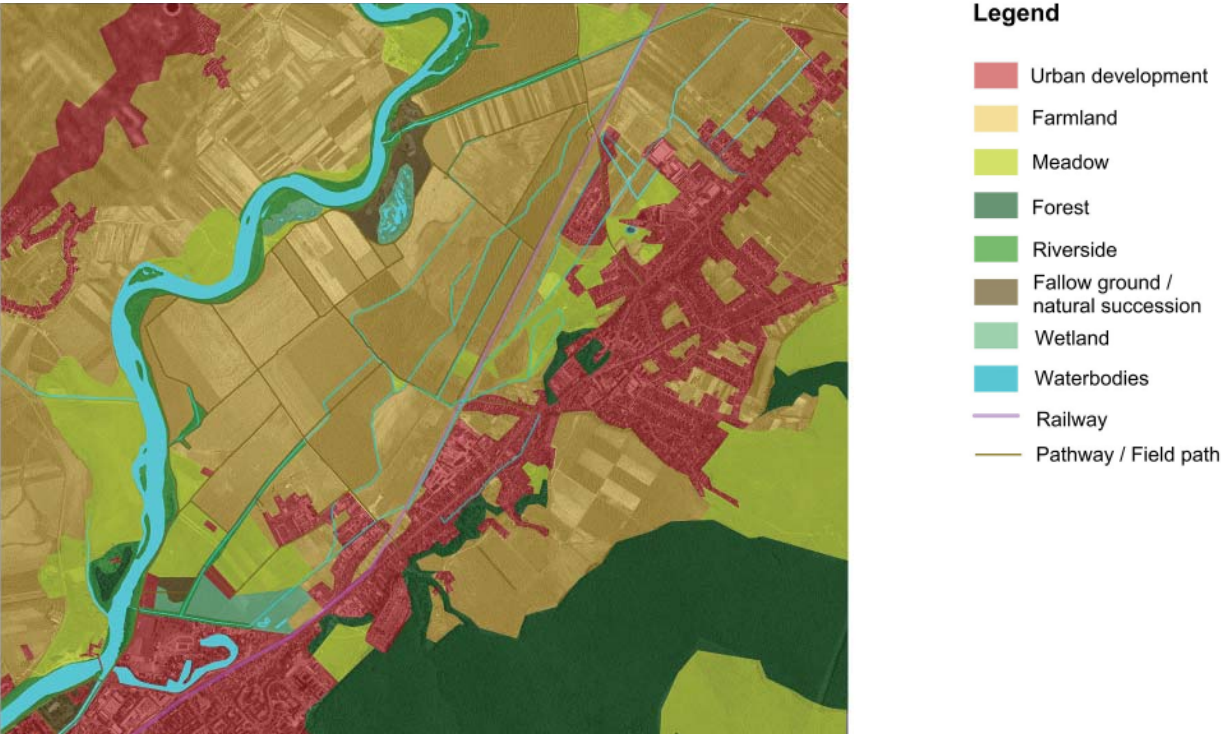


figure 17: land use map

The project area is mainly used as farmland. There are crops of wheat, corn, canola and oat. In the south of the project area are large areas of meadows located, but there is no cattle. On areas of former gravel pits there are huge fallow grounds and zones of natural succession. The vegetation of the riverside is mostly reed and a high amount of shrubbery. Along the river mainly on the areas areas of former gravel pits are huge areas of wetland which consists of a high amount of small ponds with a high biodiversity.



figure 18: impressions of land use in project area

figure 22: impressions of transect walk

2. JOINT ANALYSIS

LANDSCAPE IMPRESSIONS_landuse develops from traditional small, long plots (different cultures) to bigger, quadratic plots (single culture private garden use starts with a diverse colour and texture (vegetables, fruits, flowers, gras)to less diverse pattern, mostly with lawn (especially around new houses. The highest diversity of landscape elements is around the hill village (Cortus), the lowest in the farmlands of Mures river valley.

2.4.2 Skyline analysis

View I

back: covered and semi open hills, hedge lines, fields, solitary trees
middle: compact village pattern with church, trees
front: reed, meadows, shrubs, river

View II:

back: covered and semi open hills along horizontal line, some trees
middle: meadows with changing patterns
front: low vegetation with changing patterns

View III:

back: semi open hills, hedge lines, fields, solitary trees
middle: village pattern with church, trees
front: fields, sometimes meadows

View IV:

back: covered hill with forest, power lines, tower, houses
middle: mix of trees, houses and high houses (e.g. Hospital)
front: fields



I - west - river and village (Santana de Mures, Chinary)



II - north - open landscape (Glodeni, Dumbravioara)



III - east - field and village (Sangeorgiu de Mures)



IV - south - city (Targu Mures)



figure 23: Landscape skyline analysis

LANDSCAPE SKYLINE: In this site is a diverse set of views existing. As more variety it has, as more it is suitable for recreation. In future development it is important to keep the lines. Some hints:

- I : Underline and keep some places of access to the river.
- II: keep the river valley open (no buildings)
- III: no artificial building along the village edge, keep compact village structure
- IV: no landmarks of industries along city skyline

2.5. Social Aspects

To develop a future concept it is essential to know the users of the site and possible stakeholders. During the site visits students created a list of user’s und there use of the site. The table below illustrates the result that there are positive and negative uses.

TYPE	ACTIVITY OF USER GROUP	INTENSIVENESS	AGE GROUP
Positive	Hikers	Low	20-60
	Bikers	Low	15-55
	Fishing	Mid	35-55
	Camping	Low	20-30
	Bbq-grill party	Mid	20-30
Negative	Car washing	Mid	-
	Garbage dumping	High	20-35
Nature lovers Elderly Teenagers Families Tourists Study groups			

USER_There is a high potential in recreational use like e.g. biking and fishing on the one hand and obviously a need for it. And on the other hand there are some uses which need to be managed e.g. garbage dumping.

Joint Analysis Conclusions:

There is, no doubt, a high recreational value in a scenic outdoor environment, while at the same time, kept far from being attractive and welcoming for people. There is a high pressure to build on a flooding plain, which is a misunderstood economical trend in the entire country for now.

weakness and opportunities

Natural Environment

lack of protection | lack of green space connection | water pollution | disposal material | flood risk

+ecological value | +landscape scenery

Built Environment

urban expansion | spatial planning | accessibility | noise pollution | high frequency of traffic | industrial area presence

+landscape scenery | +current land use / farming | +recreation area | +spa

Social Environment

lack of awareness | type of user / use

+participation | +engagement

IMPRESSIONS ON SITE



figure 24: hay production in river valley - background Sangeorgiu de Mures



figure 25: new housing areas



figure 26: urban expansions in flooding area - fenced out, like an island



figure 27: path along river



figure 28: zoning - new houses in the second row



figure 29: national road nr. 15 to Targu Mures - traffic conflicts



figure 30: new lifestyle - lawn instead of vegetable garden



figure 31: plants along river



figure 32: garbage along river - pathway



figure 33: meandering Mures and its scenic impression

AGRO-LANDSCAPE PARK „MURES”

Masterplan: org. scale 1:10.000



MAIN PROJEKT III - ROMANIA - TARGU MURES
JUNI 2011

YUJUN ZHANG | ISHRAT MAHBUB | ASMA SAHBOON | DANIEL SCHEUFFELE

AGRO LANDSCAPE PARK “MURES”

1. Analysis

From the results of the joint analysis, we defined the most important conflicts and potentials which are recognizable.

1.1 Conflicts

First, the place identity of the whole area as well as of single points is nowadays undefined. In former times there were some areas which were known, e.g. the “Seven Trees”. Further there is a lack of local emotional connections and the missing local awareness for the area. Most of the inhabitants are not aware of the landscape scenery. Due to the missing interest of the people there happens some improper use, like the waste dumping and no/low maintenance in the area.

Another point that the area is in the flood plain and is often flooded, at least once a year. All proposed activities and elements have to be flood secure. Due to the climate change the floods are going to happen more frequently and they will be more dangerous. There are several residential buildings within the flood plain, which leads to one of the next problems. Targu Mures and Singeorgiu de Mures are developing very organic and is in one of the first stages of urban sprawl. The urban development in the flood plain which should be strictly avoided.

To complete the description of big structures, there is the problem of the agricultural areas. The cultivation has a limited diversity and is mainly defined by corn and similar structures.

The smaller scale problems are missing biotope connections between wetlands and other special biotopes. The salt biotope in the south should be connected to the river to have a balanced eco system.

1.2 Potentials of the area

There is a great potential of creating beautiful landscape in this area, many existing view axes provide different directions to measure the landscape, open water and landmarks also standing for the landscape attractions. The scenic landscape will offer a nice surrounding for the park and can offer view axes in another scale.

Along the river, there are several beautiful and rare wetlands, biotopes and habitats of rare species. Some very interesting biotopes were artificially created by the gravel extraction. This gravel pits are also a potential for another use, like a swimming lake.

The area has existing small creeks and nice canals which could be redeveloped. The creeks can offer connections to existing biotopes and habitats.

Another positive point is the existing fish population in the river. Fishing is a well accepted hobby of the inhabitants of the surrounding villages.

The better neighborhood connections could be belt of communication with surroundings.

Further there are some existing buildings which could be used for public use because of their position in the project area. The building on the “Island” in the South is currently used by the water authority. The farm in the middle of the agricultural land is not in a good condition, but because of its good position very valuable for a project

2. Vision

Our vision is coming after the multilateral analysis. We are going to give the place a new identity and pay more attention to the river front development. Obtaining the new landscape structure through creating new green corridor. Another important point is that it will be a minimal effort and implementation project. We want to connect the nature landscape and urban community by attraction, a better access/usage under the sign of nature protection.



Fig.1: Statement of problems



Fig.2: Potential map

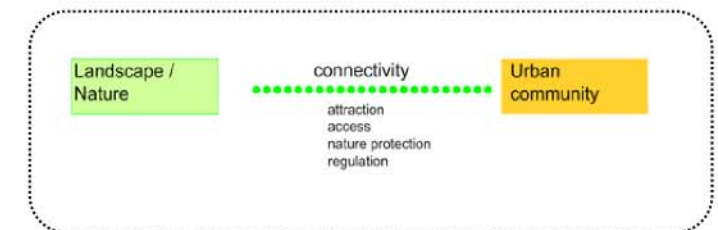


Fig.3 Vision

3. Strategy of the project?

We expound our strategy in Mures from five factors: The accessibility, recreation, landscape protection/environment, flood protection and the sustainable urban development.

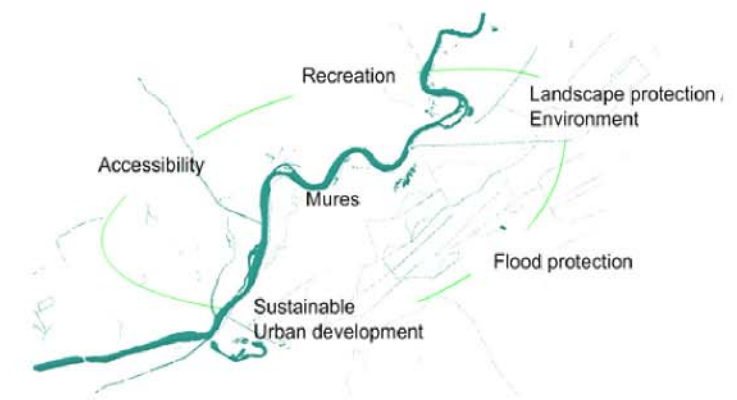


Fig.4: Strategy

The ideal is to create a agricultural landscape park in this area and improve the people's lifestyle. In order to practise these ideas, our concept is formed with different layers, such as the landscape layer, protection layer, recreational layer, agricultural layer, education layer, flood protection layer.

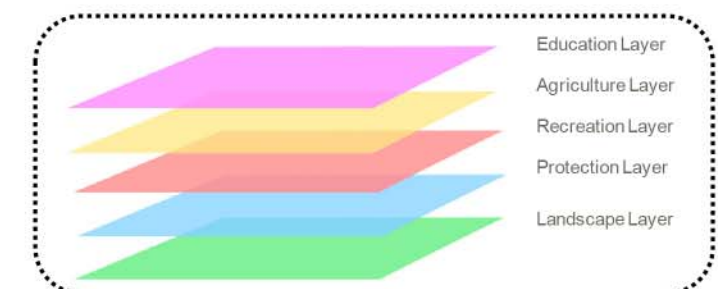


Fig.5 Concept layers

In the following points the concept is described in these categories.

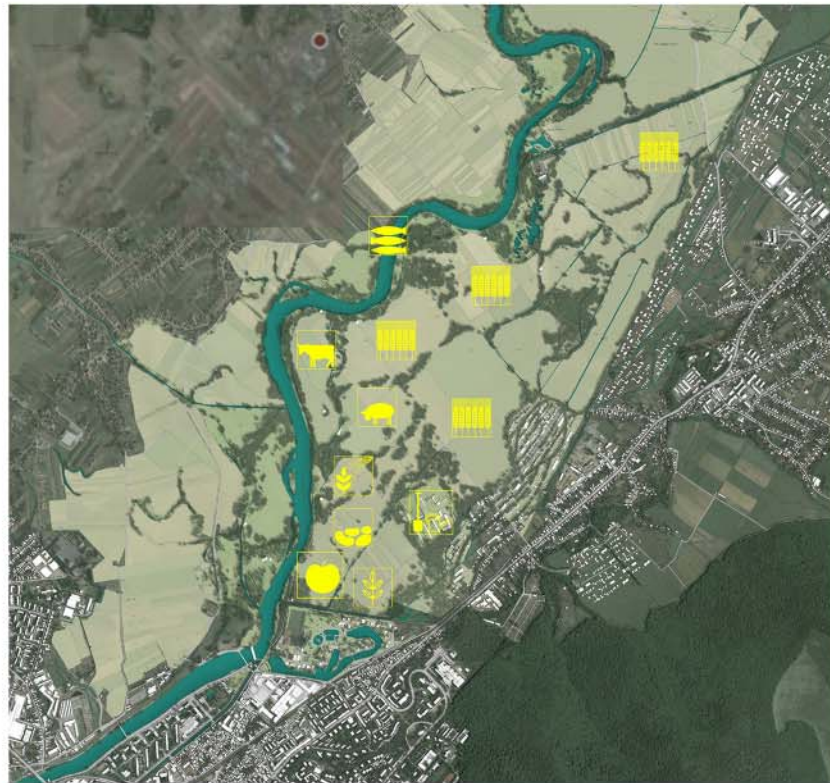


Fig.7: Agricultural layer

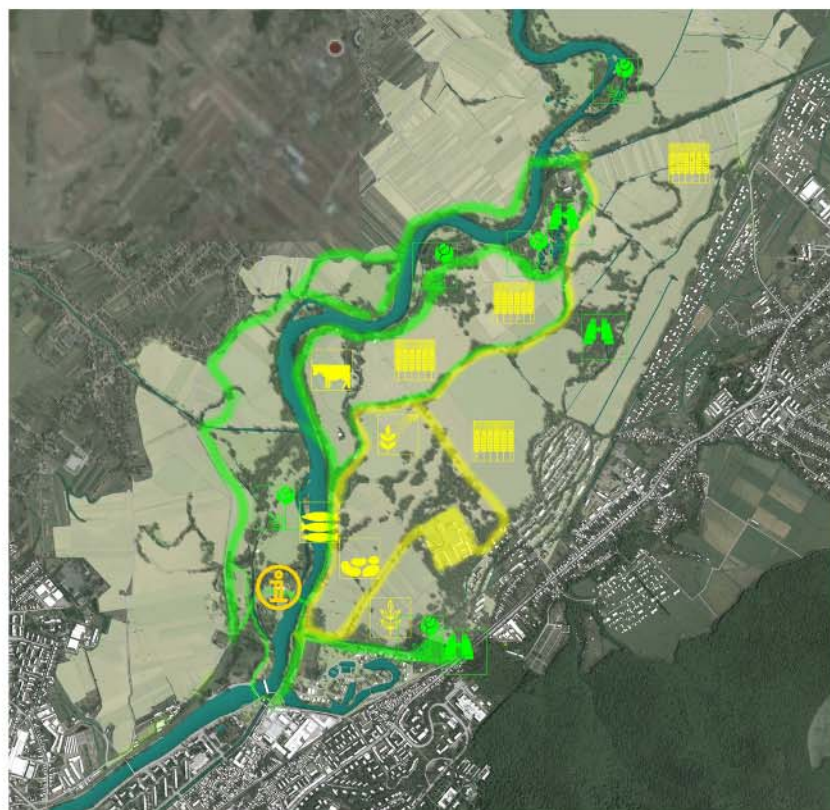


Fig.11: Education layer

4.1 AGRICULTURAL LAYER

In areas where no allotments are possible, people need a space to work outside. In addition to this, Tirgu Mures can offer inhabitants, who have free time or don't have a job, to work for their food. This idea of offering working time for food is one of the core points of the concept. For economical reasons direct marketing of the products would also be possible. This should be more profitable.

The agro-landscape park concept will be a model park that offers several projects one import is the new work & carry concept. The park should will act as a compensation for modern city-life.

Diversity

The concept has a higher diversity of agricultural usages than the existing cultivation in the area. The flood plain will offer different rooms in which the inhabitants of the city have the possibility to work for vegetables and corn. The concept is very flexible, and depending on the upcoming demand adjustable. The production of vegetables will be focused on the southern part. The simplifies the organization through the headquarter. Depending on the amount of people who are in involved, the area can be expanded to other "rooms" in the park. The northern area should start with big scale agriculture, which could be later converted. In addition to the agricultural use, gracing animals and fishing (even expanded through fishing farms) complete the production places for a agricultural model park. Further there are orchards and berry shrubs distributed in and along the green structures, which can maintained and harvested by users.



Fig.8: Photomontage: Work & Carry

Headquarter

The existing big farm is converted to the main headquarter for the organization and administration of the area. The "base" offers tools and material for working. Further the farm administrates the members of the agricultural club, which will be established for the work & carry project.

Functional concept: Work&Carry

The members of the agricultural park have an account for their working time. Depending on the amount of time they will get food the produced food of the model park. This will introduce a new currency: working time. The overproduction is sold directly in the city in combination with a direct marketing.



Fig. 9: Photomontage: Work & Carry



Fig.10: Photomontage: Work & Carry

4.2 EDUCATIONAL LAYER

The park offers two educational layers. Both are managed by the visitor center on the "Island". There will be self-guided as well as guided tours, with different interests.

The trails are using the proposed infrastructure of the recreation layer.

Natural education

There will be several trails for natural education with two main focus points.

One focus is for bird watching. In the area are some rare species. The trails will offer the possibility to have a look at them without any influence in their habitat. Following along the river, there are rare species like Riparia riparia. Further a population of Oriolus oriolus was heard in the area. The bird watching should be organized in a proper way, this means watching is just allowed in special watch platforms or similar facilities. The binocular symbol proposes positions according to the other layers.

The second natural focus point are biotopes, habitats and rare species of plants. The wetlands along the river and special conditions of some areas, like the salt wetland is very interesting for this. For both opportunities guided and self-guided tours are possible. The symbols in the map show the main areas for special plants.

Agricultural education

The agricultural education will be mainly organized in cooperation with the agricultural headquarter. The trail should show different ways of cultivation as well as plants and methods of cultivation. Vegetables, Corn and experimental areas are presented along the trails. This also covers the fishing sector with demonstrations and courses for licences.



Fig.12: Self-guiding tours



Fig.13: Self-guiding tours



Fig.18: Wet area map



Fig. 19: Monuments and Scenic points

4.3 LANDSCAPE LAYER

The landscape layer describes the changes of the landscape. It covers elements of nature conservation, landscape scenery, urban development as well as landscape aesthetics. The agro landscape park connects the recreational and aesthetic function of a landscape park with the productive agriculture in an scenic way. The idea is also to set up a park with low implementation and low maintenance costs.

Green structure in the landscape

The biggest visible change in the landscape is obviously the vegetation cover through trees. This propose has several reasons.

- Connection to the forest
- Inter-connection between wetlands, biotopes and riparian forests
- Improving the landscape scenery
- Forming of "Rooms" for better usability
- Fixing and Improvement of the river bank
- Orchards and berry shrubs within the structures.

The current natural wet areas in the fields (blue) are often not as productive as the rest of the area for the farmers. With the minimum implementation and intervention in mind, the concept proposes to plant trees based on this data. The green islands will acts as habitats for animals, and offer shadow for grazing animals. These new habitats must be connected to the existing wetlands, the forest and the biotopes. This mainly happens along existing creeks and canals in the area. This secures again the minimum costs idea. This green structure will provide a higher diversity and a sustainable eco-system.

Landscape park

To build an aesthetic park and attract people to go there, it needs more that just green structures. Several view corridors from the weekend and within the park will improve the awareness and attraction to go there. In addition to this, the view of the watch-tower in the proposed cultural center(Mobex are) can offer a nice bird view in the landscape park. The view corridors are pointing to statues, ruins (existing concrete structures), churches and monuments in the park.

There are seven new planed monuments in the park. This monuments are standing for the "seven trees" which was the former identity of a intensively used area along the river. The "seven trees" were old real *Populus nigra* in the north of the ferry. The monuments are going to act as new place defining identities to offer a better orientation in the park. They are placed in every important part, where an separation is needed.

Grazing animals will form after the years the typical landscape garden appearance of trees (free trunk in the lower area). The animals are part of the maintenance, depending on the season they can be even used in active zones. For this a lot of other points should be taken in consideration.

Canals

The existing canals within the green structures should be recovered. Depending on the orientation (N-S), the width should be increased. This should provide a better protection for small floods. In addition the banks should be covered by vegetation to prevent land-filling of the canals (erosion), what often happens when a bigger flood comes.

The urban development

Unfortunately there is a lot of existing urban development in the flood plan next to the railway. Although the development in the flood plain should be strictly avoided, the concept propose a way to minimize the destruction for the next years. Along the railway next to the farm, there will be limited new urban development zone. The development should be "invisible" for the users of the park. The vegetation should cover it from all angles. This propose decreases the flooding zone and should be as small as possible (more in the flood protection layer). Unfortunately some buildings are not within this area and they should disappear in the next 50 years. The conceptual section shows how the "invisible development" should look in practice.

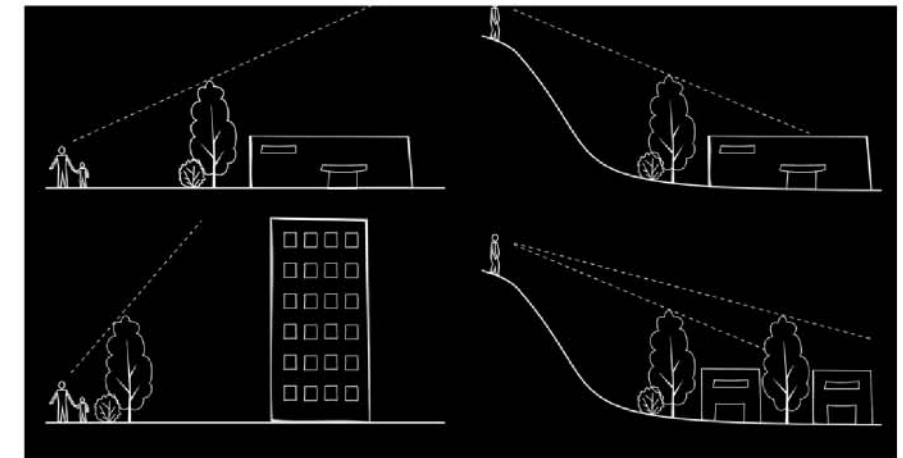


Fig.20: Invisible development



Fig.21: Photomontage: View axes



Fig.22: Green entrance to Targu Mures



Fig.23: bridge (study contemporary)

The Green entrance:

Due to the new connection to the forest, Targu Mures will get it's first green entrance. This should easily catch everybody's awareness that the northern part has changed.

Fig.24: Conceptual section

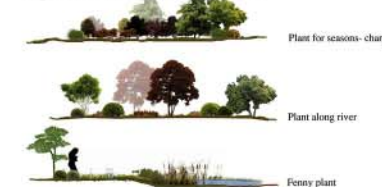


Fig.25 Section placement



Fig.26: Section c - c'

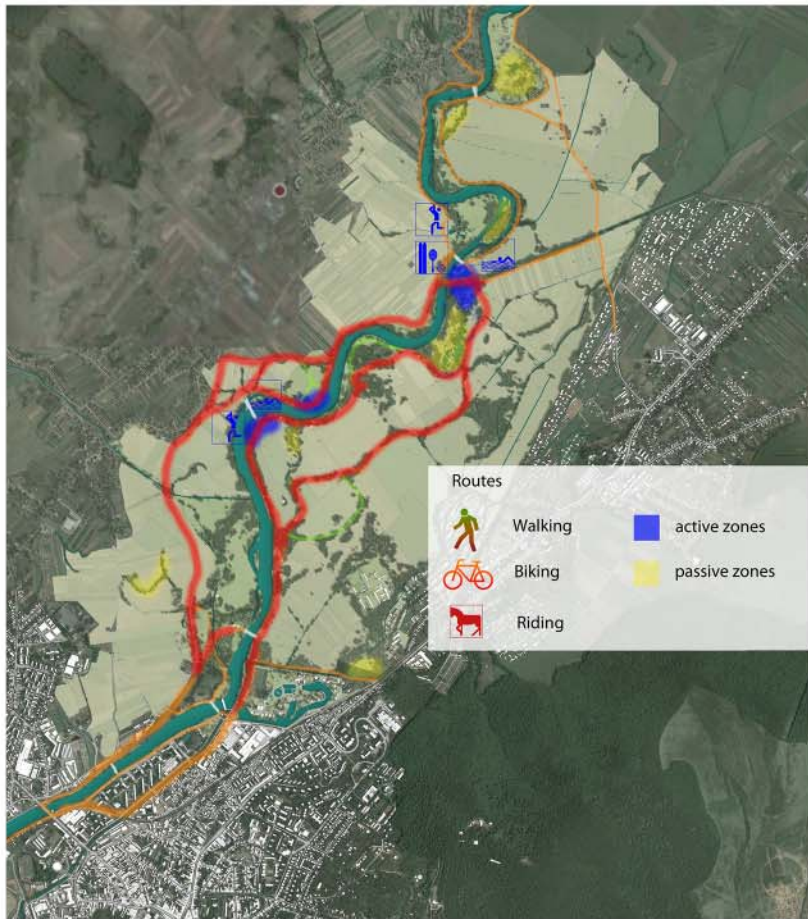


Fig. 14: Recreation layer



Fig.27: Flooding area

4.4 RECREATION LAYER

The recreation layer of the agro landscape park hosts all pathways and activity zones.

The passive zones

In the passive zones there will be no direct access for the users. This zone covers mainly areas for bird watching, biotope, habitats and other nature conservation area. This also includes riparian forests in the wetlands. There should be no active maintenance.

The active zones

The active zones represent areas which are intensively used. From north to south there will be several different activities.

The first area from south will be a swimming area with floodwater-save games and barbecuing on the river. The river bed will be secured in this areas with gravel and stones to avoid a big movement of the river. The active part offers two connections to the other side. A bridge and a rope over the river for games. Further there are some facilities for swinging and jumping in the water. This should concentrate the users to this active zones along the river.

The second important active zone is the one in the north. The old gravel pit is converted to an swimming lake as a free alternative to the weekend. It will be the most intense used area. The infrastructure should be created accordingly. This means, that it should be reachable by car, provide at least one kiosk and some parking lots. All necessary facilities should be flood secure on wood pillars for a matching natural design.

The pathway network

The routes and pathways are build on top of each other. The increasing width of pathways are represent their hierarchically order. So pedestrians are allowed on biking and riding paths. This allows pedestrians to use all trails and pathways. The widest pathways are marked with a horse, because the heaviest traffic on the network will be horse wagons. In the project area there will be two bridges (north and middle) and one ferry(south). This will connect the villages and build a green recreation area for all surrounded villages. Further this will allow circulation trails with different length.

The biking trail has an additional role, because it connects the area with the "Mures"-wide biking network. The concept proposes depending on the usage different materials for the network. Important and active areas can be covered with a wooden surface. Especially on changes of height an elevated wooden path can make the situation more interesting and secure (photomontages). Further wooden decks can be used as observation points.

The material for most of the pathways will be a water bound surface or depending on the usage a hard covered material.

The agricultural headquarter should also contribute to this recreational layer by providing horses for tours or wagon tours.



Fig: 15-17: Photomontages: Recreational area



4.5 PROTECTION LAYER

As already in the landscape layer mentioned, there will be a new dam along the railway. The map (left) shows the new flooding zone with the expanded urban development. The redevelopment (widening) of the existing canals, the establishment of terraces as well as retention zones in the riparian forests should compensate the lost flooding area. The establishment of terraces means in this case the lowering of some areas along the river. This allows to save areas from week floods and control them in a ecological way.

Existing old gravel pit should be transformed to act as bigger retention zones. It's recommended to demand a development concept for further usage, if a new gravel extraction project is planned. Due to the climate change floods will appear more frequently and probably stronger than in former times, because of this a good protection is necessary for the area.



Fig.28: Riparian forest



Fig. 29: Flooding terraces

5. FUNDING

The proposal also includes basic funding ideas. The funding should consist of several partners, who invest in a step-by-step schedule. Following schemes shows the partners.

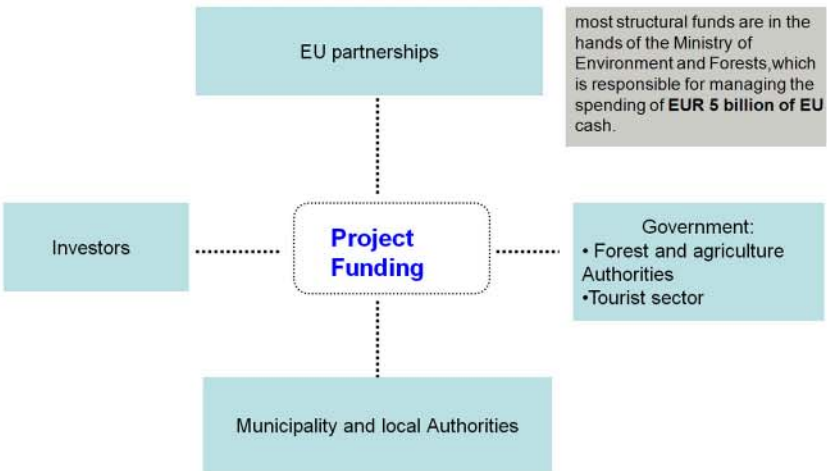


Fig.30: Basic funding concept
European Regional Development Fund and the Cities in Romania

Although most of the European Programmes are applicable to the (re)development of the cities, the most important is the 'Regional Operational Programma' (especially priority 1.). On July 12, the European Commission approved OP for this programme. The total budget of the programme is around EUR 4.38 billion and the Community assistance amounts to € 3,700 million (approximately 19 % of the total EU money invested in Romania under Cohesion policy 2007-2013).

Some EU funds allotted to local authorities for regional development come through the Ministry of Regional Development and Tourism for projects related to the improvement of infrastructure and for the development of regional and local tourism.

The Ministry of Agriculture and Rural Development deal with investments in rural infrastructure. But most structural funds are in the hands of the Ministry of Environment and Forests, which is responsible for managing the spending of EUR 5 billion of EU cash.

The Operational Program for Fisheries managed by the Ministry of Agriculture and Rural Development, has a budget of EUR 2 billion and its specific objectives are the development of competitiveness and sustainability of primary fisheries sector, the improvement of the fisheries sector products and the support for sustainable development of fisheries and areas to improve quality of life in these areas.

Priority 5:
Sustainable development and promotion of tourism
This priority axis aims mainly to sustainable valorization and promotion of the cultural heritage and natural resources with tourism potential, as well as to improve the quality of accommodation and leisure tourist infrastructure, in order to increase the regions' attractiveness, develop the local economies and create new jobs.

More, the cities can be part of other EU-programmes such as URBACT and INTERREG.

Decision procedures of the Managing Authorities
The decision-procedure regarding the project financing is not very simple and the IB plays an important role. In broad terms it is structured as follows:

- IB publishes the call of proposals according to a timetable set by the MA
- IB receives and registering the project proposals
- IB checks the administrative compliance and eligibility in accordance with the criteria established by MA
- IB organizes technical and financial assessment of the proposals with the support of independent evaluators
- IB reports to the MA the outcomes of the assessment

- IB notifies the applicants regarding the status of the proposals assessment
- MA approves the list of the accepted proposals to be financed
- IB signs financial agreements (in the name of MA) with the beneficiaries

Breakdown of finances by priority axis

Priority Axis	EU Contribution	National Public Contribution	Total Public Contribution
Support to sustainable development of urban growth poles	€ 1,117,806,529	€ 273,365,256	€ 1,391,171,785
Improvement of regional and local transport infrastructure	€ 758,355,021	€ 118,355,985	€ 876,711,006
Improvement of social infrastructure	€ 558,903,260	€ 98,629,992	€ 657,533,252
Strengthening the regional and local business environment	€ 633,423,700	€ 76,471,117	€ 709,894,817
Sustainable development and promotion of tourism	€ 558,903,264	€ 57,862,924	€ 616,766,188
Technical Assistance	€ 98,629,988	€ 32,876,662	€ 131,506,650
Total	€ 3,726,021,762	€ 657,561,936	€ 4,383,583,698

Tab.1: funding

Sources of Funding:

- First level EU partnerships
- In the next seven years from 2007 Romania will receive 31.5 billion Euros as funding from EU for development projects. It will use 22.6 billion Euros for structural reforms, **16 billion Euros for agriculture**, 3.5 billion Euros for home affairs and 919 million Euros for administrative infrastructure
- Second level Romanian government (Authorities of forest and agriculture)- Tourist sector
- Third level Local authorities and Municipality
- It will finance only a two per cent from total budget of development projects.
- Forth level investors (interest partnership)

Fig.33: Funding levels



Fig.37: wooden pathway



Fig.38 wooden observation deck



Fig.39 wetlands -retention zone



Fig.40: wooden observation deck



Fig.31: Section a - a'

Fig. 32: Section b - b'