4. PILOT PROJECTS TO STRENGTHEN REGIONAL IDENTITIES AND LOCAL ECONOMIES

4.1. ROLE OF PILOT PROJECTS AND PRINCIPLES OF GOOD PRACTICE IN PROCESSES OF ACTIVE LANDSCAPE SHAPING AND MANAGEMENT OF CULTURAL AND NATURAL LANDSCAPE ELEMENTS AS WELL AS THEIR PROTECTION AND SPATIAL PLANNING

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4.1.1. Principles of good practice and pilot projects

The term 'good practice' can be found in numerous aspects of human activity and it refers both to economic activity, to conscientious scientific research, and to activities within public administration. Such sets of principles have a character of norms accepted by the members of a particular community and, to a certain extent, concern also ethical questions.

The basic issue connected with the term "good practice" is the question of criteria evaluating various undertakings from this point of view. It seems that the basic principle here is the compatibility of planned and realized aims with an accurate needs analysis. Therefore, the term "good practice" will refer to that criterion which a particular group of beneficiaries actually needs, which triggers or enables further development, or which overcomes most significant difficulties [Fenrych 2006]. Another significant "good practice" criterion involves the participation of the local community (beneficiaries) in the process of preparation, implementation, and utilization of practical results of conducted activities.

It is also necessary to define the terms "management" and "shaping". According to Tadeusz Kotarbiński, "management" can be understood as coming to a decision, based on the knowledge of aims and means, as to the initiation or termination of activities [Kotarbiński 1982]. Thus the essence of this term lies in defining the aim and the road leading to its realization. Coming to a decision is a question of choice of the most suitable alternative out of many others. The term "management" can be examined from two points of view: a wider one, when it involves managing objects or situations, and a narrower one, understood as super-

vising. In regards to cultural and natural landscape elements management, we deal with the wider approach.

"Shaping", on the other hand, is associated with forming, preparing, specifying, or modelling. Landscape shaping is understood as the total of human material activities at a given point in time and space, having an impact on the physical shape and biotic content of human environment. Landscape shaping aims at introducing such modifications in natural systems which would improve the standard of living, increase the environment's assimilative capacity, or in any other way increase the ecosystems' resistance to anthropopressure [Koreleski et al. 1998].

Cultural landscape has developed as a result of long-lasting human influence on the natural environment, which was more often harmful than harmonized. Such activities have resulted in disturbed natural-cultural relations and landscape degradation. That is why landscape protection needs to have a complex character and needs to involve both natural and cultural landscape.

Legal regulations constitute basic elements of landscape management, shaping, and protection. In Poland, these will include:

– the Act on Spatial Planning and Spatial Management [Ustawa 2003a],
– the Act on the Protection and Guardianship of Historical Monuments [Ustawa 2003c],
– the Act on Nature Protection [Ustawa 2001a],
– the Act on Nature Conservation [Ustawa 2004].

Moreover, non-governmental organizations and various ecological associations, such as Green Federation, the Polish Ecological Club, Society for the Earth, Nature Protection League, etc, play a significant role in landscape protection. These organizations mainly act within nature and environment protection.

Spatial planning is one of the factors shaping cultural landscape; it is also an instrument of landscape protection. Spatial planning is essentially a process of predicting future states, which refers to designating land for various purposes and formulating development conditions. Spatial planning is an important tool of landscape shaping and protection primarily because it shapes space according to the requirements of the so-called spatial order, that is it makes it impossible to introduce elements which can create disharmony in landscape. Secondly, various protective provisions are being undertaken in spatial planning documents at various levels, which restrict the use of valuable elements of natural and cultural landscape [Gawroński 2007].

The international project "Protecting Historical Cultural Landscapes to strengthen Regional Identities and Local Economies" implemented within the European Union INTERREG IIIB CADSES programme involves two pilot projects, meant as practical results of the realised project. The first one is localized in the community of Miechów and involves the creation of an education and training centre with demonstrative plants for pellet and briquette production (biomass).

The other one is situated in the village of Wiśniowa (the Małopolskie Voivodeship) and involves the reconstruction of a historic water basin as well as the development of adjoining areas: the creation of small tourist infrastructure and green areas.

This paper aims at defining the role of principles of good practice in shaping cultural and natural landscape elements in the context of pilot projects realized within the INTERREG IIIB CADSES European Union project.

4.1.2 Pilot projects and principles of good practice in cultural landscape protection and shaping as well as spatial management

Depending on objectives, scientific research activities can be divided into two basic categories: basic studies and applied studies. Basic studies involve scientific inquiries undertaken without any practical objective in order to clarify unknown phenomena and discover new scientific laws. That is why basic studies are also referred to as theoretical studies. Applied studies, on the other hand, aim at applying the results worked out by basic studies in practice. They result in models, prototypes, technological solutions, etc. The objective of applied studies is to solve specific problems.

Studies conducted with the INTERREG IIIB CADSES Project have this practical (applied) character. Practical (pilot) activities were aimed at presenting model relationships between activities for cultural landscape planning and specific economic undertakings, exemplified by chosen local administrative units of Poland.

When considering the principles of good practice with reference to specific pilot projects, it is necessary, above all, to take a stance towards planning and spatial activities connected with landscape protection and shaping. Both pilot projects are located in specific communities and can exert a significant influence on space and landscape shape in these areas. Undertaking these pilot projects required a verification of their location with the regulations of the local spatial management plan (the community of Wiśniowa) and obtaining an administrative permit for building use alteration (the community of Miechów).

Landscape shaping and landscape protection issues are present at all levels of spatial planning in Poland. The National Spatial Development Scheme (at a scale suitable for this type of document) defines requirements with regards to environment and monument protection, taking into consideration protected areas. Therefore by default, this regulation also concerns landscape shaping.

Within the number of documents which build up the thematic scope of the voivodeship spatial management plan, we could point out the following: the system of protected areas, including the areas of environment, nature and landscape

protection; health resort protection; natural heritage and monument protection; and the protection of goods of contemporary culture. The voivodeship spatial management plan always defines the so-called areas under a special planning regime. These areas constitute the most valuable elements of space exposed to damage as a result of intensive development processes [Niewiadomski 2005]. These are, for example, ecologically protected areas and areas of restricted land use created on the basis of regulations set out in the Act on Nature Protection [Ustawa 2001a].

Spatial planning regulations for the studied communities cover a wide range of issues regarding landscape protection and shaping.

A community study of the conditions and directions of the spatial management deals with landscape shaping both in the section defining development determinants and in the one identifying spatial planning directions. Among the elements appearing in the context of development determinants, we can mention spatial order and the state of the environment as well as the requirements with regards to environment, nature, and landscape protection. On the other hand, the section dealing with directions of spatial development includes regulations, which are binding in the process of local planning, such as defining environment protection areas and the principles of environment protection, resources protection, nature, cultural landscape (CL), and health resorts protection.

Within the thematic areas covered by the local spatial development plan, we can find obligatory regulations concerning the principles of spatial order protection and development and the principles of environment, nature, and CL protection. Separate regulations concerning areas covered by the local development plan and referring to landscape can be also found in: the Act of 23 July 2003 on the Protection and Guardianship of Historical Monuments [Ustawa 2003c], the Act on Nature Protection [Ustawa 2004], the Act on Nature Protection [Ustawa 2001a], and others.

Cultural landscape protection and shaping can be also dealt with in voivodeship and community development strategies. A strategy, in the most general sense, is a method of achieving previously defined objectives through controlling development and engaging in the realization process [Prusek 1993]. A strategy understood in such a way consists of the following: an active relationship to reality evaluation and definition of development possibilities and methods of conduct. Strategies are developed if a given unit expresses willingness to act and manage development processes effectively.

In the conditions of market economy, each rationally acting unit, including a community, should implement strategic policies understood as a system of long-term objectives, tasks and principles of impact and realization of development plans. Objectives are conceived here as directions of activity, which grow out of the existing system of values and development missions. They are most often formulated in terms of social needs, which need to be met. Basic change objectives in

spatial management include: improving the quality of life of local people, increasing management effectiveness, protecting the natural environment and landscape, and creating spatial order [Piech and Gawroński 1993].

The process of development of a community development strategy is composed of four fundamental stages. These stages include: diagnosing and evaluating the current state, selecting fundamental development issues, defining development opportunities and threats (development scenarios), and formulating alternative strategies. Ecology and environment protection issues are present both in the first and the second stage of a community development strategy. Within these stages, the structuralization of problem issues as well as analysis of issues concerning the ecological sphere and environment protection are carried out.

In order to activate the role and significance of landscape protection and shaping, we could postulate that these issues should be taken into consideration, in a suitable and inquisitive way, in the stages of evaluating the current state and selecting fundamental development issues, particularly in communities characterized by high variability of these phenomena.

A general question appears, as a conclusion to the above deliberations: how to strengthen the role of cultural landscape protection and shaping issues within the current system of spatial planning? These issues are undoubtedly taken into consideration at all levels of spatial planning. Therefore, an amendment of legal regulations on spatial planning in Poland seems to be the only rational way in this respect. Scientific circles can postulate introducing this type of changes.

It is also necessary to point out that regulations of local spatial management plans with regards to agricultural areas are characteristic for the fact that they preserve the previous land use system based on principles defined in relevant legal articles. Thus, agricultural production areas lie within the interest of spatial planning in the sense that local plans define areas designated for agricultural purposes. Other investment activities in rural areas, such as land consolidation and exchange, hydromeliorations, building country roads are not correlated with the system of local spatial planning in the legal and organizational sense.

Spatial planning, in the sense of urban planning, defines the scope and methods of conduct in the processes of designating land for various purposes as well as principles of their management [Ustawa 2003a]. A number of authors adopt a wider approach to spatial planning and understand it as a process of defining a development concept for areas (including agricultural areas) thus defining the concept of their development and predicting future states. Within this approach to spatial planning, agricultural production space can be an object of comprehensive management. Realizing this mission requires the application of instruments, such as land consolidation and exchange, building country roads and technological infrastructure, and hydromeliorations. For spatial planning understood in such a way, local spatial plans can be realized through property buyout or expropriation,

building permits, decisions about development conditions, pre-emptive right, or various tax concessions. These activities undoubtedly influence the shape of rural cultural landscapes. However, Polish legal regulations regarding spatial planning do not envisage systematic activities connected with the so-called comprehensive management of rural areas. This management can (but does not have to) be conducted on the basis of other legal regulations: the Act on Land Consolidation [Ustawa 1982] and the Act on Water Law [Ustawa 2001c]. We could therefore postulate such changes in legislation regarding spatial management so that spatial planning and management in Poland would have a comprehensive (systematic) character including both the management of built-up and urbanized areas as well as the areas of agricultural production space.

The participation of local communities and ecological organizations in the process of local spatial planning is also a significant aspect leading to cultural landscape protection and shaping in the process of spatial planning and management. The participation of the social factor in the process of spatial planning is reflected both at the stage of developing and passing the local spatial plan by the community council as well as in administrative procedures leading to the decision on development conditions and land management conducted by the community executive body (mayor). As far as the stage of creating the local plan is concerned, legislation issued within the Act on Spatial Planning and Management provides for the possibility of presenting comments to the project of the local plan [Ustawa 2003a]. These can be put forward by anyone, who questions decisions undertaken in the project of the local plan which is available for public inspection. Since everybody is given the right to put forward their comments, so just as in the case of protest (article 23 of the Act on Spatial Planning), putting forward comments has a universal character. By using the word "everybody', the legislator gives all natural persons, legal persons, organization units without legal entity, and groups of people the right to formulate critical statements regarding the proposed solutions included in the project of the local spatial plan. Such a claim can be regarded as a comment if it questions the decisions undertaken in the project of the plan. There is, however, no requirement that the person putting forward the comment must demonstrate the existence of legal interest, which can be violated by decisions of the local spatial management plan included in the project of the plan. There is therefore no doubt that this right is given not only to the owner of the property which the plan concerns but also to social organizations, such as ecological associations. Thus, the mayor of the city or town is obliged to investigate comments to the project of the local plan.

In the case when there is no local spatial management plan, management directions and conditions for a given area are defined on the basis of decisions about development and management conditions for this area. The localization of a public purpose investment is decided upon the basis of a decision on public purpose

investments, whilst land management direction and development conditions for other investments are defined through decisions on development conditions. It is also possible to take into consideration the social factor here though it is necessary to refer to appropriate regulations of the Kodeks Postępowania Administracyjnego (Administrative Procedure Code) [Ustawa 1960]. Thus, a social organization can demand the initiation of proceedings or can ask to be allowed to participate in such proceedings on behalf of a different person, if this is justified by its statutory objectives and if this is supported by public interest.

Therefore we might conclude that ecological organizations can demand participation in administrative proceedings which concern someone else, that is proceedings in which this organization is not a side.

The demand of a social organization to participate in administrative proceedings must be justified by its statutory objectives. There must be then a thematic link between the subject of the proceedings and the scope of this organization's activities. As a general rule, the subject and aim of activities of a given organization are defined in their statute. The public administration body is therefore obliged to establish whether the aims defined in the statute of the organization justify its participation in the proceedings concerning a third party.

We can therefore conclude that the local community and ecological organizations are provided with a wide spectrum of possibilities of participating in administrative and legal proceedings connected with the development of the local plan and decisions on development conditions, including the decisions within environment protection and landscape protection and shaping.

Concluding the above investigations, we can state that the pilot activities within the INTERREG III B CADSES Project aimed at presenting the relationship between activities for cultural landscape protection and specific economic undertakings, through model examples. Both projects are localized in specific communities and have a significant influence on the shape of space and landscape in these areas.

Research activities that have been carried out also make it possible to draw a few general conclusions. Firstly, the issues of landscape shaping and protection are present at all levels of spatial planning in Poland. In a particularly detailed way, suitably to the size of the study, they are analysed at the level of local spatial planning.

Secondly, these issues can appear also within planning studies, such as a voivodeship development strategy and a community development strategy. The issues of ecology and environment protection, including landscape protection, appear both at the stage of selecting basic development problems for each strategy as well as at the stage of formulating development scenarios. We could therefore postulate that these issues should be suitably emphasized and taken into consideration in communities characterized by high variability of cultural landscape and in communities where landscape protection is indispensable.

Thirdly, the following question appears: how to strengthen the role and significance of cultural landscape protection and shaping within the existing system of spatial planning? These issues are certainly taken into consideration at all levels of spatial planning in Poland. The only way here seems to be an attempt at amending legislation on spatial planning.

Other activities within landscape protection and shaping include the participation of local communities and ecological organizations in the spatial planning process. These organizations have particularly significant opportunities of taking part in administrative and legal proceedings connected both with the procedures of creating and passing a local plan and with the process of deciding about development conditions and localizing public purpose investments.

4.2. ACTIVITIES FOR THE PROTECTION OF CARPATHIAN CULTURAL LANDSCAPE IN MALOPOLSKA SHAPED BY ITS 600-YEAR-OLD PASTORAL CULTURE

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The article presents examples of comprehensive regional activities aimed at protecting historical cultural landscapes. The chapter dwells upon the assumptions and results of a programme developed for the enhancement of economic activity and protection of heritage in the Carpathian region of Małopolska called: "Program aktywizacji gospodarczej i ochrony dziedzictwa małopolskich Karpat – OWCA+" [Program 2005]. The aim of the Programme was to protect natural and cultural landscape elements, as legacy of the 600-year-old pastoral tradition and culture in the Carpathian region of Małopolska. Moreover, the chapter contains results of a study on the current Programme implementation stage as well as discusses its actual and potential outputs. In terms of methodology, the chapter is based upon an iterative method, synthesis and example study.

For the Małopolska voivodeship, with an area of 15 107 km^2 and the population of over 3.2 million inhabitants, half of whom (about 1,6 million people) live in rural areas and rely upon agricultural production, the Programme acquires particular significance. It is especially important in the case of individual farmers, among whom over 97.5% work solely on their individual farms. For the remaining 2.5%, agriculture remains the main source of income, which means that they work additionally outside their farms [Kuzianik and Pijanowski 2005, Pijanowski 2003]. For rural areas situated more than 300 m AMSL, this ratio is even higher.

Thus, the economic situation and particularly sources of income in mountainous and submontane areas require special activities aimed at creating new jobs outside agriculture. This objective was met by the OWCA+ Programme. It is generally known that agriculture is unable to provide employment for the labour surplus inhabiting rural areas (which in some communities is as high as 80%), especially that, compared with the rest of the country, the Malopolska voivodeship possesses the least favourable conditions for the development of agriculture as the leading economic function. This is the case mainly due to its lowest average farm size (2.6 ha; for Poland it is 8.9 ha) and the lowest number of people employed per 100 ha arable land (53 people; for Poland it is 23 people). This results in very low agricultural productivity, determined by farm structures, described as the worst in Poland, and a high number of people working in agriculture. For such farms, the cost of labour, defined as the cost of living of the entire family, constitutes 60% of production costs. Such a situation makes it necessary to search for alternative

income sources for agricultural population in the southern part of Malopolska. The potential in this respect is very high [Pijanowski 2006].

4.2.1 The OWCA+ Programme as an opportunity

For many centuries, the Carpathians – and not only their part lying within the territory of Poland – have been the region of developing pastoral culture, which formed the basis of economic existence for local inhabitants. Pastoral tradition also gave rise to the unique and incredibly rich local culture and customs. Economic transformations in Poland turned out to be very unfavourable to this region, as after the year 1989 they led to the decline of pastoral tradition and sheep breeding. Since 1989, sheep headage has fallen twentyfold, that is from about 4.5 million head of sheep to about 250 000 (while in Malopolska to about 84 000 head of sheep) [Jabłoński et al. 2005]. The disappearance of sheep breeding caused job losses in grazing and processing of sheep products. The decrease in employment in the sector of sheep breeding is difficult to estimate, since this work frequently had a family character.

By the end of 2010, activities aimed at restoring sheep grazing in the Carpathians of Malopolska, undertaken within the OWCA+ Programme, can provide employment for about 1 000 people in the sector of sheep breeding and for 9 000 people in sectors connected with breeding and in tourism.

Before dwelling upon that issue in subchapter 4.2.4, which describes activities within the programme, it should be said that the development of tourism through the restoration of former overview points on selected mountain peaks and ridges constitutes a significant aspect of these activities. This creates the necessity of developing small tourist infrastructure or building observation platforms in selected spots in the mountains.

The decline of sheep grazing also brought about negative phenomena in the natural environment of the Carpathians. These are caused by forest succession into abandoned mountain meadows, natural habitats for numerous plant and animal species, which results in their disappearance. This concerns endemic species, contributing to the unique character of these areas, such as saffron crocus (*Crocus scepusiensis*), whose existence is tightly connected with sheep grazing [Gąsiorek 1993].

Even if mountain meadows do not disappear, without sheep, saffron crocus will face extinction within the next 10-15 years. Research conducted by the Institute of Botany of the Polish Academy of Sciences in Krakow revealed that forests have overgrown over 30% of meadows in the Tatras and Beskids. Forest succession progresses and further 30% of meadows are doomed to disappear [Mirek 2005].

Restoration of sheep grazing within the area of traditional pasture lands (historical meadows in the timber belt) can safeguard the most valuable plant communities which are about to disappear, as well as protect cultural elements of the historical cultural landscape in the Carpathians going into ruin.

4.2.2 Natural assets of the Carpathian cultural landscape in Malopolska

The Carpathian region in Poland embraces the districts of Gorlice, Nowy Sącz, Limanowa, Myślenice, Wadowice, Nowy Targ, Tatras, and Sucha Beskidzka. These areas are characterized by incredibly rich animate and inanimate nature resources. Nowhere else in Poland do they have match in terms of nature diversification and landscape assets.

The Polish part of the Carpathians is predominantly characterized by foothill landscape but we can distinguish as many as 6 vertical climate zones (cold, moderately cold, very cool, cool, moderately cool, moderately warm, and the zone of valley microclimate). Landscape, climatic and hydrological diversity results in vegetation variety as well as vertical and horizontal diversification of plant habitats (forest, meadow, peat bog, water, xerophilous habitats, areas of agricultural production, etc.) [Hess 1965].

Some of the most valuable nature resources can be found within the so-called lower timber belt, which stretches from about 550 to 1 150 m AMSL (Babia Góra, the Beskids, the Pieniny) and in the Tatras up to 1 250 m AMSL. Among secondary communities, meadows play the most important role in this timber belt. These include semi-natural communities, created as a result of forest clearings and maintained through sowing and grazing, mainly sheep grazing [Towpasz and Zemanek 1995].

Within the upper timber belt (1 150 to 1 390 m AMSL for Babia Góra and the Gorce; and 1 500 m AMSL in the Tatras) forest clearings are overgrown with bentgrass (*Agrostis*), gladioli (*Gladiolus*), mowable grass communities of meadow grass (*Poa chaixii*), false hellebores (*Veratrum lobelianum*), as well as poor mat grass (*Nardus stricta*) meadows. Endemic species constitute 39% of Carpathian vegetation in the Tatras, 22% on Babia Góra, 17% in the Gorce, and 13% in the Beskid Wyspowy. Depending on the state of biocenose preservation, variety of animate nature and landscape elements, accumulation of communities and unique species, about 67% of the area of Malopolska has been placed under legal protection, which is the highest percentage in Poland. 6 national parks lie within the boundaries of the voivodeship: the Babia Góra National Park, the Gorce National Park, the Ojców National Park, the Pieniny National Park, the Tatra National Park, part of the Magura National Park, as well as landscape parks, areas of protected landscape, and nature reserves of various types [Radwańska-Paryska 1959].

4.2.3 Anthropogenic elements of the Carpathian cultural landscape in the context of pastoral culture development and decline

Today's landscape of the Carpathians has been shaped to a large extent by pastoral communities of Balkan origin (Wallachians). Wallachian settlers significantly influenced the material and spiritual culture of contemporary Carpathian communities. Above all, they introduced and popularised highland grazing and shaped local music, art, and architecture.

It is believed that Wallachians arrived to the Carpathians in at least two waves. The first took place most probably in the 8th century. It mainly consisted of shepherds wandering with their flocks along the Carpathian ridge. The next (more intensive) wave occurred in the second half of the 14th century and involved shepherd and farmer communities searching for land under permanent settlement. The area between the Lower Beskid and the Beskid Sądecki were colonised first. Then, the settlers travelled more to the west, towards the Tatras [Dobrowolski 1970].

They had chosen Carpathian mountainous areas because from the 13th to the 15th centuries these areas had not been utilised by agriculture. Therefore, the incoming waves of pastoral communities could settle in higher ridge areas as well as on mountain slopes, useless in terms of their agricultural potential and worthless for local inhabitants. First of all, shepherds grazed sheep on natural meadows situated high in the Tatras and along the range of Babia Góra. Through slash and burn practices, they created artificial pastures and clearings on milder slopes of the Beskids ranges, which brought the famous pastures of the Gorce into existence. As time passed, part of the shepherds settled in the valleys at the outskirts of villages and transferred to agricultural economy.

The meeting of two significant settlement waves – the earlier, agricultural and ethnically Polish wave with the latter pastoral, ethnically Ruthenian, Romanian and Balkan – is particularly reflected in the rich cultural variety of local ethnical zones. This can be exemplified by highland communities of the Tatras, the range of Babia Góra (currently in the area by the Skawica River in the Sucha Beskidzka district), the Podhale region (communities living in the Podhale up to the Gorce and Spisz), the population living around Szczawnica and Krościenko, as well as highland communities of the Beskid Sądecki or Lemkos [Dobrowolski 1970].

Sheep grazing on pasture lands, clearings and meadows was seasonal and lasted from spring until autumn. Sheep flocks used to be driven out to pasture after the day of St. Adalbert (23rd April) and turned back around the day of St. Michael (29th September). The event of driving sheep out to pasture (called *redyk*) and back to the village was always an important celebration.

All the summer, the flock was guarded by a senior shepherd (called *baca*) and his helpers (*juhasi*). A mountain shelter served as their summer base. On the

Fig. 37. Examples of deteriorating shelters and the disappearing population of saffron crocus on a mountain meadow (photo J.M. Pijanowski)

Phot. 123. A meadow in the lower timber belt – the Chochołowska Valley (phot. J.M. Pijanowski)

Fig. 38. Driving sheep out to pasture - redyk (www.wrotamalopolski.pl)

Fig. 39. Elements of the highland folk costume (photo Z. Mirek)

other hand, in lower areas, the so-called 'land economy' (*gospodarka polaniarska*) developed which combined hay harvesting and cattle grazing. At the same time forests were cleared and burnt. Thus, pastoral economy exerted significant influence on the shape of local landscape.

Sheep grazing on mountain meadows also enriched the landscape with elements of pastoral architecture, which included:

– summer shelters for shepherds called *koliby*;

– shelters (*szałasy*) with a living quarter for shepherds and a separate room for cheese production;

– numerous sheds (*szopy*) used as a shelter for animals or for hay storage;

– movable enclosures for sheep called *koszary,* characteristic for pastoral economy.

Buildings for shepherds were made of pine or fir logs, called *płazy,* cut longitudinally and squared off at corner joints. Steep roofs were covered with planed planks called *dranice*.

Unique objects of pastoral architecture are currently threatened with destruction, whilst the history of architecture and culture explicitly shows that it was actually this architecture that became the prototype of regional mountain architecture in Poland. To this day, houses built in the so-called Zakopane style are wooden and similarly to their pastoral prototypes built from logs cut longitudinally. They also have steep roofs covered with shingle. The Carpathians of Malopolska contain only remains of unique pastoral architectural objects, mainly on the southern slopes of Babia Góra or on some meadows of the Tatra district.

Wallachian settlers also left permanent traces in the language, which contrary to many artefacts of traditional culture are not disappearing. Words of Wallachian origin include: *maczuga* (club), *fujara* (pipe), *baca* (senior shepherd), *żętyca* (whey of ewe's milk) or place names, such as *przysłop* (pass), *kiczora* (peak), *magura* (peak) given to many mountains and mountain ridges (e.g. Magura Małastowska).

Balkan traces can be also found in traditional costumes: in their general shape and particular elements, such as white cloth trousers, wide belt, a cape (called *cucha*), moccasins constructed from a single piece of leather, or hats. At the moment, highlander folk costumes are treated by many inhabitants of the Podhale as obligatory for formal occasions (see Fig. 39).

Cultural elements introduced by pastoral communities generally include: architecture unique on a European scale, traditions, costumes, or, for example, methods of processing ewe's milk, tools and equipment. Sheep cheese (previously referred to as *oscypiorek,* now as *oscypek*) belongs to the most characteristic products connected with the pastoral tradition. *Oscypki* were covered with diversified geometrical or floral ornaments and have become a very popular and much loved product all over Poland.

Still by the end of the 1980s, sheep and cattle breeding thrived in the Polish part of the Carpathians. Between 1918 and 1939 over 8 000 sheep were grazed on the Tatras' meadows. However, pastoral practices were most intensive towards the end of the Second World War and just after it. The number of sheep at that time reached 40 000 head.

After the creation of the Tatra National Park in 1954, sheep grazing was gradually eliminated and in the 1970s, sheep were completely removed from the Tatras. In return for lost pasture lands, shepherds received the right to graze animals in Jaworki. Grazing was also removed to the Beskid Sądecki. Thanks to these activities, in certain parts of the region sheep population reached record numbers in the 1980s. At the same time, grazing was also indiscriminately transferred to the Bieszczady, with sheep flocks transported there from the Podhale. It must be openly said that eliminating sheep from the Tatras was a mistake and revealed unsuitable approach to nature and culture protection issues in mountainous areas. At the moment, both practical experiences and research results confirm that normative approach to nature protection can lead to the violation of natural coexistence processes between human beings and nature. However it was the serious agricultural crisis after the year 1989 that exerted the most negative influence on the Carpathians of Malopolska. It was the time when agricultural production was limited or even given up on fields and meadows situated higher in the mountains. This led to the disappearance of grazing even on land situated close to villages.

4.2.3.1 Natural changes caused by the decline of grazing

As people gave up grazing sheep, mountain meadows started to disappear overgrown with young stands of spruce and willow, which endangers most valuable semi-natural plant communities, characterized by wide variety of plant species creating flowery meadows, for example xerothermic grasslands or wet meadows with abundant purple moor grass. This can bring about the extinction of numerous species endemic on mountain meadows and pastures, mainly the saffron crocus. According to research conducted by Wężyk and Pyrkosz [1999] and based on aerial photographs, usable area of the Gorce's meadows has diminished tenfold. The area of meadows enclosed by the wall of trees has fallen by 21%, while the area covered by meadow vegetation by 34%. The abandonment of agricultural activities (mowing and grazing) increased the occurrence of high grass and as a consequence the meadows of Babia Góra are overgrown with cocksfoot grass (*Dactylis glomerata*) and fescues (*Festuca*) while at the same time clover (*Trifolium*) and orchid (*Orchis*) populations are disappearing [Kazimierczakowa 1990].

While in the past, mowed and grazed meadows of the Beskids and Gorce were covered with mat grass (*Nardus stricta*), at the moment, abandoned lands are very quickly invaded by tussock grass (*Deschampsia caespitosa*), inedible

Phot. 124. Example of forest succession caused by the abandonment of grazing in the mountains (© UMWM)

to sheep. The plant grows in large clusters and cannot be fought by fertilizing or mowing since it is a nitrogenophilic grass and develops even better after moving. Tall grass also limits the amount of light, which inhibits the growth of low grass. This leads to the above mentioned extinction of saffron crocus, which requires light in its early growth phases [Grodzińska 1982].

4.2.3.2 The role of grazing

Were it not for agricultural and pastoral practices, over 90% of the area of Malopolska would be covered by forests. The landscape of the southern part of the voivodeship would therefore miss dozens of biotopes and hundreds of species growing on grazing or mowable meadows, which constitute about 25% of its entire area. From the point of view of biological diversity, Malopolska thus becomes the richest region in Poland.

The role of saffron crocus should be also pointed out, as far as the tourist attractiveness of Carpathian meadows is concerned. Grazing turns out to be the most effective method of protecting this species as well as preventing mountain

meadows from forest succession. At the same time, grazing itself boosts tourist attractiveness of the area.

Sheep, goat or cattle grazing prevents forest and bush succession as well as naturally fertilizes meadows, thus safeguarding ecological stability of plant communities and improving pasture sward.

Nowadays, in the context of sustainable development promotion, the so-called ecological significance of sheep grazing is more and more frequently mentioned. Primarily, it is supposed to preserve unique features of the timber belt as well as maintain tradition and folk culture connected with pastoral practices.

It should be underlined that preventing forest succession into mountain meadows is also very significant in terms of their attractiveness as hiking trails. The majority of meadows are situated along popular trails (such as Wielka Polana Kuźnicka or Kalatówki). Preventing forest succession then means maintaining finest observation points, which have gained popularity among tourists.

In many European countries, sheep flocks help to maintain young stands and forest farms. Thanks to grazing, foresters do not need to apply herbicides since sheep fertilize the crop speeding up nitrogen circulation within the grazed area. The management of such processes requires certain knowledge about nutritional preferences of sheep in the context of protected saplings. Research conducted at a grazing meadow called Przysłop in the Beskid Żywiecki revealed that with the appropriate number of sheep damages to spruce, beech and fir saplings were insignificant [Drożdż 2002].

4.2.4 The OWCA+ Programme as an example of practical activities for the Carpathian cultural landscape protection in Malopolska

The OWCA+ Programme embraced communities from the southern part of the Malopolska voivodeship, situated over 300 m AMSL. The most significant subjects taking part in Programme implementation involved: local government units, job centres, scientific institutions, and NGOs.

Programme effectiveness depended on a variety of, particularly economic, factors. Thus, the Programme also concentrated on promoting sheep products, including lamb, which possesses particular dietary and medicinal properties. Programme promotion among its potential beneficiaries was defined as equally important.

At the same time, the OWCA+ Programme assumed comprehensive activities, which through a wide spectrum of impact were to generate the realization of the primary objective, that is economic activation and protection of the Carpathian heritage. The system of objectives presented in Table 24 was approved so as to ensure realization of these goals.

Table 24. The system of objectives of the OWCA+ Programme [Jabłoński et al. 2005]

Primary objective	Main objectives	Partial objectives	Operational objectives
Sustainable development and heritage protection in mountainous areas based on pastoral practices	1. Economic activation of rural mountainous areas	1.1 Increase of sheep headage	1.1.1 Purchase of sheep flocks 1.1.2 Increase of sheep flocks 1.1.3 Incentives to sheep breeding (Polish mountain sheep) 1.1.4 Farmer trainings
		1.2 Sustainable development of tourism	1.2.1 Selection and exposure of observation points in the Beskids, overgrown as a result of forest succession 1.2.2 Creation of tourist infrastructure (observation points) 1.2.3 Creation of a tower or observation deck in a selected spot of the Beskids 1.2.4 Creation or renovation of shepherd shelters 1.2.5 Sanitation of tourist trails 1.2.6 Creation and maintenance of cross-country skiing and ski touring trails
		1.3 Promotion as an important element supporting the Programme	1.3.1 Programme promotion targeted at potential beneficiaries 1.3.2 Promotion of natural and landscape assets of the Carpathians 1.3.3 Promotion of tourist assets of the Carpathians 1.3.4 Market development concept for sheep products 1.3.5 Promotion of sheep products 1.3.6 Expert reports and social consultation
	2. Social activation and increased involvement of institutions	2.1 Activation of local communities	2.1.1 Temporary jobs for unemployed 2.1.2 Promotion of mountain culture among children
		2.2 Integration of local government units and other institutions	2.2.1 Involvement of job centres into Programme implementation 2.2.2 Coordination of activities carried out by local government units 2.2.3 Involvement of institutions providing agricultural consultancy into Programme implementation
	3. Nature and landscape protection	3.1 Protection of flora and fauna	3.1.1 Protection of local animal breeds 3.1.2 Creation of the incentive system encouraging shepherds to graze sheep in places of particular natural and landscape assets
		3.2 Protection of Carpathian landscape	3.2.1 Protection of mountain meadows 3.2.2 Activities for the protection and maintenance of traditional submontane landscapes

Although the authors of the OWCA+ Programme were inspired by the desire to protect Carpathian landscape, they intentionally assumed a slightly different order of objectives and expected results. Economic aspects, such as these connected with the standard of living were put in the first place whilst these related to natural heritage protection can be found towards the end of the above presented system of objectives. However, according to the principle of sustainable development we cannot expect to obtain positive results without implementing interconnected economic, social and heritage protection activities [Pijanowski 2007]. In any case, the Carpathian cultural landscape confirms centuries-long interrelation between these three elements. It is obvious that we cannot expect the Programme to restore pastoral economy in its previous scale and form, especially that this was not the intention of the authors. The aim is to preserve its significant role in the economic development of the voivodeship, particularly in the tourist industry, the market of regional and traditional products, food industry, and ecological agriculture. There are also numerous complimentary aspects: climatic conditions, mineral springs connected with landscape and cultural assets create favourable health conditions in the region. Carpathian meadows are attractive places for recreation and mountain tourism.

The Programme, nevertheless, assumed a comprehensive goal, that is the preservation of the Carpathian cultural landscape in Malopolska shaped by pastoral culture together with its remaining anthropogenic and natural elements. This landscape involves meadows in the timber belt together with their biological variety. This effect can be fully obtained only by restoring sheep grazing practices in these areas. Considering difficult relief conditions and inconveniences for people grazing sheep in upper parts of the mountains, the Programme was primarily threatened by limiting grazing to easily accessible enclaves situated near villages in river valleys.

Sheep grazing on a wide scale, a desirable result from the point of view of the Programme, can be accomplished faster if we manage to increase demand for sheep products. That is why the promotion of such products is so significant, including lamb, which possesses particular dietary and medicinal properties. It is also essential to promote the Programme among its potential beneficiaries.

It is largely probable that such demand can be increased, as the Malopolska voivodeship witnesses dynamic development of the market of regional and traditional products.

Flagship and highly appreciated products in this respect are made from ewe's milk, whose shortage, and as a result the shortage of products made from it, turns out to be a favourable factor contributing to the Programme's objectives.

4.2.5 Good intentions versus legal regulations

The OWCA+ Programme encountered serious barriers at the stage of implementation. In the first quarter of 2006, Regionalna Izba Obrachunkowa w Krakowie (Regional Financial Inspectorate in Krakow), which supervises local government units, expressed reservations about making NGOs responsible for investment objectives, according to the Act of 24 April 2003: Ustawa o działalności pożytku publicznego i o wolontariacie (Act on Public Benefit Activity and Volunteerism) [Ustawa 2003b]. Departament Środowiska i Rozwoju Wsi Urzędu Marszałkowskiego Województwa Małopolskiego (The Department of Environment and Rural Development at the Marshal Office of Malopolska Voivodeship) undertook the effort of finding a legal formula which would help to realize investment objectives stated in the Programme.

As a result, certain preparations for the creation of observation towers on several Carpathian peaks (Lackowa in the Low Beskid and Lubogoszcz in the Beskid Wyspowy) were initiated. These sites were consulted with relevant institutions, such as Centralny Ośrodek Turystyki Górskiej PTTK (Centre for Mountain Tourism) and Regionalna Dyrekcja Lasów Państwowych in Krakow (Regional Directorate of National Forest Holding in Krakow).

The investments were to be conducted according to national regulations on public tenders (architecture competition) and then the objects were to be given to communities or other legal subjects in the form of a donation.

In July 2006, the governing body of the Malopolska voivodeship (Zarząd Województwa Małopolskiego) passed a bill regarding the change of regulations in the OWCA+ Programme. These changes were supposed to extend legal bases of the Programme, making it possible to realize investment objectives. The bill was defeated by Sejmik Województwa Małopolskiego (Malopolska Voivodeship regional council) on 28 August 2006. This was a result of previous discussions held by particular committees during which delegates expressed their will to continue the programme in its previous form, despite reservations from Regionalna Izba Obrachunkowa in Krakow.

A turnabout in the Programme implementation, which took place the same year, was caused by the Act of 6 December 2006: Ustawa o zasadach prowadzenia polityki rozwoju (Act on the Principles of Development Policy) [Ustawa 2006]. It introduced changes into the Act of 5 June 1998: Ustawa o samorządzie województwa (Act on Voivodeship Self-Government) [Ustawa 1998], according to which the previous term "Voivodeship programmes" (*Programy wojewódzkie*) was replaced by the term "Regional operational programmes" (*Regionalne programy operacyjne*). Thus, following the regulations of this act "Program aktywizacji gospodarczej i ochrony dziedzictwa małopolskich Karpat OWCA+", that is the OWCA+ Programme, became an operational programme. Since the legislator

changed the concept of implementing objectives envisioned in the Programme, they could not be realised in accordance with the principles of the Act on Development Policy.

This serious legislative change made it necessary to suspend the OWCA+ Programme on 15 March 2007.

In 2007, the objectives of the Programme were incorporated into the programme of cooperation with NGOs and other subjects conducting public benefit activities, whereas the investments connected with observation towers were included into the project "Program Ochrony Środowiska Województwa Małopolskiego" (Environment Protection Programme for the Malopolska Voivodeship). This programme is supposed to provide additional legal and contentwise foundations for the implementation of the OWCA+ Programme.

A competition open to Malopolska's communities regarding the creation of observation towers in selected Carpathian spots was announced on 24 July 2007. Applications were accepted until 23 August 2007.

Moreover in 2007, as a result of another competition, NGOs were entrusted with realizing activities of the former OWCA+ Programme. The first of these involves training sheep breeders so as to create a group of agricultural producers who would improve the effectiveness of farmers on the Polish and European markets. Other activities involve maintaining hiking trails in the mountains or promoting tourist assets of the Carpathians by publishing an atlas of the Carpathians of the Malopolska voivodeship. The atlas will be intended for tourists practicing cross-country skiing or ski touring, including winter hiking also with the use of snowshoes. There are also plans to issue a publication devoted to the culture of mountainous areas mainly indented for children.

It should be assumed that in the following years the local government of Malopolska will not abandon further activities for sustainable development of the Carpathians.

4.3. DEVELOPMENT CONCEPT „MIDDLE SAALE VALLEY AROUND JENA“ AN IMPORTANT EUROPEAN CULTURAL LANDSCAPE

Wolfram Stock, Tim Hofmann, Ingo Quaas

On the initiative of the regional planning authority East Thuringia in the year 2004, the Erfurt University of Applied Science carried out a research report on historically influenced cultural landscapes and specific natural scenery in East Thuringia. In its concluding part, the research report defines the Middle Saale Valley as a cultural landscape of national importance due to its particular density of natural and cultural characteristics. This induced the regional planning authority East Thuringia to commission a development concept for the Middle Saale Valley around Jena as an important cultural landscape.

The concept was developed as a part of an interdisciplinary project CULTURAL LANDSCAPE (2006-2008), within the INTERREG IIIB CADSES Programme of the European Union, and it was conducted in cooperation with the regional planning authority Jena as well as the Saale-Holzland-District. The project aimed at promoting transnational cooperation in the field of European cultural landscape development.

The objective of the cultural landscape project “Middle Saale Valley” was the development of a dynamic model which would contribute to saving and developing the functioning of local cultural landscape in a sustainable way. The planning area for the development concept comprised the Saale Valley between Kahla and Camburg and the side valleys which are visible from the valley plain.

By May 2007, landscape architects, urban planners, and communication experts analysed this area and named its fundamental strengths, weaknesses, and conflicts. Based on these results, models regarding “Middle Saale Valley” cultural landscape were drafted including recommendations for its future development. Additionally, a communication concept was drafted aimed at initiating a public dialogue (media, authorities, organisations, etc.), obtaining project approval, making various actors interested in its implementation and suggesting modifiable means of communication for its implementation.

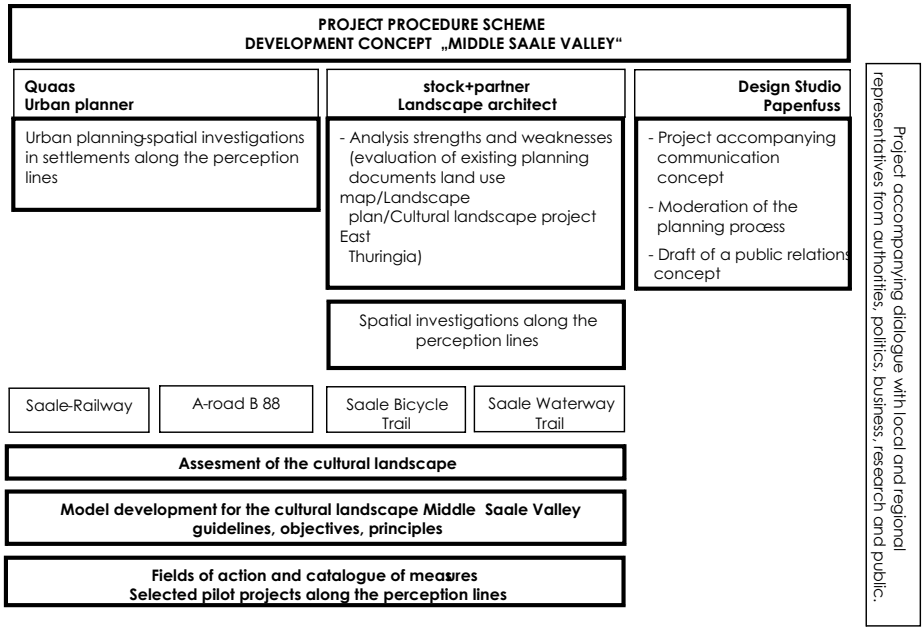

Fig. 40. Organisation chart of the project procedure

4.3.1 Framework

4.3.1.1 Planning area

First of all, the planning area was identified. It consisted of the Saale Valley between Kahla and Camburg. Thus, all Thuringian coquina formations of the Middle Saale Valley are situated within the study area. Furthermore, the border of the planning area was drawn along the horizontal line that can be observed by overlooking the valley from the Saale floodplain. This line runs along slope sides on both sides of the river and reaches into the Saale side valleys of various depths.

The map chosen as a basis for graphical presentation shows land use patterns and topography on a scale of 1: 25 000.

Phot. 125. View of the Middle Saale Valley

4.3.1.2 Communication concept

Besides the analysis of urban and landscape planning, a communication concept had to be developed as a part of the development concept "Middle Saale Valley around Jena".

– With respect to the progress of the development concept, communication concept involved the following objectives:
  • to make the project public and implement measures for sustainable development of the cultural landscape,
  • to make institutions and sponsors involved in the planning process,
  • to initiate a dialogue with regional actors (public relations and outside representation of interests) aiming at achieving their collaboration or acceptance for the project.
– With respect to the methodological approach the objectives were:
  • to impart information about particular qualities of the Middle Saale Valley,
  • to position and reveal the context regarding the content, form, and measures in the overall concept,
  • to adapt variability and modifiability of the different measures.

Connecting communication means. Communication concept used various means of communication which were compiled by the project group and suggested to all initiatives involved in the Middle Saale Valley development concept. Thus, a "general" website could be implemented and linked with several more specific websites. Communication means were connected with each other depending on particular tasks. Also, some initiatives were using the same communication means simultaneously, like joint workshops, festivities, etc.

4.3.2 Analysis of strengths and weaknesses

4.3.2.1 Working methodology

The analysis of strengths and weaknesses was carried out on a scale of 1:25 000 for the complete planning area based on the existing land use maps, landscape plans, and the cultural landscape project East Thuringia. At the same time, fundamental strengths/potentials and weaknesses/conflicts in the planning area were defined. For better presentation, the planning area was divided into 5 segments: Kahla, Jena-South, Jena, Dornburg, and Camburg

In order to describe fundamental strengths and weaknesses, planning sections were created, which allowed better visualisation of individual focal points.

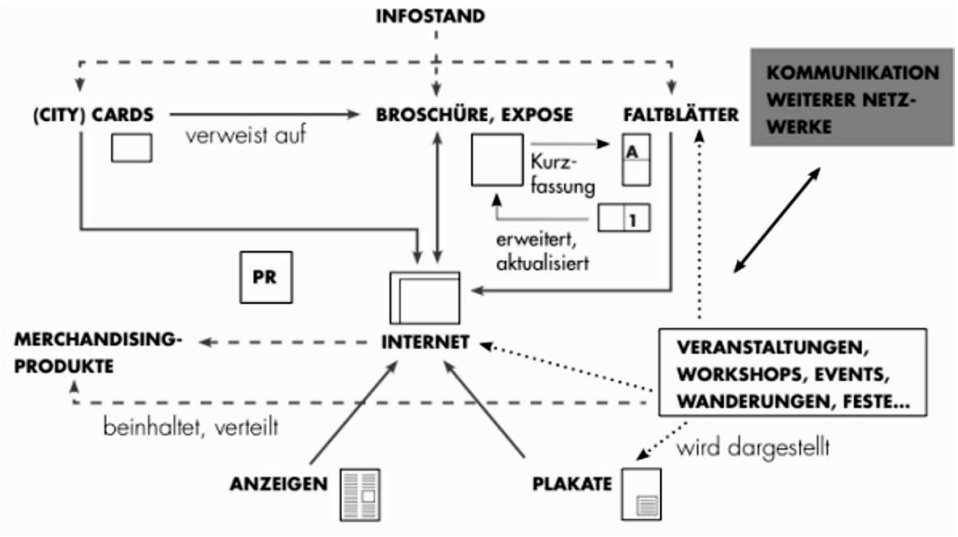

Fig. 41. Connecting communication means from the proposed project initiatives

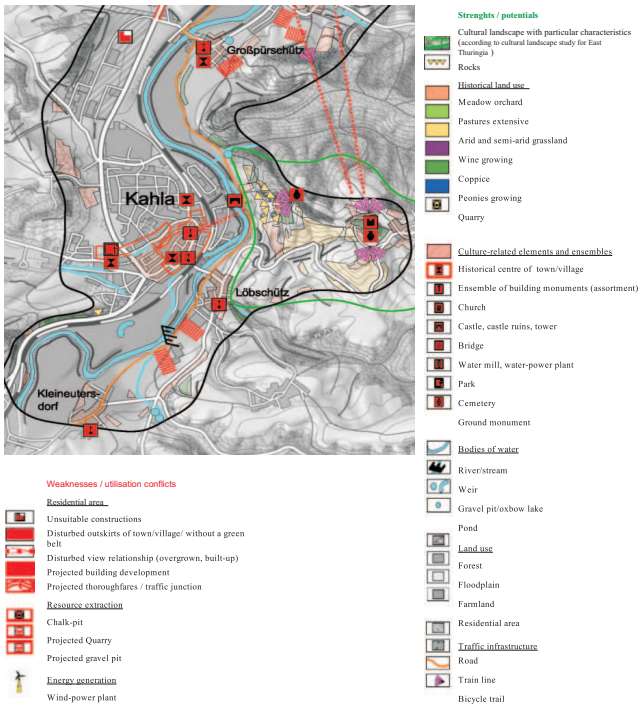

Fig. 42. Analysis of strengths and weaknesses. Planning section segment Kahla

The results of strengths and weaknesses analysis formed the basis for assessing perception lines and designing a cultural landscape model.

The first step involved the compilation and analysis of available documents regarding strengths and potentials as well as weaknesses and conflicts, which involved:

– Cultural Landscape Project East Thuringia, UAS Erfurt [Schmidt et al. 2004],

– landscape plan Jena [Büro stock+partner 2003], landscape plan Jena "incorporated communities" [BÜro stock+partner 1997a], and landscape plan Jena section "surrounding area" [BÜro stock+partner 1997b];

– southern area of the Saale-Holzland-District [BÜro Prof. Dr. Krause 1996];

– conservation and development plan of the large scale nature reserve "Orchid region Middle Saale Valley near Jena" [Büro Hirsch et al. 2002];

– study "Experiencing the Saale" in the urban area of Jena [Büro Boock 2004];

– study "Waterway touring on the Saale in Thuringia" [IPU Ingeniebüro 2006].

Additionally, the following planning documents were used:

– Regional land-use plan East Thuringia;

– Land-use map for the city of Jena;

– Master plan Jena/ Saale-Holzland-District ("JenArea 21");

– Aerial photographs.

The results were documented in writing and presented graphically on a scale of 1:25 000.

4.3.2.2 Results

Subsequently, the results of the analysis of strengths and weaknesses were compiled for the overall planning area.

Strengths and potentials

Nature-related elements. Over thousands of years, the river Saale and its tributaries have shaped the landscape through erosion processes. The unique landscape has developed as a result of an interaction between various characteristics of the occurring rocks and the power of water. Since most of Central European landscapes have been modified by anthropogenic influences, natural elements are especially important.

Relief. The canyon-like valley is a distinctive natural feature of the Middle Saale Valley. Partly rocky, partly forested, the steep slopes contrast with the open landscape of the Saale floodplain.

Steeper parts of the slopes in the southern planning area are mainly covered by mixed forests. In the municipal area of Jena, the valley extends and offers views that in some parts reach far into the side valleys (the Leutra Valley, the Roda Valley, the Pennicken Valley, and the Gembden Valley). Also north of the city, the valley opens towards the east into the Gleis Valley, until after a distance of 3 km the "Alter Gleisberg" restricts the view. In the Dornburg area, the valley becomes closer again. Instead, the floodplain extends to 1 km, being twice as wide as around Kahla. East of Wichmar, the slope side is less cliffy. The canyon opens, announcing the entry of the river into flatter landscapes north of Camburg.

The mountains of Jenzig, Heiligen, and Pfaffenberg offer especially noticeable mountain silhouettes.

Rocks. Rock formations play a special role in the perception of this landscape. In the planning area, they occur as steep slopes, undercut banks, and slumps.

In the south, Bunter Sandstone formations are dominant. In this area, Dohlenstein and Leuchtenburg are the only and first distinctive coquina ensembles along the course of the Saale. This indicates the beginning of a type of rock which for the next 100 kilometres is going to be typical for the valley along the Saale, reaching far into Saxony-Anhalt. In the municipal area of Jena, coquina formations of steep slopes create a ubiquitous background in the cityscape.

Coquina and Bunter Sandstone occur as far as Dornburg until finally, in the northern planning area, geological exposures reveal exclusively coquina rocks.

The river. The streams divide the landscape. While the Saale forms a spine in the north-south direction, its tributaries structure the landscape in the east-west direction. Despite the man-made development of the river, large sections still maintain their natural features, especially outside populated areas. In the municipal area of Jena, several near-natural areas still exist at many sections of the Saale.

Also, three natural bodies of standing water occur in the planning area, situated in the floodplain of the Saale: the bayous south of Kahla and Porstendorf as well as the groundwater pool (Quelltopf) north of Steudnitz between the A-road and the Saale.

Culture-related elements

Primarily, a distinction can be made between man-made and natural elements of the cultural landscape. Since the first type of elements is a proof of anthropogenic construction and settlement activities and therefore mostly situated in cities and villages, the latter type rather exists in the countryside.

It is one of the specific landscape features of the Middle Saale Valley that man-made and vegetative elements occur together within a small area. Due to the narrowness of the valley, only very limited space for settlements was available. For centuries, the steep slopes on the one side and flooded plains on the other made it impossible to develop settlement activities in these areas. Even with new technologies being invented, settlement activities were still restricted. Thus, settlements were established at the bottom and along the less steep slopes which, especially in Jena but basically also in Dorndorf-Steudnitz and Kahla, led to the development of "band-shaped" settlement structures in the Saale Valley and partly in the side valleys. Because of the way the settlements were embedded in the landscape, a high number of border lines as well as a high concentration of man-made and natural elements emerged within a small area.

Deep integration of settlement and natural areas can be perceived as one of the region's essential strengths. At any point within the settlement area, walking distance to the countryside is not longer than 20 minutes. Many housing sites benefit from their climatically beneficial southern exposure and interesting views.

Historical land use. Because land use forms persisted over a long period of time, the area could flourish with types of vegetation that due to their scarcity and sensibility are especially valuable, such as aesthetically precious and vital biotopes for animal and plant species. On the other hand, their value arises from the way they document the past ways of living and former economic methods.

The most widespread natural elements of the cultural landscape in the planning area involve arid and semi-arid grassland, followed by meadow orchards that mainly concentrate on southerly exposed slopes. The arid and semi-arid grassland predominantly occurs in the upper while the meadow orchards in the lower parts of the slopes. Numerous meadow orchards also exist on the outskirts of towns and villages. All over the planning area, some historical forms of forest use occur on forested slopes. Juniper heaths can only be found as local relicts, while vineyards are newly planted elements. Historic quarries are situated at many sites in the area surrounding settlements, especially around coquina formations.

Over the past 100 years, the number of ponds has declined significantly in the planning area as well as in many other regions. Ponds of the highest density can be still found in the Pennicken Valley and the Gembden Valley. Due to gravel mining in the Saale floodplain, also new bodies of water have been formed. Since mining activities finished many decades ago, most of the mining relicts have developed into aesthetic landscape elements of high value. Lake Schleichersee and Porstendorf gravel pit are the largest bodies of standing water in the planning area. Several other former gravel pits concentrate between Rothenstein and Maua as well as near Porstendorf.

Phot. 126. Rock formation Rothenstein

Phot. 127. The Käutzchensberg - the last vineyard in Jena

Monuments. Due to a wide range of individual elements under legal protection, only a few can be enumerated here. At the same time, the examples below include several buildings that are not listed as monuments according to the Thuringian Monument Act, yet they possess special qualities as long-distance landmarks, serve as reference points, or reveal unique architectural features. These are, for instance, the "Jentower" in the city centre of Jena or various former water mills. When possible, monument complexes have been described on a scale of 1: 25 000.

The Saale Valley boasts high density of building monuments which are located in Kahla, Löbschütz, Rothenstein, Ölknitz, Burgau, Lobeda, Jena, Paradies, Dornburg, or Camburg. It can be noticed that they are situated in the vicinity of the river and on both its sides. Many of the historically important buildings bear a direct relationship to the river. This applies to the bridges in Brücken, Kahla, Lobeda, Burgau, Dorndorf, and Camburg; the mills and the millstream in Kahla, Jägersdorf, Burgau, Porstendorf, Dorndorf, Döbritschen, and Camburg. Three mills still exist in the Leutra Valley, along a 2-kilometre section of the stream. The Porstendorfer millstream is more than 2 km long and therefore it is an especially impressive evidence for anthropogenic construction activities at water bodies.

The study area is also particularly rich in surface earth monuments. More than 20 settlement sites and fortifications are visible in the terrain relief between Kahla and Camburg. They are mainly situated on the hilltops and provide evidence of anthropogenic settlement activities along the river. In a specifically obvious way, the earth monuments link the regional history of settlement with the landscape.

Castles, castle ruins, and towers are also distinctive features of the landscape. There are very few sites within the planning area where none of the distinctive buildings on the mountain range can be seen.

Leuchtenburg castle is one of the most striking building monuments, visible from a long distance. A good view towards the castle stretches even from the top

of Landgrafenberg near Jena. Generally, this landmark can bee seen from the area of about 700 km^2 in the Middle Saale Valley. On the other hand, the "Jentower", by far the highest building in the area, marks the city centre of Jena from a long distance. Church towers are particularly significant landmarks not only for town or village districts but also for landscapes. Together with numerous graveyards, churches form a kind of religious cultural landscape.

Many building monuments reflect the geology of the area. In the southern part of the planning area, between Kleineutersdorf and Rothenstein, Bunter sandstone predominates and is still the preferred building material. Further north, coquina is widely popular. In Jena, both types of rocks have been used as building material: e.g., coquina for the main university building and Bunter sandstone for the city hall.

It is specific for the cultural landscape of the Middle Saale Valley that many direct interrelations can be seen between the buildings made of natural stone and rock formations where the material was gathered from. This connection is most obvious for the castles built from coquina and rocks they are standing on. However, such relationships can be also found over greater distances, e.g. between the Burgauer Bridge and the rocks of the mountain of Johannisberg or the city church in Jena and the rocks at the slopes of Jenzighang.

Weaknesses and utilisation conflicts

Regional landscape plans provide detailed descriptions of disadvantages of various forms of use and their impact on natural scenery. Below, the main weaknesses and use conflicts will be compiled from the sources named in chapter 4.3.2.1. This data will be supplemented with information about deficiencies recorded in the frame of the project work.

Settlement development and traffic infrastructure

The cultural landscape of the Middle Saale Valley has been altered rapidly in several steps during the past 130 years. The construction of railway lines in 1874 and 1876 marked the beginning of the industrialisation process in this region. Until World War I, large-scale industries had their structural breakthrough in Jena. Consequently, the population increased drastically and the populated area tripled mainly due to extensive building development westwards and southwards from the city centre. The settlement area doubled again after another construction impulse in the 1930s. Settlement development was accompanied by various alterations affecting the course of the Saale River, involving straightening of the river, bank reinforcement, and partial piping installations.

With the construction of the motorway in 1938, another infrastructural axis reached the planning area. Between 1950 and 1980, new residential areas were

built from precast concrete slabs not only north and south of the municipal area of Jena but also in Kahla and Camburg.

In the 1990s, further extensive settlement activities begun. In Jena, relatively large residential areas arose in Drackendorf, in the Gembden Valley and on the northern outskirts of the city. Also in the Saale-Holzland district, large residential areas were developed: in Ölknitz and Dorndorf-Steudnitz.

At the same time, numerous new industrial estates appeared. Therefore, some areas that had been already characterised by dense settlement, became more compact or were covered with new buildings (the industrial estate of Unteraue, Am Egelsee, Zwätzen, Am Felsenkeller, Tatzendpromenade, or Göschwitz). On the other hand, some large-scale industrial estates were built on the outskirts of towns, where there were no buildings before (e.g. Lobeda-South, Maua, and Kahla) or within already existing settlement sites, which were considerably extended (e.g. Clinical centre and Beutenbergcampus in Jena).

The realisation of numerous individual projects increased settlement compactness both in the city of Jena but also at many steeper slopes (e.g. Sophienhöhe, Philosophenweg, and Schillbachstraße). Also the green belt of the Saale floodplain within the municipal area of Jena, including flooding areas or near the river banks, was further reduced by building development (e.g. industrial estate Saalepark, Wiesenstraße, stadium, Schillerpassage). In some parts, allotments have been established.

As far as the development of traffic infrastructure is concerned (e.g. the extension of the A4 road and the tramline Jena Centre - Lobeda, Nordbrücke), the landscape has been seriously altered. For example, several constructions sharply contrasting with neighbouring buildings as well as surrounding landscape in terms of proportions, style, material, and colours appeared in Rothenstein and Lobeda-South. The picturesque view towards Leuchtenburg Castle north of the town of Rothenstein, the most significant regional element of this cultural landscape, has been obstructed by new industrial buildings. The view from Dornburg Castles, part of the national cultural heritage, well-known from drawings and landscape descriptions created by Goethe, has been drastically changed by new buildings.

Severe interferences into landscape scenery have been caused by the buildings that:

– due to their height, size, or exposed position exert a significant long-distance effect (e.g. Industrial estates of Maua, Schillerpassage Jena, or chimneys of the power station at Burgau);

– have their front walls painted with bright colours or colours that are not typical for this landscape (e.g. in Steudnitz, Maua, Lobeda-South, Stadtrodaer Str. at the level of Neue Schenke);

– are situated in the vicinity or within the view of famous cultural monuments, like Leuchtenburg Castle or Dornburg Castles (e.g. the residential area at Dorndorf-Steudnitz and the industrial estate at Maua);

– are not sufficiently surrounded by the green belt on the outskirts of towns/ villages (on the outskirts of numerous urban and rural places within the overall planning area);

– consist of moving elements or have flickering lights (e.g. wind turbines near Coppanz and Frauenprießnitz).

Building proposals

Besides the already existing disturbances, further severe changes to the cultural landscape have to be expected in the future because of intended building proposals. These include:

– the extension of A-road B 88 south of the motorway junction Göschwitz,

– the construction of A-road B 88 north of Wiesenstraße in Jena.

Positive impact on the cultural landscape is to be expected with dismantling the motorway in the Leutra Valley after the completion of the tunnel.

Smaller building projects can be also disadvantageous to the settlement scenery if they are carried out in sensitive urban spaces. The extension of urban settlement spaces – in principle, a positive tendency – threatens valuable green areas which become built up. An example for Jena is the building development of the central green in the area of Ringwiese (Aspenweg/ Hopfenweg). As a result, an open space disappeared, which typically for that period, was related to the surrounding housing development from the 1930s.

Resource extraction

Opencast mining is a precondition for using regional building material. However, this has severe impact on the landscape, as rock mining changes its characteristic relief. If mining takes place on slopes or on top of an area, like in Steudnitz, this has a particular long-distance effect.

Regarding regional development, there are two lower-priority areas for opencast rock mining within the overall planning area: east of Steudnitz and west of Porstendorf.

4.2.3 Assessment of cultural landscape along the perception lines

With regard to the insemination of systematically recorded and documented natural, structural, historical, architectural, and other elements of the cultural

landscape in the Middle Saale Valley, the "day to day" (real) perception from the perspective of the "users" was reconstructed and analysed. The basic assumption of this method developed by Kevin Lynch [1989] is that the perception of the city – and the landscape respectively – happens alongside frequently used perception lines (roads, paths) which are likewise significant elements of the city/ natural scenery.

Between October 2006 and January 2007 the perception of the cultural landscape was recorded alongside four main arteries:

- the Saale-waterway trail (boat),
- the Saale-bicycle trail (bicycle),
- the train line (train),
- the A-road B 88 (car).

Based on the different perspectives, noticeable (visible) areas are differentiated from unnoticeable (hidden) areas and significant aspects characterising the cultural landscape are determined. Thereby, the following elements were distinguished and documented:

- border lines / margins (e.g.: between settlements and the countryside),
- areas (e.g.: special urban architectural style),
- focal points (e.g.: crossroads, a train station, a market square, etc.),
- landmarks (e.g.: a castle, a multi-storey building, a chimney, etc.).

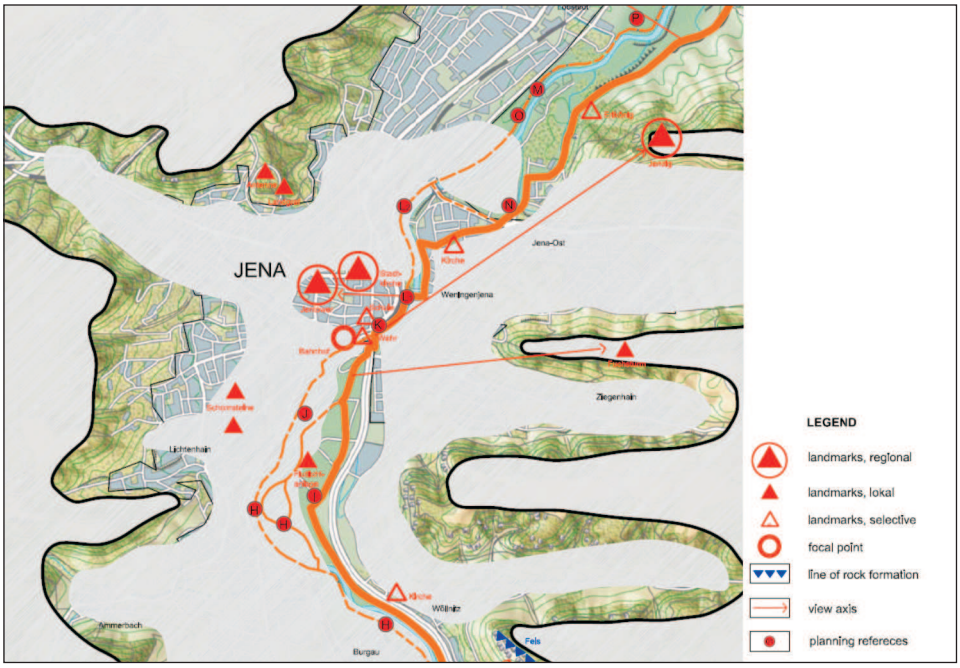

Fig. 43. Assessment of the perception line Saale - bicycle trail, section Jena

Thereby, these elements were differentiated with regard to their meaning for the cultural landscape scenery as well as their perception (regional, local, and punctual). Conflict situations were marked as points and described. They mark areas with need for action or where certain measures have already been implemented.

In combination with the models that need to be carried out, all points represent planning aids regarding the section "measures for sustainable upgrading and development of the area".

On the one hand, assessment was important in order to restrict certain structural and spatial aspects, especially in the municipal area of Jena. On the other hand, it enabled a "popular" description as a basis for a broad dialogue with various actors.

Focussing on important perception lines enabled the creation of a communicable, practice-oriented concept development at a regional level. In the course of further processing the development concept for the cultural area Middle Saale Valley, it is possible and recommended to get the municipal level involved. A compiling chapter shows the individual segments and provides assessment indications. The results are presented in writing and on a map.

Regarding the perception line Saale (boat), information from the study on waterway touring on the Saale [2007/2008] was included in the assessment. Some of the deficiencies that mainly concern access and facilities at different sites have already been eradicated or will be in the near future. The assessment was conducted in a verbal-argumentative way. The results of the perception study were documented in four perception maps and will be implemented in approximately 120 proposed measures.

4.3.4 Model development for the cultural landscape Middle Saale Valley

4.3.4.1 Working methodology

The model has holistic objectives with respect to the entire society. The content of the objectives for the development of the cultural landscape Middle Saale Valley is based on research data and results. The model represents a compiled presentation of the condition that is intended to be achieved in the planning area within 15 years.

The hierarchical levels of the following figure provide an overview of the methodical approach. The classification has been made according to the contents of the cultural landscape project East Thuringia by UAS Erfurt.

The model will be discussed and agreed on by the advisory board and local actors.

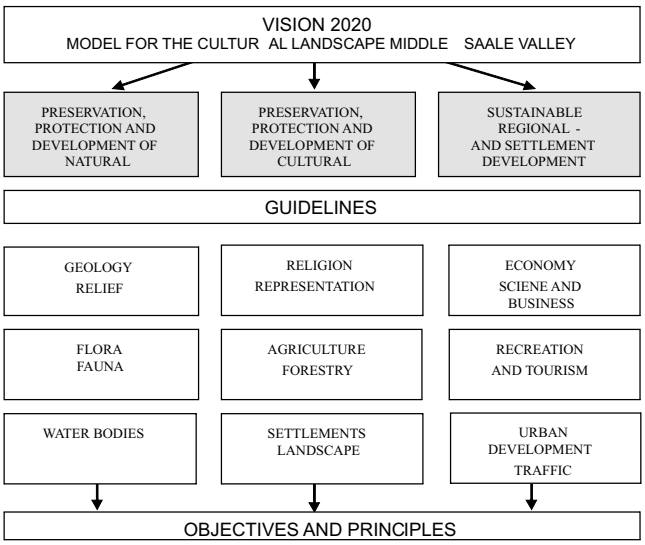

Fig. 44. Model development diagram

4.3.4.2 Vision 2020 - a fictitious experience report

Nowadays, the unique beauty and diversity of the Middle Saale Valley with its canyon-like plains and detailed landscape mosaic, consisting of rock cliffs, tree-covered slopes, vineyards, orchards, arid grassland, and one of the most important orchid sites in Central Germany, are still as striking as in the previous century.

The visitors centre, situated in the central area of the large-scale nature reserve “Orchid region Jena - coquina slopes in the Middle Saale Valley“, has become one of the most popular attractions for local people and visitors to the region as it provides a lot of information about local flora and fauna as well as the origin of this cultural landscape.

Whilst castles and churches as well as historic forms of settlement and the division of land symbolise ancient cultural traditions, the so called “bio region“ Jena has developed into a leading scientific, technological, and leisure site in Germany, based on historically developed competences in optics and precision engineering, in close co-operation with research institutes at the “Science-Campus Jena-Beutenberg”, and imbedded in the attractive countryside of the Middle Saale Valley.

The sustainable and regionally co-ordinated land use management of the “JenArea“ undercuts the “National Sustainability Strategy“ by the federal govern-

ment, despite a population increase of 10 000 inhabitants. Nevertheless, today's character of Jena as a "green city" can be experienced to a greater extent than in the year 2007.

Positive situation regarding the job market, manifold cultural activities, and excellent leisure time facilities in the proximate residential environment are the reasons why the region of Jena has now reached a top position in international ranking. Besides traditional trails along the "Horizontal" with a "view from above" into the Middle Saale Valley, the new "Saaleauenpark" offers hikers, cyclists, and paddlers a new continuous connecting path in close proximity to the river between Kahla and Camburg. Construction and urban building sights along this path are well signposted while restaurants invite people to rest "on the bright beaches of the Saale" and offer new viewpoints on the Middle Saale Valley at the water line level.

Jena has regained its good reputation as a "city on the river". Numerous regional public transport connections of the "Saaletalbahn", which at the weekend has a luggage carrier for boats and bicycles, have, despite an increase in population, caused a significant decrease in the number of private cars driving along the roads. Also, car-sharing companies are flourishing.

Lamb, apple juices from local orchards, goat cheese, and other regional or organic products have become very popular in regional households.

Such a strong social commitment reflects the great identification of citizens and local enterprises with their living and working environment and plays an important role in sustaining this precious cultural landscape beyond the year 2020.

4.3.4.3 Guidelines, objectives and principles

Natural characteristics

Guideline:

The Middle Saale Valley around Jena: a geomorphologic rarity, **naturally unique**!

– The outstanding geomorphologic situation of the canyon-like valley with its steep, open rock cliffs and deeply cut side valleys is the most striking local feature.

– The landscape scenery is an important location factor for the Middle Saale Valley. All impacts and changes must be reviewed in relation to their special implications and compensated if necessary.

– The specific topographical, geological, and climatic conditions of the coquina landscape bring about a diversity of various animal and plant biotopes, including the most important orchid sites in Central Germany.

– The balanced relationship between nature and wildlife conservation, recreational function and economic utilisation is a precondition for sustainable preservation and development of the Middle Saale Valley cultural landscape.

– The subdividing river course as well as its tributaries and floodplains constitute dominating and connecting landscape elements in the Saale Valley.

– Natural water dynamics, high water quality, and extensive flooding areas are not only important for the efficiency and usability of the floodplain, but form the basis for the development of a near-natural park-like landscape between Kahla and Camburg.

Objectives and principles

Geology and relief:

– conservation of the distinctive relief, especially the upper slopes and plateaus from dominating visual "overforming" by forests or building development;

– preservation and development of the well-structured cultural landscape mosaic;

– cubature, height, and colour of new buildings matching the local landscape;

– conservation of slope sides that function as blinds and protection against noise and dust in rock mining areas of high and lower priority;

– no more declarations of land for resource extraction in regional spatial planning;

– installation of new wind energy farms only outside the horizontal line of the valley plain in selected high priority areas;

– application of impact regulations also for impacts regarding the landscape scenery.

Flora und Fauna

– promoting extensive grazing management and mowing of areas that are not suitable for grazing in order to retain areas for rough grazing with their arid and semi-arid grassland that is typical for this region; establishment of an arid biotope connectivity;

– preservation and development of linear landscape structures (e.g. hedges, forest edges, saum structures) and landscape elements (solitary trees, field hedges, groups of trees) for structural diversity and as joining elements for biotope connectivity;

– preservation, protection, and optimisation of water habitats and connecting them in terms of wetland habitat connectivity;

– transformation of farmland in river and stream floodplains with flooding hazard into floodplain meadows and forests; development of waterlogged zones in the Saale floodplain;

– compilation of a long-term development concept to continue the large-scale conservation project in connection with the implementation of marketing strategies for products from cultural landscapes.

Water bodies

– promotion and strengthening of the natural water dynamics of the Saale and its tributaries by keeping the flooding area clear and extending it as well as renaturation of sealed land;

– renaturation of buildings and allotments in the floodplains of the Saale valley (e.g. in Jena near the former Rasenmühle);

– renaturation and connection of "flood throughs" and backwaters with the Saale;

– improvement of water quality by means of avoiding nutrient contamination due to intensive farming practices in the rivershed or development of a buffer zone by the intensification of agriculture and development of buffer zones next to adjacent intensively used agricultural areas on both sides of the river;

– developing the Saale into a fish biotope without obstructions by means of constructing fish ladders at weirs;

– maintenance and development of water bodies by applying environmentally friendly hydro-engineering methods of construction.

4.3.4.4 Cultural characteristics

Guideline

The Middle Saale Valley around Jena: Cultural heritage of great format. Historically valuable!

– The distinctive characteristic of the Middle Saale Valley is the historically grown diverse mosaic of different land uses patterns consisting of extensively structured vine and fruit growing, arable farming, grazing management and forestry.

Precondition for sustainable preservation and development of this unique cultural landscape is the combination of ecological, economic, and cultural aspects for the protection, maintenance and utilisation of natural resources.

– Besides the autochthonic characteristics of the regional architecture, especially the silhouettes, "roof landscapes", and village or town outskirts, create the picture of this settlement landscape in the Middle Saale Valley as part of a larger regional unit.

– The reason for this particularity of the cultural landscape with its numerous architectural monuments is the fascinating heterogeneity of its monuments:

religion, representation, and industrial production. Whilst castles on hilltops and slope sides as well as churches in villages and small towns constitute landscapes landmarks with long-distance visibility. The scenery of the city of Jena is particularly marked by industrial architecture and settlements of the modern spirit.

Architecture and monument conservation are therefore of special importance as distinctive elements in villages and towns as well as the landscape. Therefore, the impact of all building projects has to be checked, adapted and if necessary altered. This requires the creation of supra-regional effective mechanisms

Objectives and principles

Religion and representation:

– preservation, maintenance, and restoration of historical architectural monuments (castles, castle ruins, churches, parks, and gardens), if possible with new forms of utilisation, as orientation and identification points in the landscape;

– preservation and reconstruction of major intervisibilities.

– reviewing the effects of all planning and building permissions regarding the protection status of the surrounding architectural monuments.

Agriculture and forestry:

– preservation and utilisation of remaining regionally typical vineyards, meadow orchards, as well as arid and semi-arid grassland by direct marketing of respective agricultural products;

– conversion of arable land into grassland on erosion-prone slopes and in floodplains as well as on land with naturally low productivity;

– conservation of historic forms of forest utilisation, the so called "Mittelwald" and coppice forest, and promotion of landscape perception lines (forest outskirts, near-nature forests, saums, or clearings);

– exclusively near-nature forestry by planting native tree species as well as protecting and developing mixed hardwood forests and establishing staged forest outskirts with herb and shrub layers;

– reviewing the effects of all planning and building permissions regarding their impact on the scenery of the cultural landscape.

Settlement landscape:

– restoration of historic towns and villages with their typical elements (a village square, a village green, ponds) and regionally typical building materials;

– preservation, restoration, and conversion of characteristic buildings, like old barns;

– restoration and conversion of historic industrial and commercial buildings (old train stations, bridges, historic water mills, etc.)

– analysis and reconstruction of historic crossroads as well as former stream courses and trenches.

4.3.4.5 Sustainable regional- and urban development

Guidelines

The Middle Saale Valley around Jena: knowledge-based economy with social, ecological, and cultural perspectives sustainable attractive!

– The existing and historically developed competences in research and industrial production, especially in the field of optic and precision engineering, constitute the economic basis for sustainable regional and urban development in the Middle Saale Valley.

– At the same time, the region strengthens its technological and science assets on the basis of inter-municipal land management, according to the criteria of the "JenArea 21" as well as the intensification of the collaboration between economy, science and culture within technology and innovation centres.

– The attractiveness of the Middle Saale Valley as a central place for living and as a tourist attraction originates from the "experience quality" of its cultural landscape, which is a unit of manifold nature- and culture-related characteristics in combination with attractive infrastructure.

– Compared with other parts of Thuringia, the Middle Saale Valley changes more rapidly due to the extension of settlement and traffic space. Further urban sprawl of settlements would put nature-related characteristic at risk.

– The essential precondition for the conservation and development of the cultural landscape is sensible handling of land natural resource by means of consequent "inner development", recycling of derelict land as well extending (traffic) infrastructure in a way that uses land and landscape very economically.

– The outskirts and entrances of towns and villages, boundaries and landmarks are essential elements for the image of a place Consequently, their peculiarity is important, especially along major perception lines.

– Every impact on the scenery of towns, villages, and landscape has to be reviewed for its sustainable effects (cultural landscape check).

4.3.4.6 Objectives and principles

Economy, science and business

– enhancement of historically developed competences in optics and precision engineering, linking them with new scientific competences, development and

production of innovative instruments and solutions for life-science applications ("Bioregion");

– regionally co-ordinated allocation of land tailored to meet the requirements as well as technology-oriented infrastructure (offices, laboratory centres, etc.);

– definition of the qualities and special characteristics of different industrial estates;

– promotion and development of regional markets and jobs by means of strengthening regional networking and verified regional land management;

– direct marketing of regionally typical industrial and agricultural products;

– development of joint regional marketing strategies;

– co-ordination of regional land management for sustainable site development and extension with the technology and business site of the Saale Valley according to the criteria of the "JenArea";

– promotion of alternative sources of income in agriculture or forestry (e.g. development and extension of renewable energies in compliance with environmental protection and nature conservation).

Recreation and Tourism

– establishment of a near-natural Saale valley park with varying development levels between Kahla and Camburg, offering continuous and attractive infrastructure for hikers, cyclists, paddlers, etc.;

– provision of the Saale valley railway with separate carriers for boats and bikes at weekends and during the holiday season;

– keeping intervisibilities and views towards architectural landmarks clear;

– presentation of the unique landscape scenery in image brochures and Internet presentations for visitors, guests, and newly establishing companies;

– compilation of integrative development strategies and co-ordination of leisure facilities in close co-operation with representative bodies from economy, tourism, nature conservation as well as agriculture and forestry.

– utilisation of synergy effects between eco tourism, extensive farming, and environmental education in the project area of the large-scale conservation project;

– combination of various weather-independent and target group-specific facilities in the field of sports, culture, and education (e.g. guided walks, visitor parks, exhibitions, environmental learning activities, etc.);

– promotion and conservation of regional traditions (e.g. municipal and village chronicles, history workshops, clubs and societies, festivities, local museums, etc.);

– education activities regarding regional history;

– initiation of literature competitions (short stories, essays, etc. thematically related to the landscape of the Middle Saale Valley).

Urban planning and traffic

– utilisation of developed sites in reserve within the inner area;
– keeping the upper hillsides free from housing, allotments and weekend homes;
– avoidance of "continuous settlements" (*Siedlungsbändern*), development of green spaces between districts;
– restoration of historic architectural and spatial structures;
– promotion of utilisation of regional building materials (coquina, Bunter Sandstone)
– renovation of the parks "Paradies", "Landveste" and "Oberaue" in Jena;
– establishment of green areas along the outskirts of villages and towns as well as next to disturbing buildings and building sites;
– maintenance of still functioning and development of new green outskirts of towns;
– protection and development of open public and private spaces in town districts;
– selection of suitable front colours for buildings with landscape impact;
– medium-term renaturation of industrial sites in the Saale floodplain;
– clearance of derelict industrial sites (e.g. chimneys) in rural areas;
– restoration of historic bridges over the Saale;
– alternative traffic development by establishing a wide cycle path network between settlements that are directly related to distinctive characteristics in the cultural landscape Middle Saale Valley;
– increase in the frequency of the Saale railway and introduction of carriers for boats and bicycles at weekends and during holiday seasons;
– construction of new train stops for commuters;
– analysis, preservation, and signposting of historic relationships between roads and paths;
– utilisation and design concepts for derelict land, especially neglected train stations and their surroundings.

4.3.5 Fields of action and catalogue of measures

4.3.5.1 Fields of action along the perception lines

Apart from subordinate and abstract statements regarding models and guidelines, it is necessary to substantiate development objectives for the Middle Saale Valley. This will be realised by dividing them into fields of action with definite spatial relations alongside the four perception lines:

– the Saale waterway trail (boat),
– the Saale bicycle trail (bicycle),
– the train line (train),
– the A-road B 88 (car).

The development objectives for the four fields of action, that constitute guidelines for the creation of a catalogue of measures, are briefly described below.

The continuous, largely undeveloped Saale floodplain in the north-south direction forms the "backbone" of the Middle Saale Valley perception lines. Measures with respect to leisure- and tourism-related infrastructure must be sustainable improved and extended. This includes new public greens, picnic areas, paddling facilities, or simple actions like putting up benches near particularly nice spots in the landscape. More importantly, intervisibility into the landscape and towards historic buildings should be given more emphasis by creating viewing windows.

Development objectives Saale - water touring trail

– promotion of the Saale as an attractive water trail for paddlers etc. by building additional facilities for them and constructing sluices at weirs;

– infrastructure development by constructing sufficient embarkation points and picnic areas, including facilities for protecting boats;

– creation of signposts pointing out surrounding places of interest;

– improvement of access to the Saale and its few standing waters, especially in municipal areas and considering conflicts of interest regarding recreation and conservation;

– retention of indivisibility towards significant landscape-related structures, such as the silhouettes of castles, distinctive hilltops, and slope sides by creating viewing windows or cutting down woods near the river bank;

– cooperation with Saxony-Anhalt across federal states to encourage water touring activities (tourism project "Blaues Band") from the Middle Saale Valley to the Burgenlandkreis district.

Development objectives Saale - bicycle touring trail

creation of a continuous Saale bicycle trail with the route passing close to the river in towns and rural districts and mostly off roads;

creation of bridge underpasses along the Saale

improvement of access to existing walking trails, construction of new alternative cycling trails and improvement of access to the centres of towns and villages;

transformation of the paths along the railway line into a continuous path by using and restoring existing passage railroad embankments and opening up the closed railway underpass;

establishment of history-related marks in the landscape (e.g. near the Saale forts, commemorating events of the Thirty Year's War, at the former Gleistal railway, at the sites of residence of historically important personalities, at the junction of the ViaRegia, etc.);

establishment of uniform and continuous signposting for distinctive cultural landscape features in towns and rural districts (e.g., peonies, special buildings, and earth monuments).;

maintenance of intervisibilities towards culture- or history-related sites of interest;

qualitative and quantitative development of infrastructure for cyclists (restaurants, picnic areas, etc.).

Development objectives -railway

– preservation and improvement of intervisibilities towards culture- or history-related sites of interest by cutting viewing windows, if necessary;

– establishment of uniform information boards in towns and rural districts about local places of interest at each train stop;

– establishment of additional train stops in Großeutersdorf;

– creation of development concepts for neglected train stations and utilisation of building land in reserve by buying it from the Deutsche Bahn (DB);

– strengthening of the position of public transport and promotion of special railway offers for paddlers, cyclists, etc.

Development objectives - A-road B 88

– preservation and improvement of visibility towards distinctive buildings and landscape-related structures, like castle silhouettes, significant hilltops, and slope sides;

– qualitative infrastructure development by means of putting up signposts for towns and villages and other perception lines;

– uniform, clear signposting and provision of information about places of interest and special features of the cultural landscape;

– enhancement of green road banks by planting tree avenues along main roads and superordinated side roads as well as planting shrubs and trees at proposed or existing parking places;

– establishment of the so-called “park+hike“ infrastructure: parking places for hikers on the outskirts of towns and villages and in the vicinity of particularly scenic areas.

4.3.5.2 Working methodology of the catalogue of measures

At first, the IST-state of sites under consideration is presented as a result of the survey. For each site, planning instructions and suggestions for measures are specified.

The identification "planning instruction" = H is for sites that are already part of existing investigations, studies, or plans or are in the process of completion. This involves e.g. information from the WW study „Water touring on the Saale in Thuringia"[IPU 2006], which is intended to be conducted in the first six months of 2008.

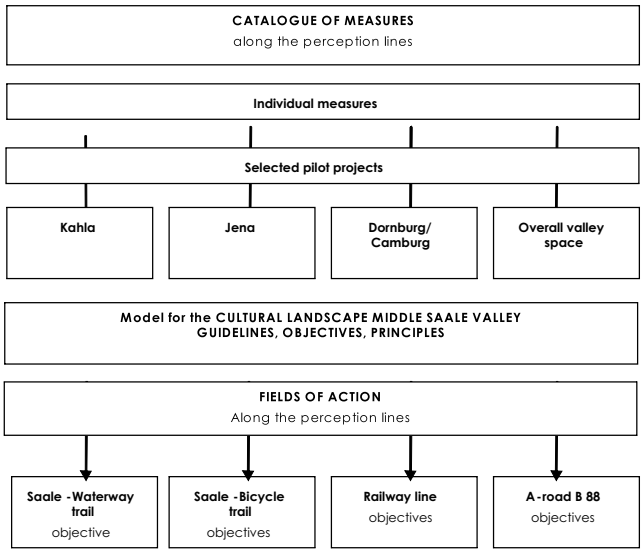

Fig. 45. Schematic presentation of fields of action and catalogue of measures

Those sites that are not focused on by other investigations and plans, come under direct measure proposals = M, which result from the comparison of the IST-situation and the targeted objectives and principles of the model (SOLL-state).

It is possible that some measures will be mentioned more than once, if they are important along different perception lines.

The cartographic presentation of the measure sites relates to the respective sites of the pre-run assessment. The numeration of the total of 57 measures is carried out continuously from north to south for each perception line, whereas the Saale-Holzland district (SHK) is described with numbers and the municipal area of Jena alphabetically.

In addition, an abbreviation is used for each perception line, to guarantee an unmistakable identification number for each individual measure:

- Saale - waterway trail (B = boat),
- Saale - bicycle trail (R = bicycle),
- Saale railway (E = train)
- A-road B88 (A = car).

All planning instructions and measure proposals are given a priority that indicates in which order they should be carried out. Hereby, 3 levels are distinguished here: pilot projects, high priority, and medium priority.

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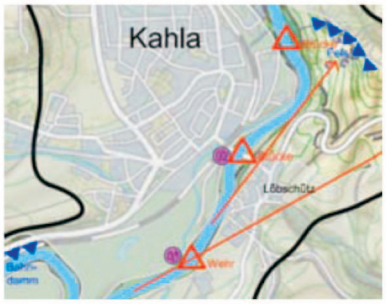													
Situation/ Konflikte							**Maßnahmenvorschlag**						
- Mangelhafte Ausstiegs- und Umtragemöglichkeit (Ausstieg vor und Einstieg nach dem Wehr) - fehlende Rastplätze und Wegweisung							- Ausbau/ Befestigung der Umtragemöglichkeit durch Holzsteg, Rampe und Umtrageweg von 2m Breite (WW-Studie) - Errichtung eines Rastplatzes mit Bank und Feuerstelle Wegweiser mit Hinweis auf barocke Jagdanlage Hummelshain						
Leitbildebene	Freizeit und Tourismus												
Ziele und Grundsätze	Entwicklung eines durchgehenden Saaleauenparks von Kahla bis Camburg												
Prioritäten	Pilotprojekt		Hohe Priorität				X	Mittlere Priorität					
Zuständigkeiten	Land		Kreis	X	Gemeinde			Privat					

Fig. 46. Presentation of individual measures

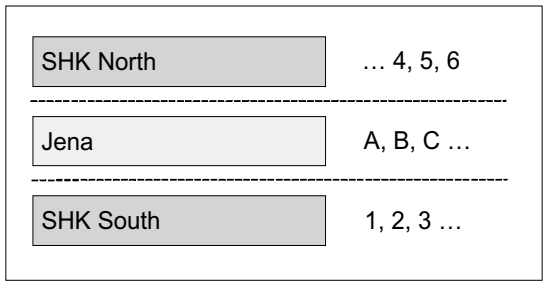

Fig. 47. Perception line Saale (Boat)

The responsibilities of the federal state, SHK, the city of Jena, communities and private initiatives are presented in the form of an overview of the respective contact persons for the implementation of the proposed measure.

4.3.5.3 Selected pilot projects

In the course of the implementation of the individual measures, pilot projects will be chosen later on as regional focal points for the sub-areas of Kahla, Jena, Dornburg, Camburg, and the overall floodplain space.

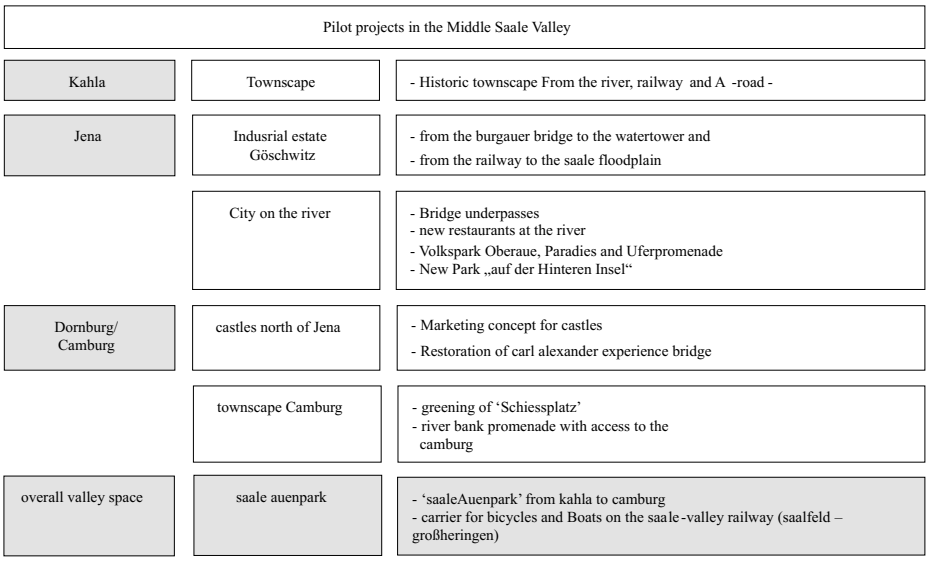

Fig. 48. Overview of pilot projects

The implementation of models and measures developed in the frame of the project cultural landscape “Middle Saale Valley“ is going to be supported by different groups of regional actors (e.g. associations of administrations, mayors, project responsible parties from economy, research, tourism and local organisations) for a longer period of time.

For this purpose, a project advisory board was founded to discuss the drafted models and to discuss and complement the proposed measures as well as to initiate the implementation of selected pilot projects.

The first meeting of the advisory board was held in Kahla, the second took place in Jena and the third – at the castle of Tümpling, where the realisation proposals of some pilot projects and the so called Charter of Camburg for the protection and sustainable development of the cultural landscape “Middle Saale Valley” will be discussed.

Afterwards, the Charter is to be agreed on by all local councils and regional authorities from the area between Kahla and Camburg before, following a bicycle tour, it will be signed during a Saale-Neighbour-Conference at the castle of Camburg.

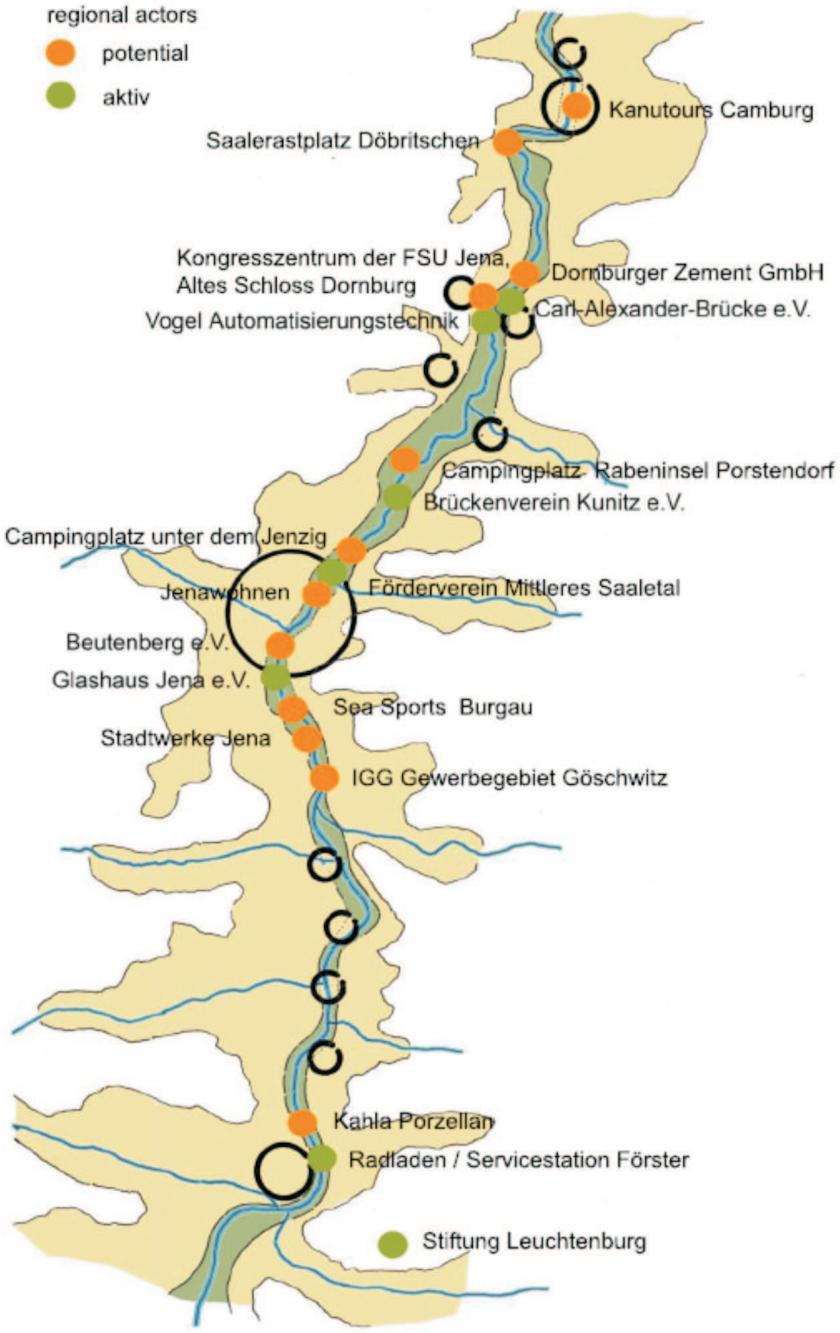

Fig. 49. Overview of regional actors in the Middle Saale Valley

4.3.6 Charter of Camburg

– The unique landscape scenery of the canyon-like valley space with its steep, open rock faces and deeply cut side valleys is an important 'soft' site factor. All interferences/changes must be checked for their spatial impact or compensated respectively.

– The valley space offers a great diversity of different habitats for animals and plants – i.e., the most important orchid sites in Central Germany. A balanced relation between conservation, recreation and farming is the precondition for a sustainable preservation and development of the small-structured cultural landscape of the Middle Saale Valley.

– The dividing river course, its tributaries and floodplains are dominating and joining landscape elements of the Saale valley. Natural water dynamics, high water quality and wide flooding spaces are not only functional and utilisation features of the floodplain, but also the basis for the development of a near-natural Saale valley park between Kahla and Camburg.

– One of the distinguishing features of the Middle Saale Valley is the historically developed, diverse mosaic of small-structured wine and fruit growing, arable farming, grazing management and forestry. Precondition for a sustainable preservation and development of the cultural landscape is the close linkage of ecological, economic and cultural aspects of the conservation and utilisation of natural resources (e.g. by means of regional marketing).

– The special characteristics of the cultural landscape Middle Saale Valley with its numerous architectural monuments is based on the diversity of the monuments. Whilst castles on the hilltops and slope sides as well as churches in the villages and small towns are landmarks with long-distance visibility, the cityscape of Jena is especially characterised by industrial architecture and modern settlements. Therefore, architecture and monument conservation are an important factor influencing villages/towns and the landscape. All construction measures have to be checked for their impact and adapted if necessary. All visibility lines must be kept clear.

– The economic basis for a sustainable regional and settlement development in the Middle Saale Valley is the historically grown competence in research and industrial production, especially optics and precision engineering.

The basis for further promotion as technology and science region is an intercommunal land management according to the criteria of the JenArea 21 as well as an enhanced collaboration between economy, science and culture within technology and innovation centres.

The attractiveness of the Middle Saale Valley for living, working and recreation depends decisively on the quality of the cultural landscape which combines

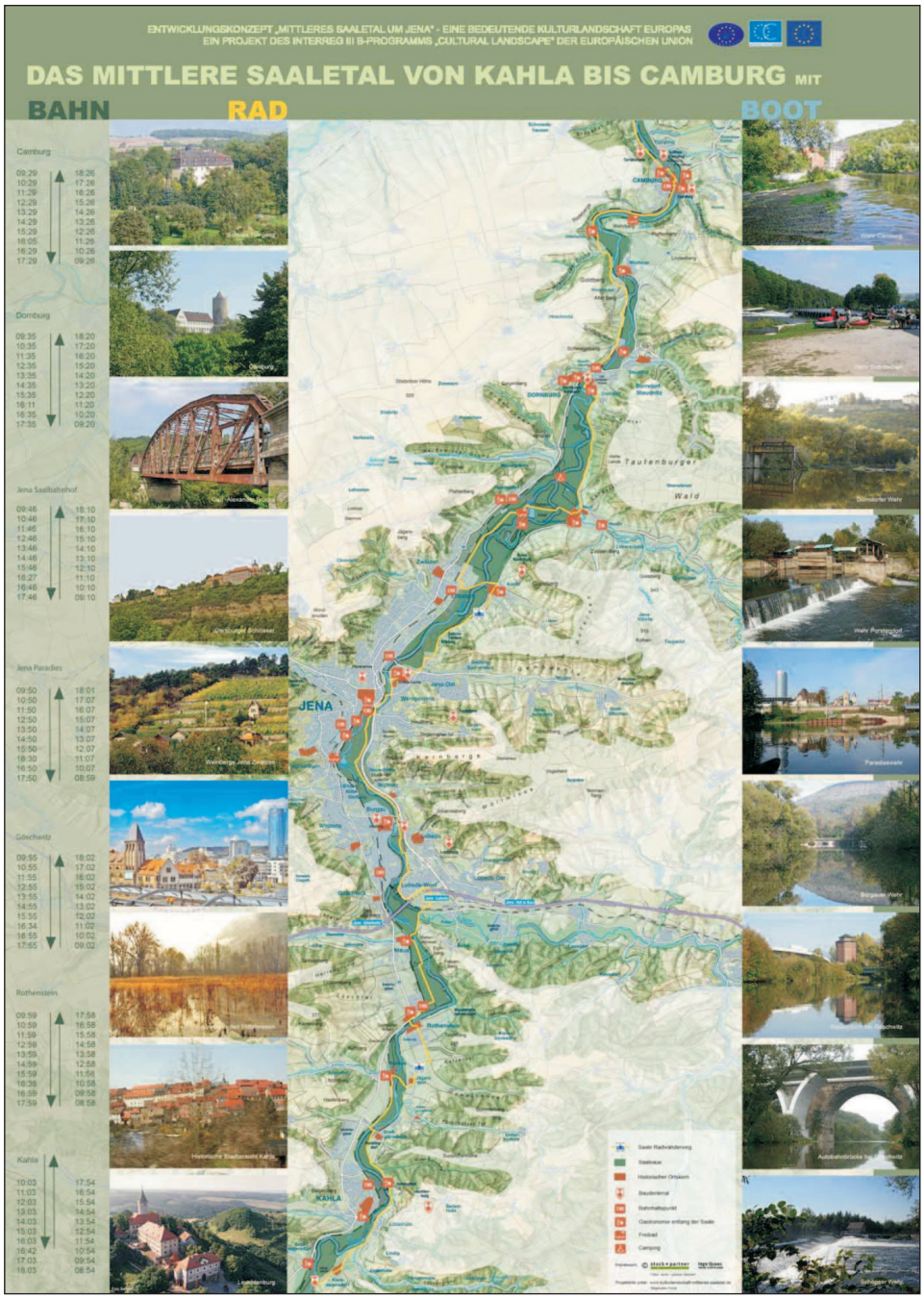

Fig. 50. Poster „The Middle Saale Valley from Kahla to Camburg by train, bicycle and boat"

manifold natural and cultural characteristics with an attractive infrastructure along roads, train lines, bicycle, hiking and waterway trails.

A Thuringian comparison shows that in the Middle Saale Valley the scale of extending settlement and traffic areas is above average. The further urban sprawl of settlements puts the unique nature at risk. An essential precondition for the conservation and development of the cultural landscape is the prudential handling of the resource soil by means of a consequent 'inner development', recycling of derelict land and the extension of traffic infrastructure that saves the use of land and landscape.

The outskirts and entrances of towns/villages, boundaries within a settlement and landmarks are essential elements for the image of a location. Consequently, their peculiarity is important, especially in the area of distinctive perception lines.

All future interferences effecting the scenery of towns/villages or the landscape, have to be reviewed with respect to their sustainability to save the precious cultural landscape Middle Saale Valley for the future generations of our children and grandchildren.

4.4. ROLE OF PHOTOGRAMMETRY, GEOINFORMATICS AND REMOTE SENSING IN RESEARCHING CULTURAL LANDSCAPE

Oleksandr Dorozhynskyy, Igor Kolb, Olenka Dorozhynska

Since 1992, when the notion of "cultural landscape" appeared in the text of Operational Guideline for the Implementation of the World Heritage Convention, Western European countries have taken a great deal of effort to implement the Convention. The situation in the countries of Eastern Europe, particularly the post-Soviet ones, which regained their independence in those years, was quite different. Despite being truly advanced in theoretical research and university education, these countries were backward in the sphere of practical implementation of the Convention. Suffering from unstable economy, hyperinflation, and political reforms characteristic for initial stages of the state-shaping process, Ukraine had neither finance nor potentials to preserve national cultural heritage at the beginning of the 1990s.

With gradual economic growth, the citizens of Ukraine became more confident about their future. Despite very low financing, culture and art started to flourish. Ukraine witnesses rapid construction of sacral buildings, erects new monuments to prominent figures, and reconstructs monuments of historical and cultural heritage.

Hopefully, the participation in the Project 5D 106 CULTURAL LANDSCAPE "Protecting Historical Cultural Landscapes to Strengthen Regional Identities and Local Economies" will help to implement new European cultural principles and concepts.

The Ukrainian partner of the Project (a group of researches from Lviv Polytechnic National University) aims at studying European experiences on cultural landscape and using these experiences as well as national sci-tech achievements to develop so-called deprived areas.

Though a combination of humanities and technical fields (photogrammetry, geoinformatics, and remote sensing) might seem unnatural, it is necessary to admit that aerospace and mathematical methods have been successfully used for a long time in physical geography and landscape studies particularly to plan landscape as a geosystem that includes natural, social, and economic spheres as well as historical and cultural heritage.

To present the tasks more distinctly, it is advisable to provide a classic definition of cultural landscape: it is a geographic area that uniquely represents the combination of cultural and natural resources associated with historic events and human activity. People evaluate it visually, relying on their experience, knowledge, or moral and spiritual values.

There are several approaches to the notion of "cultural landscape", its content and purposes. We prefer the one stressing intellectual activity as a main factor influencing the environment. This impact (particularly economic) must be based on unconditioned protection of cultural and intellectual achievements, that being passed down through generations are fundamental for human development.

Nowadays, in the epoch of powerful industrial development, the crucial task is to monitor landscape environment and protect cultural landscape from thoughtless and short-sighted economic activity searching for superprofit and self-enrichment. Simultaneously, there are areas defined in the CADSES programme as "deprived". These areas need urgent support. One of the tasks of the project is to strengthen regional economy and improve the quality of life in these areas avoiding damaging the environment.

Thus, the basic statements of the present chapter may de defined as follows:

– Photogrammetry possesses powerful means of researching and monitoring landscape environment and consequently of protecting cultural landscapes from undesirable interference and destruction.

– Remote sensing, primarily satellite images, is an indispensable source of data on the state of environment. When combined with photogrammetry and geoinformatics, remote sensing helps to evaluate the state of an area quickly and efficiently and to take suitable decisions.

– Geoinformatic systems and technologies are perfect instruments for analysing territories. They provide communities with objective information as well as influence the development of recreational activities, tourism, and regional planning.

These basic statements are applicable to the following three types of cultural **landscapes: intentionally created, organically evolving** (or continuing landscapes), and **associative landscapes.**

The typology is comprehensively characterized in the Convention mentioned above. To explain the important connection of cultural landscapes with photogrammetry and remote sensing it is necessary to describe these types briefly.

Intentionally created landscapes include first of all objects of landscape architecture. They are usually very rich in anthropogenic elements and have a certain planning composition. Aesthetic qualities and values are taken into consideration while planning this type of landscape.

Organically evolving landscapes are shaped within a long period of time. They undergo changes under the influence of nature and human activity. Being the largest part of the environment, such landscapes are the object of scientific research and need constant protection.

Associative cultural landscapes are primarily areas associated with historic events, creative and religious activity, or cultural achievements.

All three landscape types must rely on images as a source of objective information about the environment. (These might be various kinds of images including first of all photographs). Image is a document which

– is a source of information on the actual state of the object,
– immediately records all the changes in space and time,
– provides metric data on size, distance, spatial location of the whole object as well as its elements.

In order to take and process images, it is necessary to have photogrammetry and remote sensing instruments.

Nowadays, geoinformation approaches are indispensable in the research of ecosystems, which include cultural landscapes. Based on information provided by geoinformation analysis, it is possible to take optimal administrative steps aiming at preserving the environment. It is also important to creating specialized geoinformation systems (GIS), in particular tourist GIS.

Thus, cultural landscape is a complicated system requiring a complex study and a thorough analysis. This approach is generalized in the following scheme (Fig. 51).

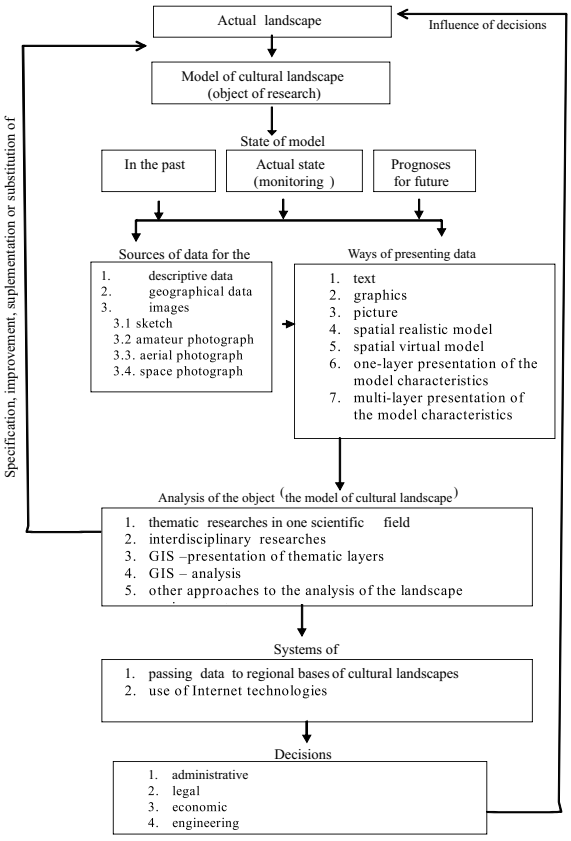

Fig. 51. Cultural landscape as a research model

Cultural landscape research is a comprehensive task that should be conducted by a great number of experts. The ideas presented here do not claim to be an absolute novelty; they rather sum up the results achieved through applying photogrammetry, remote sensing, and geoinformatics to this field.

4.4.1 Photogrammetry as applied to cultural landscape research

Modern photogrammetry uses digital images taken from the ground, aircrafts (plane, helicopter, aerostat, etc.), and pilot or automatic spacecrafts. The image may be received in a certain electromagnetic band (visible light, infrared band, radio band, etc.). It may be black and white, colour, or spectrozonal. Depending on the length of a radio wave, various equipment may be used to receive the image:

- photograph 0.4-0.9μm
- multispectral scanners 0.45-20.0 μm
- ground and air scanners 0.7 μm
- scanners. infrared imager 3.0 -20.0 μm
- radar 0.7-10.0 mm
- microwave sensor 0.5 mm-1.0 m

Visible electromagnetic band can be:

- violet 0.40-0.45 μm.
- dark blue 0.45-0.48 μm
- blue 0.48-0.50 μm
- green 0.50-0.56 μm
- yellow 0.56-0.59 μm
- orange 0.59-0.62 μm
- red 0.62-0.75 μm

Infrared band is divided into three zones:

- short-range infrared 0.75-1.30 μm
- middle-range infrared 1.3-3.0 μm
- long-range infrared > 1.3-3.0 μm.

Depending on the wavelength, radio band is divided into four zones: millimetre, centimetre, decimetre and meter.

The type of photograph (ground, air, or space) is usually chosen depending on the research tasks. It depends on the type of the object and precision requirements. The resolution on the surface of the object is the most universal characteristics that may be measured in millimetres, meters or even in kilometres. The most comprehensive information is presented in Table 25.

Table 25. Type of survey methods recommended for cultural landscape modelling

Object	Resolution	Recommended survey
Architectural construction	1-5 cm	Terrestrial digital camera
Details of architectural constructions, historical monuments.	1-10 cm	Terrestrial digital camera, terrestrial laser scanning
Topography of the intentionally created landscape (parks, gardens)	5-10 cm	Colour aerial survey
Topography of the natural cultural landscapes of small size	10-50 cm	Black and white, colour or spectrozonal aerial survey
Topography of the natural objects of large size	1-5 m	Aerial or space survey
Topography of the natural cultural landscapes of extra large size	5-20 m	Space survey
Engineering structures on the cultural landscapes	10-20 cm	Laser scanning from airplane

While choosing survey instruments it is necessary to consult a photogrammetry expert or a specialist experienced in doing similar works.

Images are processed by means of a digital photogrammertric station, that is a high-capacity computer providing stereoscopic examination and measurements with the help of a special manipulator-"mouse" and stereo-spectacles. The software allows measuring, calculating, digital processing of images, and performing many other specific functions.

Thus, photogrammetric methods offer the following products to research cultural landscape:

– digital and raster orthophotomaps,
– digital terrain model (with the possibility of visualization),
– digital models of surface covering (with the possibility of visualization),
– spatial images composed of stereopairs, oriented in space, with defined metrics,
– virtual images composed of images of different origins,
– catalogues of coordinates, distances, azimuths, etc.

It is significant that results received from processing images at a digital photogrammetric station may be transferred into geoinformatic systems where the data are analysed and it is possible to elaborate recommendations for administrative decisions.

Some samples of photogrammetric products are presented in Fig. 52, Fig. 53, and in Fig. 54.

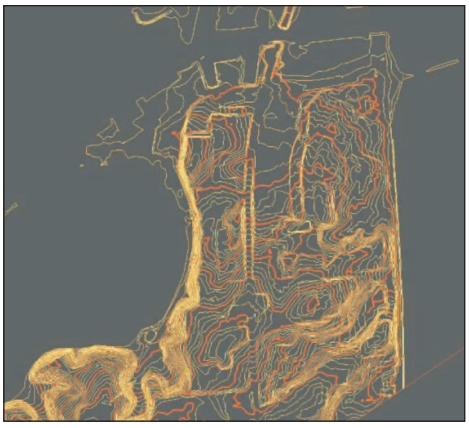

Fig. 52. Image of the relief in horizontal lines (a sample)

Fig. 53. Orthophotograph with horizontal lines (a sample)

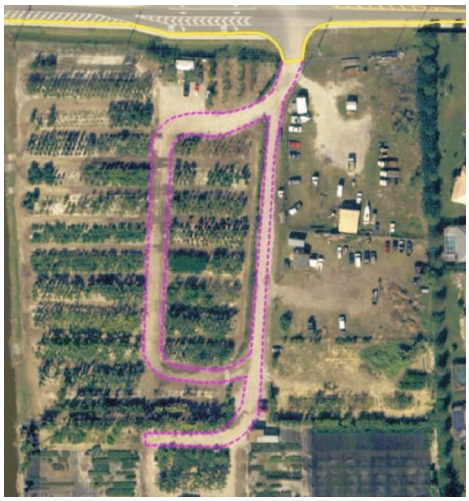

Fig. 54. Fragment of orthophotomap with indicated roads

4.4.2 Space Photogrammetry: classification and Description of satellite systems

Satellite systems (SS) - are aggregates of artificial Earth satellites used for scientific or practical purposes. Depending on their purpose and use, satellite systems are subdivided into the following:

– Research and observation SS - observing and measuring the Earth and environment, monitoring resources important for humans. They are frequently used for cartographic purposes.

– Military SS - are used to provide intelligence information on military activities, launch rockets, make nuclear tests, pick up and record radio and radar transmissions, spy, detect unknown objects, etc. Being a part of the secret program Corona, the first reconnaissance satellite Discoverer 1 was launched on February 28th, 1959 in the USA.

– Navigation SS - make it possible to find out the location (coordinates) of aircrafts, vessels, cars, or any other object equipped with a receiver that can pick up radio signals from the satellite. Being initially meant for military purposes, GPS (described further) has been functioning since 1978. Nowadays, besides military tasks, GPS are widely used in scientific, commercial, and industrial spheres.

– Weather SS - used to make weather forecast on the basis of data about cloudiness, wind, and atmosphere temperature. They are also used to detect and research climate changes and global warming. The first weather satellite Explorer 7 was launched in the USA on October 13th, 1959.

– Communications SS - provide a worldwide linkup of the radio, telephone, television, and computer net. It may carry transponders. The first geostationary orbit satellite SYNCOM 3 has been functioning since August 19th, 1964.

GPS (Global Position System) has revolutionized geodesy. It provides navigation and timing information to users worldwide. Nowadays there are tree Global Position Systems known in the world:

– GPS NAVSTAR (USA) - 24-satellite constellation with Earth orbits arranged in the way that makes it possible to receive signals from a minimum of 4 satellites at any place and at any time.

– GPS ГЛОНАСС (Russia) /GLONASS/ developed by the former Soviet Union. Theoretically, it is a constellation of 24-satellites. As the system gradually fell into disrepair, nowadays there are only few functioning satellites. Beginning in 2006, Russia committed to restoring the system.

– GPS Galileo (European Union) - 30-satellite constellation, is being built by the EU member-countries. In December 2005, the first experimental satellite was launched. The whole system is currently projected to be operational in 2008.

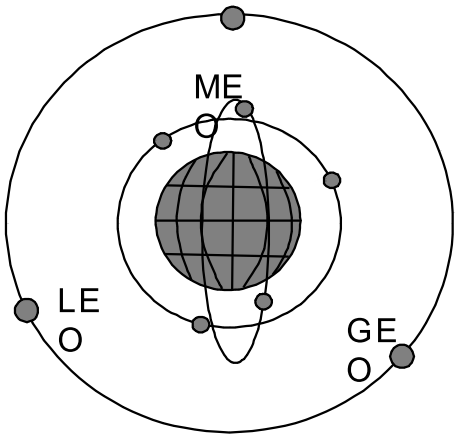

Fig. 55. Types of satellite orbits

Regardless its purpose, each satellite is brought by a launch rocket to the certain orbit.

There are several types of orbits. They are shown in Fig. 55.

A geostationary orbit GEO (known also as a geosynchronous orbit) circles the Earth above the equator at an altitude of about 35 900 km. Preserving its fixed position above the Earth, stationary satellites make one rotation every 24 hours. Signals from this orbit cover a large por-

tion of the Earth except for polar regions and therefore it is an ideal orbit for telecommunications, observation, and monitoring.

A geosynchronous intermediate orbit MEO (known as middle or elliptical) is located at a the height of about 20 000 km. Travelling in this oval orbit these satellites cover polar regions.

A low Earth orbit LEO is at the lowest altitude above the Earth. Satellites in this orbit must travel at a high speed to avoid loosing the orbit or colliding with the Earth. This orbit is used for monitoring, research, and meteorology purposes.

The list of some Earth satellites is presented in Table 26; the dates of launch are given in Table 27.

Table 26. List of several Earth satellites

Name	Orbit types	Orbit altitude (km)	Launched	Out of service	Institution
ADEOS	Sun synchronous	797	1996	1997	NASDA
Aqua	Sun synchronous	705	2002		NASA
BILSAT	Sun synchronous	686	2003		TUBITAK-BILTEN
CBERS	Sun synchronous	778	1999		INPE
KOCMOC	Sun synchronous		1987		The Russian Federal Space Agency
DMSP-16	Near polar Sun synchronous	830	2003		the US Department of Defence
ENVISAT	Sun synchronous	800	2002		ESA
EROSA	Sun synchronous	480	2000		ImageSat International
GEOS-10	Geostationary		1997		NOAA
Ikonos	Sun synchronous	681	1999		Space Imaging
INSAT	Geostationary		1993		ISRO
IRS-1C	Sun synchronous	817	1995		ISRO
IRS-P3	Sun synchronous	817	1996		ISRO
Kompsat-1	Sun synchronous	685	1999		Korea Aerospace Research Institute
LANDSAT 1	Sun synchronous	907	1972	1978	NASA
LANDSAT 7	Sun synchronous	705	1999		NASA
Meteosat 7	geostationary		1997		EUMETSAT
NOAA-17	Near polar Sun synchronous	833	2002		NOAA
Quickbird	Sun synchronous	450	2001		DigitalGlobe
QuikSCAT	Sun synchronous	803	1999		NASA
RadarSat-1	Sun synchronous	798	1995		RadarSAT international
Seasat	Sun synchronous	800	1978	1978	NASA
SPOT 1	Sun synchronous	832	1986	2002	CNES
UK-DMC	Sun synchronous		2003		British National Space Centre

Table 27. Prognosis and plans for launching new satellites since the year 2005

Name	Source of information	Planned date of launch
	2007	
ADM-Aeolus	ESA ADM Aeolus	2007
MSG-4	EUMETSAT	2007
COSMO-SkyMed 3	Italian Space Agency (ASI)	2007
RapidEye	RapidEye AG	2007
GOES-0	GOES at Boeing	2007
CASSIOPE	Canadian Space Agency	2007
NOAA-N	POES launch table	2007
	2008	
GOES-P	GOES at Boeing	2007
OCO	Orbiting Carbon Observatory	2008
OSTM (Jason-2)	Ocean Surface Topography Mission	2008
EROS C	ImageSat Internationsl	2008
CBERS 3	OBT-CBERS	2008
World View II	Digital Globe	2008
	2009	
MSG-3	EUMETSAT	2009
EROS C	ImageSat Internationsl	2009
Pleiades-2	CNES	2009
	2010	
METOP-2	POES launch tadle	2010
	2011	
CBERS 4	OBT-CBERS	2011
	2012	
GOERS-P	NOAA	2012
NPOESS-Cl	NPOESS	2012

Companies or countries possessing satellites lease them to gain profit. Information and images received by satellites help to improve communication networks inside the country as well as throughout the world. In terms of income, potential space communication market can rival with the market of launching service.

Remote sensing market offers high potentials for space commercialisation. Depending on technical characteristics of remote sensing equipment (particularly high precision and resolution), information received from satellites is divided as to its purposes and functions.

Resolution - dominant characteristic that defines the choice of survey scale while detail characteristics of the photos are fixed. As to their details, (resolution) photos are divided into the following:

– low-resolution photos (kilometres),
– medium-resolution photos (hundreds of meters),

– high-resolution photos, which in turn are subdivided into:
  • very high-resolution photos (10-20 m),
  • ultrahigh-resolution photos (≤ 1 m).

Low-resolution photos are frequently used in cases of vast areas to control temperature of sea surface and flora conditions or to analyse natural disasters. High-resolution photos (10-30 m) are used for monitoring, differentiating details on the surface and mapping (scales 1:50 000, 1:25 000). Each resolution is used in a certain type of applications. The highest demands for data precision and details are posed by the town-planning cadastre. Unlike the land cadastre, the town-planning cadastre needs data on the height of buildings as well as digital data on relief. High-resolution photos serve best for analysing city development, engineering works, specifying details of remote sensing with lower resolution. Such images are provided by space systems SPOT 5 (sensor PAN, resolution 5 m), IRS (sensor PAN - 5 m). Integrated with lower resolution data, such photos allow finding out object structure on zonal and synthesized photos. Though polluted zones are hard to differentiate by direct indication, spectrozonal photos allow identifying various objects: forests or other vegetation components to study grassy phytocenosis, city agglomerations, and different violations. Content precision of this level (1-10 m) corresponds to map scales 1:10 000-1:50 000. Space survey with the resolution 1-10 m is used to build digital model of relief and to make object maps which when superposed with the maps of zoning give more precise details on area peculiarities, landscape, etc. Such a detailed information is received from satellite systems QuickBird and Ikonos with the resolution of 0.6-1.0 m.

What follows is a description of most suitable, in terms of precision, space satellites providing images of high resolution. These are QuickBird, SPOT, Ikonos and IRS.

4.4.2.1 QuickBird 2

Spatial resolution	0.61 m panchromatic at nadir 2.44 m multispectral at nadir	
Speed	7.1 km/sec	
Single scene	16.5 x 16.5 km (272 sq km)	
Depth of colour	11 bit	
Spectral band	panchromatic	0.45-0.90 μm
Blue		0.45-0.52 μm
Green		0.52-0.60 μm
Red		0.63-0.69 μm
Near infrared (IR)		0.76-0.90 μm

In one year the satellite may produce images of surface area equal to 75 million sq km.

4.4.2.2 SPOT 5

Spatial resolution	5 m (2 m) panchromatic at nadir 10 m multispectral at nadir	
Speed	7.4 km/sec	
Single scene	60 x 60 km (3 600 sq km)	
Depth of colour	8 bit	
Spectral band	panchromatic	0.48-0.71 µm
Green		0.50-0.59 µm
Red		0.61-0.68 µm
Near infrared (IR)		0.78-0.89 µm

The satellite is equipped with a high-precision stereoscopic sensor to take stereogram that may be used in topography and for generating relief models. There is also a camera Vegetation 2 that allows daily reception of photos of all Earth surface at the resolution of 1 km.

4.4.2.3 IRS-1C

Spatial resolution	5.8 m panchromatic 23.5 m multispectral	
Single scene	70 x 70 km or 142 x 142 km	
Depth of colour	6 bit	
Spectral band	panchromatic	0.50-0.75 µm
Green		0.52-0.59 µm
Red		0.62-0.68 µm
Near infrared (IR)		0.77-0.86 µm

IRS (Indian Remote Sensing Satellite) is a type of remote sensing satellite (mass > 1000 kg) meant to research natural Earth resources. India has been one of the leaders on the market of remote sensing data since 2005. More than 12% of global remote sensing data are received from IRS-type satellites.

4.4.2.4 Ikonos

Spatial resolution	1 m panchromatic 4 m multispectral	
Depth of colour	11 bit	
Spectral band	panchromatic	0.45-0.90 μm
Blue		0.45-0.53 μm
Green		0.52-0.61 μm
Red		0.64-0.72 μm
Near infrared (IR)		0.77-0.88 μm

This type of images may be used for various purposes and in different fields: research of landscape environment, telecommunications, land monitoring and management, mapping, tourism, etc.

The price of photograph depends on its spatial resolution: the higher the resolution, the higher the price.

4.4.3 Space photogrammetry in area cartography

Since cartographic materials are indispensable sources of information for landscape researches, it is important to discuss the role of space photogrammetry in area cartography.

Not long ago, a topographic map was considered the main product of cartography where photogrammetric methods and technologies were dominant. Owing to rapid development of technology, the scope of cartographic products expanded. Nowadays it includes:

– topographic maps with graphic presentations of contours and relief,
– digital maps with contours and relief,
– digital orthophotomaps with photographs of contours and graphic presentations of relief,
– digital terrain models.

Each of the products should meet certain technical demands. A traditional topographic map is generated in a fixed scale and follows the demand of contour lines accurateness (0.2-0.3 mm in the map scale) and relief presentation accurateness (½-$^1/_4$ contour interval depending on relief type).

Another important point is cartographic content, that is what must be shown on the map and what may be omitted.

In the case of digital maps, the scale does not matter as all the elements of contours are displayed naturally in absolute coordinate system. Still, it is impor-

tant to know the accuracy of received contours and relief, which depends on the map scale.

As it is saved in the computer memory in pixels, digital orthophotomap does not have a scale. Its most important characteristics are spatial resolution and the error of determining the elements of contours in nature. When a digital orthophotomap is printed, it will have a scale.

Data obtained through space survey may be used to produce a cartographic product, depending on its purpose. Therefore, it is necessary to study real capabilities of various space survey systems carefully and independently of information provided by manufacturers, as it may be just advertising.

Two basic characteristics are needed to evaluate image adequacy for cartography: resolution (another very frequent term "spatial resolution") and radiometric characteristics (amplitude resolution, that is ability to differentiate the degree of grey or colour).

Geometric characteristics of space system precision do not bring about particular problems. Since the graphic accuracy of the map is $p = 0.2$ mm (in the map scale), the requirements as to the accuracy of contour will be as follows: 1:10 000 - 2 m; 1:25 000 - 5 m; 1:50 000 - 10 m; 1:100 000 - 20 m; 1:200 000 - 40 m (where the first unit refers to scale and the second to accuracy).

Spatial resolution (P) depends on the quality of the survey system and the flight height of the spacecraft. These data are available in various publications, some of them are provided in Table 28. Taking into account the accuracy of contour displaying, it is possible to get the maximal value of map scale: $1/M = p/P$.

Table 28. Adequacy of space images for mapping

Spacecraft			Scale
	Band, m	Resolution P, m	
Landsat 7	multispectral	30.0	1:150 000
IRS-1C	multispectral	23.5	1:117 000
SPOT 1-4	multispectral	20.0	1:100 000
SPOT 4	panchromatic	10.0	1:50 000
IRS-1C	panchromatic	5.8	1:29 000
SPOT 5	panchromatic	5.0	1:25 000
IKONOS	multispectral	4.0	1:20 000
EROS A	panchromatic	2.4	1:12 000
IKONOS	panchromatic	1.0	1:5 000
EROS B	panchromatic	0.7	1:3 500
Quick Bird	panchromatic	0.6	1:3 000

Thus depending on their geometric characteristics, some space systems may be used for large-scale mapping. Still, it must be noted that the process of image identification poses more problems. The experiments proved that to generate map

with a scale of 1:10 000, spatial resolution should not exceed 0.65 m; for a map with a scale of 1:25 000, it should not be higher than 1m; and for a map with a scale of 1:50 000, resolution should be less than 1,75 m. Obviously modern survey systems, even with the best characteristics, may be used to generate maps with a scale of 1:25 000 the largest.

The main technological peculiarities of space photogrammetry that are significant for area mapping will be discussed below.

4.4.3.1 Forming stereopairs

To generate a topographic map or digital terrain model DTM, it is necessary to have a stereoscopic model. Space survey differs from aerial survey. There are three methods of space survey: The first is similar to aerial survey (Fig. 56): the surface is projected on two sensor lines. The first sensor line fixes image at nadir while the second one fixes image with forward deviation. These two images make a stereopair.

4.4.3.2 Stereo-survey with changed orientation

The second method (Fig. 57) suggests surveying the same surface with changed angular sensor orientation. Gradual move of the satellite from position 1 to position 2 provides a surface image without the change in orientation.

When the satellite stays in position *n, n* + 1, the sensor is redirected to the area of survey. These two differently oriented images make a stereopair.

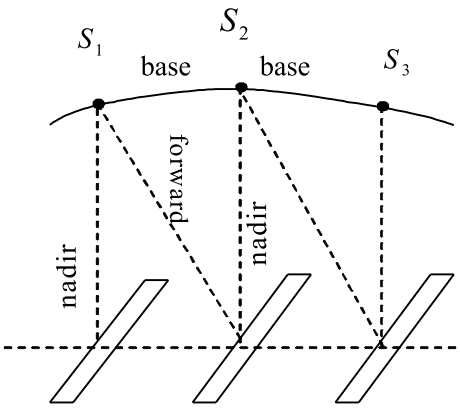

Fig. 56. Geometry of stereo-survey on two sensor lines.

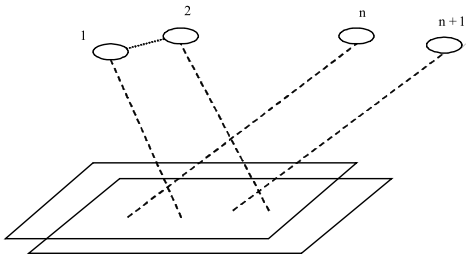

Fig. 57. Geometry of stereo-survey with changed orientation

4.4.3.3 Survey from two different satellites

The third method (Fig. 58) consists in surveying from two different orbits or from two different satellites.

The scheme shows the swath for satellite *A* and for satellite *B* at the same period of time. While surveying uninterruptedly, it is possible to receive stereoscopic model of the surface.

To achieve adequate geometric quality of the final product, it is necessary to perform digital photogrammetric processing.

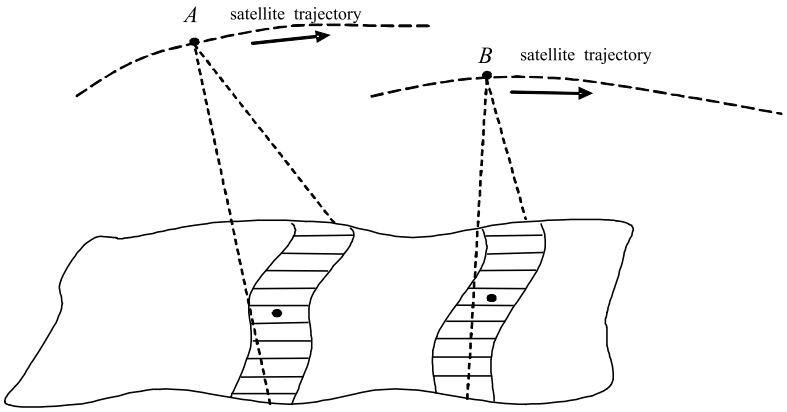

Fig. 58. Surveying an area from two different satellites

The process of improving interpretation qualities of the image is often termed as radiometric correction. Preliminary radiometric correction is done by the owner of the image. It is possible to receive synthesized colour image of high quality if the system worked in panchromatic and multispectral bands and the quality of the panchromatic image is 3-4 times higher than the quality of the multispectral one.

Accurate choice of software is an important technological aspect of area mapping. The matter is that the space survey data may be presented in various formats, in different combinations and with different characteristics. The user should be absolutely aware of how they are going to use the image and how they will process it.

There is a great choice of software on the information and remote sensing market. The best-known products include: ERDAS, Z/I Imaging, PCI Geomatics, BAE Systems, Photomod, etc.

Modern software is oriented at solving a wide scope of tasks and processing various cartographic materials and spatial images.

Space mapping will inevitably develop its potentials. Fundamental military achievements in this field gradually enter the sphere of civil structures activity. Many publications mention the military reconnaissance satellite KH-11M with spatial resolution ≤15 cm (depending on weather conditions). It is 6-7 times better than Ikonos resolution. This confirms high potentials of space photogrammetry as a method of topographical mapping and high-precision evaluation of landscape environment.

4.4.4 Geoinformation Systems (GIS) and Technologies. Interrelation and Complementation of GIS and Remote Sensing

In landscape studies, GIS methods are primarily used for state object evaluation by means of geoinformation analysis, which determines the location, structure, and interrelations of the objects and phenomena on the basis of methods of space analysis and geomodelling.

In professional GIS, the modules of space analysis comprise nearly 20-30 functions, in particular visibility/invisibility area display, route optimisation, centre distance area formation, area of "influence" formation around the appointed centre, etc. A separate set of tasks in spatial analysis is connected with the digital terrain model. It includes the generation of three-dimensional (3D) surfaces, calculation of their volumes and areas, construction of random sections and profiles, calculation of slope parameters, exposition, sunlight, unification of raster and vector data, etc.

The latest high-quality GIS contain modules for image analysis. In this respect, the above-mentioned system ERDAS IMAGINE can serve a model, as it is meant to be directly used in data analysis of the Earth remote sensing, which is presented in raster formats. The 8.7 Version includes three basic sets, such as IMAGINE Essentials, IMAGINE Advantage, IMAGINE Professional and every set fulfils certain functions in image processing as well as complements the functions and potentialities of its forerunner. Data visualization and import, geometric correction, image improvement, GIS-analysis, image identification, mapping, three-dimensional graphics, virtual space images and many others belong here.

The radar method deserves significant consideration in the research and mapping of landscape surroundings. On 15th June 2007, a German radar of super high-resolution capacity (1-3 m) was successfully launched on the orbit, and started sending space images which are received by the German Aerospace Research Centre DLR.

In order to process such images (which needs to be done through special programmes), professional GIS, for instance ERDAS IMAGINE 8.7, has four modules (developed in cooperation of Leice Geosystems and Mapping, Switzerland; Vexcel Corporation, Austria; and SIE Mashynistroyeniye, Russia). These

modules make it possible to improve image quality, carry out geometrical correction and orthotransformation, and generate a digital terrain model on the basis of stereopairs and radar interferometry.

Undoubtedly, the radar method will be applied in landscape studies since the clouds do not present any obstacles in radar surveying and it broadens the possibilities for remote area sensing.

The view of the land inundated after the flood in Great Britain in summer 2007 will serve as an example. It is presented in Fig. 59.

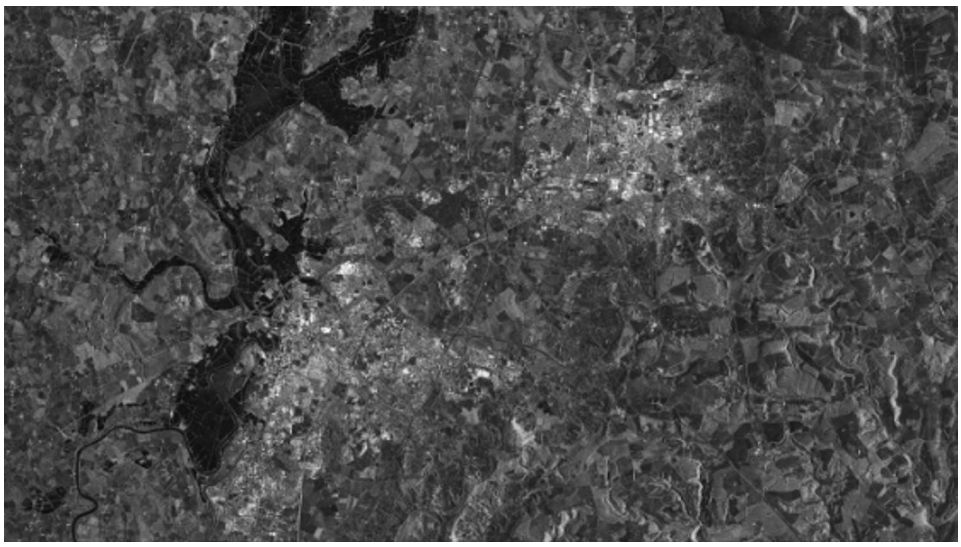

Fig. 59. Photograph of inundated land after the flood in Great Britain (German radar TERRASAR)

Geoinformation technologies are successfully used for generating applied GIS. A great deal of international experience has been gained in this respect, and this field is being continuously developed. In the framework of our project, a new tourist GIS of recreational area Skhidnytsya (Ukraine, Lviv region) was set up. The following section provides more details on GIS use in this region.

4.4.5 Role of Geoinformation Technologies in the implementation of the objectives of municipal authorities and recreational business

Tourist industry is a vital and well-developed business domain in eco-friendly regions attractive for visitors. Tourism as a dynamic and highly profitable branch of regional economy constitutes a significant sphere of interest for the state, regional and local governments. However, not every territory can demon-

strate great success in informational and advertising activities which indisputably greatly influences the system of values in the consciousness of the society in general. Therefore, the establishment of a unified information platform with inherent temporal and spatial linkage becomes an important aspect of development of this field today. In this respect, geoinformation mapping is the only possible working and experimental instrument, while GIS become a specific practical product.

There are numerous examples of GIS application in the sphere of tourism. One of the most interesting information products for Ukrainian Carpathians is the project "Information system of regional development of tourism in Transcarpathian area". Currently, research is being conducted on local tourist GIS for separate recreational areas, national nature protection parks, reserve zones, and others. On the basis of practical experience in creating tourist GIS ("Tourist GIS for Hashemite Kingdom of Jordan" was made under the supervision of Prof. Dorozhynskyy) and the above-formulated theoretical and practical statements, tourist GIS for one of the sites in Ukrainian Carpathians was set up.

Based on earlier research, new theoretical approaches grounded the role of GIS-tourism in problematic mapping, which provides general theoretical basis for the study of geographic environment and objects as well as for the use of geoinformation mapping instruments. The practical aim is to elaborate GIS cartographic components, to apply the materials of aerospace surveying and also to combine the purpose and functioning of municipal and tourist GIS. Municipal institutions, which have recreational resources in their disposition, as a rule are the most interested in tourism development (green tourism, agrotourism, sport tourism, therapeutic tourism, health-improving programs, etc.) that undoubtedly influences the state of regional economy.

The object of the study is the village of Skhidnytsya (Lviv region) which belongs to the category of balneological health resorts. It is abundant in picturesque views; it is ecologically safe and has a wealth of mineral water springs, the same type as Naphtusya, which are not inferior in their medicinal properties to the waters of more well-known resorts. However, the resorts' economy is not developed well enough. All these facts suggest an idea that the district of Skhidnytsya has a long-term potential and attracts tourist business; hence it serves a reasonable ground to demonstrate the significance of municipal and tourist geoinformation systems integration as it was previously mentioned. Such a standpoint allows formulating the following principles of GIS purposes that grant:

– information support for authorities and local governments (at regional, district, and village levels) as well as state departments (of public safety, border guards, search and rescue teams, sanitary and epidemiological teams, and others);

– information support for business tourist institutions (tourist operators, trade, transport, etc.) as well as for owners of private businesses that offer tourist services;

– information support for potential clients of tourist services and products.

The main components of GIS are: structure, information resources, and main purposes. The structure of GIS is shown on Fig. 60.

This structure does not limit the purposes of GIS solely to tourism. On the contrary, GIS is determined as a system of municipal management of territories where tourism constitutes only one of the branches.

The exact content of the information system relies on image and graphic data (maps, photographs, etc.) as well as on the descriptive data shown in Fig. 61.

The list of main objectives to be solved by GIS includes 5 sets shown in Fig. 62.

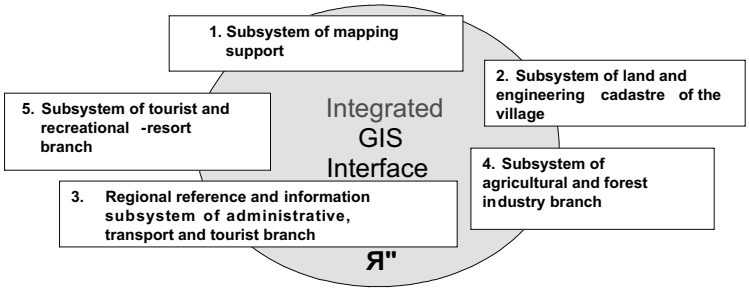

Fig. 60. Structure of GIS-Skhidnytsya

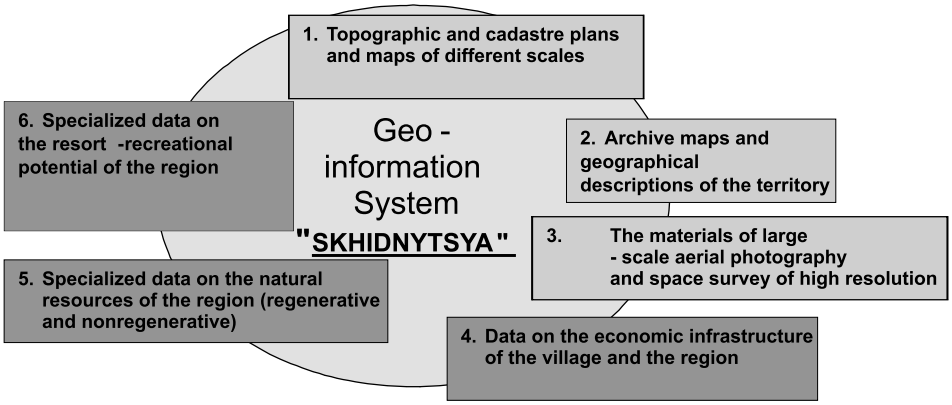

Fig. 61. Information resources of GIS-Skhidnytsya

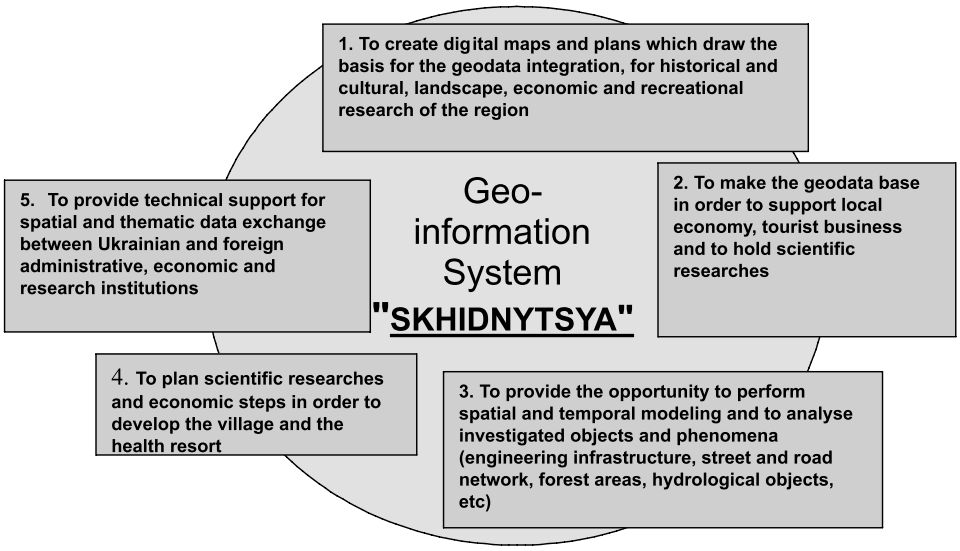

Fig. 62. Main purposes of GIS-Skhidnytsya

This list is open to enlargement, as the system achieves greater significance nationally and internationally (one of the aspects of such international cooperation is the integration of GIS-Skhidnytsya within our project in the framework of International Research Program INTERREG III B CADSES, "Protecting Historical Cultural Landscape to strengthen Regional Identities and Local Economies", CULTURAL LANDSCAPE, Ukrainian project coordinator: Prof. O. Dorozhynskyy).

4.4.6 Archive maps as a source of data for evaluating cultural landscape changes (as exemplified by Skhidnytsya)

Over the centuries of civilization evolution, cartography has been developing as a theoretical study as well as an applied branch aiming at displaying the territory on a map, which might be both a science document and a piece of art.

Nowadays, archive maps make perfect material for researching various modifications of landscape environment that appeared within a certain period.

A map as an image of space may, first of all, provide a researcher with data on changes in surface topography and cultural environment in which certain social structure existed.

Changes in topography include:

– modifications of areas and borders of inhabited areas, forests, industrial, and agricultural lands;

– changes in river beds and drainage basins caused by economic activity;
– development of transport infrastructure;
– climate changes.

In the 19th and at the beginning of the 20th centuries, the territory of Skhidnytsya was a part of Austro-Hungarian Monarchy. Later, it belonged to the territories under Poland (1919-1939), the USSR (1939-1941), Germany (1941-1944), the USSR again (1944-1991), and today it is situated in the territory of Ukraine.

Every state authority generated cartographical products according to technical possibilities, needs, certain standards, coordinate systems, conventional signs, cartographical content, etc. Today, the topographic maps of Galicia (Austro-Hungary, 1889), Poland (1935), Soviet Union (1984), aerophotographs (1999), and space images of medium and high resolution (2001-2007) are at our disposal.

All these cartographic materials included in GIS-Skhidnytsya are available for use and extensive study.

The collection of such data is supplemented by land management and land administration cartographic materials. For example, the general plan of the borders in health resort Skhidnytsya will be included in GIS-Skhidnytsya.

Illustrative material that demonstrates landscape change in Skhidnytsya over the last century is provided in Fig. 63 and Fig. 64, which precisely show fragments of the topographic maps at the scale of 1:100 000 at the times of the Austro-Hungarian Monarchy (Fig. 63) and the USSR (Fig. 64).

By means of modern equipment, the map is scanned and inputted, which simplifies the analysis of such a heterogeneous material. The most important elements of the image are vectorised to enable analytical operations. Since the mathematic base (coordinate system, projection, mathematic model of the Earth, etc.) is not known for the most of old maps, the easiest way of superpose two different maps is by means of projective transformations or with the use of various types of polynomials. These constitute well-known methods of mathematical cartography. In Skhidnytsya, this research is planned to be done at the end of 2008.

4.4.7 Tourist GIS for health resort Skhidnytsya

Tourist GIS (Fig. 65) is an autonomous program product aiming at expanding informational capacities of traditional informational and referential systems by means of extensive use of modern cartographic materials, aerial and space images, and archive maps.

The interface of the program is designed as a multi-window system compatible with OS Windows XP standards. It includes the following chapters:

– topographic maps;
– thematic maps (ecology, flora and fauna, history, etc.);

– maps for GPS navigators and portable computers;
– information on planned sporting hikes (based on topographic maps, aerial and space images, etc.);
– information on the balneological health resort;
– transport system of the region;
– description of landscape environment and evaluation of its development.

The system is open to both supplementation and development in the use of descriptive geographic data. It is also possible to expand the system of requests and analytical operations.

The following functions are very important and useful for wide circles of users:

– virtual model that is created by a combination of the map and spatial model;
– virtual model that is created by a combination of the map, aerophotograph, orthophotomap, and spatial model;
– animation and virtual model.

These and other functions are realized in the presented system. Fig. 66 shows how topographic maps can be operated.

The user may change thematic layers displayed on the map as well as the scale of image (magnifier simulator included), s/he may also look through spatial images (Fig. 67), receive information on metric parameters (coordinates, azimuths, and distances) and content characteristics of displayed objects. The map displays inhabited localities with roads, flora, hydrography, and a lot of other information useful for a tourist.

The system offers the possibility of viewing space images, received from the satellite EROS B (surveyed in 2007) and orthophotomaps. It is also possible to combine the image with cartographic layers (Fig. 68).

Fig. 69 shows a fragment of an orthophotomap generated on the basis of space survey materials.

Under modern conditions of rapid technical development, the use of GPS navigators becomes another interesting and useful direction. Therefore, digital maps for GPS navigators GARMIN have been also generated. Moreover, route points that will help a tourist to orient him/herself in the area and find interesting objects have been collected. In the course of field research, GPS receiver registered the location of mineral water springs, the petrol station, hotels, shops, the building of municipal authorities and many others (Fig. 70).

With the help of Navigator, a tourist receives on-line extensive information on location, route, probable obstacles, and dangerous places, nearest springs of drinking water, suitable camping sites, and distance to the nearest road, store, pharmacy, or petrol station.

Fig. 63. District of Skhidnytsya in the map at the times of the Austro-Hungarian Monarchy

Fig. 64. District of Skhidnytsya in the topographic map at the times of the USSR

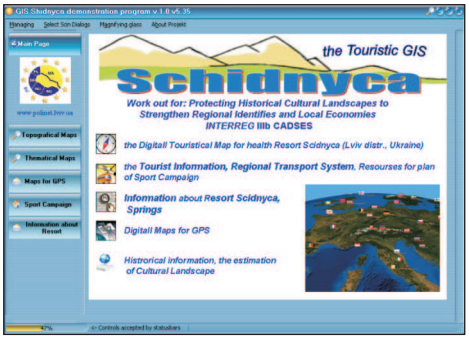

Fig. 65. Main page of the system

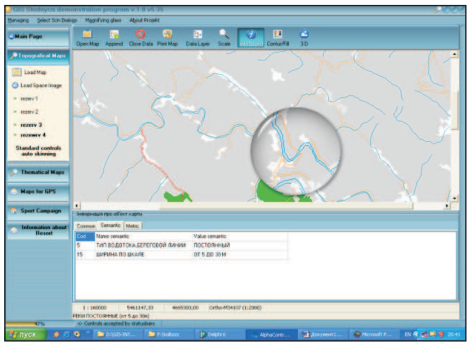

Fig. 66. Work with an electronic map

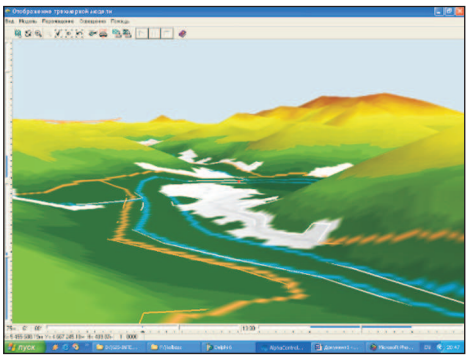

Fig. 67. Spatial (3D) model of Skhidnytsya

Fig. 68. Example of combining space image with the layers of an electronic map

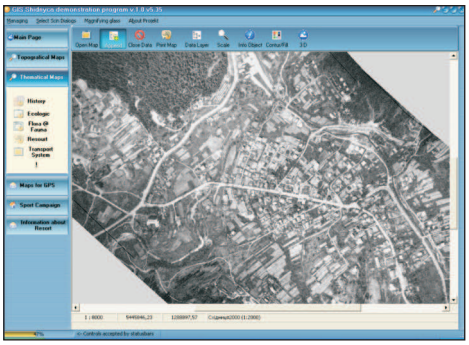

Fig. 69. Orthophotomap of Skhidnytsya (fragment)

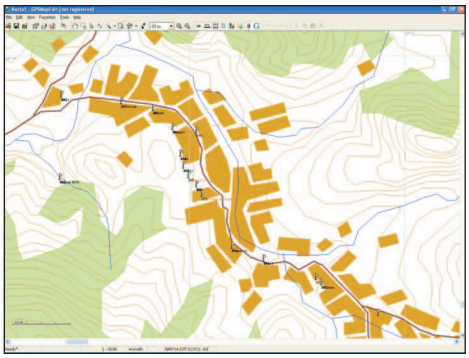

Fig. 70. Navigation electronic chart for GPS navigators GARMIN with the collection of route points

Phot. 128. Town hall in Skhidnytsya

The next stage will be a compilation of a photograph library of interesting sights (Phot. 128) may serve as an example) and to establish reciprocal references between this library and the objects on the map in the framework of GIS. It is also planned to compile a collection of photograph for three-dimensional viewing by means of macyscope

The collection of information has been arranged to generate thematic maps (ecology, flora and fauna, history). With the collection of information, maps and databases describing the recreation potential of the region related to them will be created. Such maps will display realistic situation and will make objective starting points for evaluating landscape permanence and planning recreation load for separate areas and objects.

Modern methods and technologies combined with intellectual potential of experts of different fields make a perfect base for complex research on preserving and development of landscape environment.

4.5. REGIONAL MARKETING - THEMATIC RURAL MARKETS IN REINSTÄDT

Hans-Joachim Petzold

4.5.1 Rural market in the countryside

Reinstädt is an idyllic little village situated in a side valley of the Saale in the centre of Thuringia. Surrounded by shell limestone hills, on which dozens of rare orchids blossom, a series of eight villages lie one behind the other along the Reinstädt area. Jena and Weimar are half-an-hour drive away.

The Reinstädt rural market is a market in the countryside. Unlike "green markets" in cities, with cobble or tarmac underfoot, in Reinstädt the market stands in the middle of a village green. The marketplace is an old square next to the Kemenate, a historic tower with sleeping quarters from the early 15th century; the village church as well as the vicarage and forester's lodge are in the immediate vicinity. The wide square is surrounded by stone walls and, in 1997, a stone baking oven was added. It is a special place with a unique flair, well-suited for holding a market whether rain or shine.

4.5.2 "Regional is first choice"

The rural market was set up to promote regional products, crafts, and services. An important aspect for the initiators was the use of raw materials from the region, particularly with regard to products, in order to support sustainable conservation of the cultural landscape. The rural market aims to develop regional markets and relationships and provide a platform for small producers and their products. They should present their goods in person, as only they themselves can extol their products' virtues and uniqueness or stand by them in the face of criticism. Only they are in a position to trade, negotiate, and barter. The result is something that everyone benefits from – a relationship of trust between the producer and the consumer.

The main priority of the rural market is to give regional products, alongside ecological products, a permanent platform. It makes more sense to develop products in the region than to present ecological products that may have come from thousands of miles away. The spectrum of products offered by small traders rang-

es from fruit, apple juice, apple wine, bread from a stone oven, potato-dippers, cheese from goats, sheep and cows, and smoked trout, to various sorts of sausages from local producers, lamb and turkey meat, herbs, herb products, honey, honey products, mustard, mustard oils, cigars and many more.

Regional products can be tasted, compared, and savoured. The possibility of tasting, exchanging a few words with the producer serves more than simply satisfying one's taste buds or hunger. It also appeals to:

– the mind: the visitor can see by whom, where and how something is produced;
– one's need to communicate: the visitor can chat with the producer;
– the eye: the visitor can see uplifting colours and forms of products and packaging;
– the nose: the visitor can experience different bouquets of wines and brandies;

The combination of these creates a feeling of trust and satisfaction. One learns to cherish a product because its purchase was the result of a human interaction, a recommendation, a personal exchange.

In addition to products, there are a number of different skilled tradesmen. These include manufacturers of kitchen and garden wooden utensils, ecological building materials, historical windows, blueprints, naturally dyed wool, materials, and much more. Tradesmen allow the visitor to touch and try out their wares.

The Reinstädter Rural Market is not only for buying and selling. The organisers arrange various cultural attractions to extend, liven up, and complement the entire programme. Exhibitions, film presentations, music programmes, or storytelling sessions take place in the village green or guided tours of the 600 year old Kemenate are given. These are just some of the various cultural elements on offer in Reinstädt.

4.5.3 Fostering mutual benefit

A basic principle of the rural market and activities connected with it is to "foster mutual benefit". This is exemplified by a network of people and small businesses who know each other personally or from business and have something in common. The network was founded in 1997 as an "Interest Group for the Reinstädt Rural Market" and since 2006 it has been known as the "LANDMARK trade society" to reflect new areas of activity.

Whether small farmers, agrarian societies, fish farmers, beekeepers, associations, planners, authors, schools, teachers, or private persons, all are equal partners in the network and represent a variety of possible interactions. The network operates according to economic criteria. Its aims are:

– to access the economic market in a decentralised manner,
– to open up the possibilities of combining products and services,

– to foster the internal market between the participants in the network,
– to enhance the status of own products through the network,
– to present the strength of the region through the network,
– to leverage the location of the network between the towns of Jena, Weimar and Rudolstadt.

4.5.4 The valorisation of historical cultural landscapes

As a result of cooperation with the Heimatbund Thüringen e.V., a long-time partner for various projects, in 2006 two special thematic markets were organised and held as part of the INTERREG III B CULTURAL LANDSCAPES Project. Through the choice of a particular thematic focus, the visitor's attention was drawn to specific product groups, including their production methods and production conditions. The visitors learnt what happens before the product reaches the consumer. This makes it easier for the consumer to make more informed decisions about what they buy, the hope being that consumers would favour regional products and services for their proximity. The markets were complemented by guided tours of specific cultural landscape elements of the villages. In addition to the thematic markets, a project week was organised for children entitled "Discovering Cultural Landscapes".

4.5.5 Thematic market: "Everything about bread"

The rural market held in May 2006 was inspired by the motto "Everything about bread". The visitors were able to learn more about the relationship between the cultivation of cereal crops, the work of the miller and the baker, and the qualities of flour and bread; all with a view to stimulating greater interest in hand-baking and hobby bakers. The market provided an opportunity to present the advantages of skilled trades, regional economic cycles, and the consequences of industrial production, as well as their respective influence on the cultural landscape. Consumers could gain greater knowledge of sensory feelings for bread. This would help them to make more environmentally sound and healthy choices before any future purchase or would stimulate them to bake at home by themselves.

More than 45 exhibitors took part in the market with an additional information stand in which farmers from the Reinstädter Grund eG agrarian society, a miller, and a baker demonstrated the work of their respective trades and the resulting products. Cereals and grains, methods of cultivation, types of flour, and the resulting variety of breads occupied the central stage.

Prior to the market, hobby bakers were invited to submit their own home-made bread for assessment by a jury. The samples provided on the day were then professionally tasted and judged. The bakers of the three best breads won prizes in the form of baking goods (rye and wheat flour, sunflower seeds, etc.). The visitors were, of course, invited to taste too. On the day of the market, the bread information stand was inundated with over 1 000 visitors conducting numerous stimulating discussions with producers. The thematic market was a resounding success.

4.5.6 Thematic market: "Cultural landscapes for the senses"

For the rural market in December 2006, a special "Rural Specialities Menu" with 7-courses consisting of delicacies made from regional products was devised in cooperation with the organisation "Slow Food". The disadvantage of fast food and the fast-food society are well known and described in detail elsewhere. Slow Food's promotion of slow and appreciative consumption of food complements the philosophy of the Reinstädt Rural Markets and represents an ideal marketing partner for its regional products. The focus is on the quality and enjoyment of regional specialities. With some quite considerable logistic effort, the "Rural Specialities Menu" was prepared and served in two servings for 25 persons each. It consisted of products solely from the Reinstädt Rural Market. The specialities menu was a great success with many visitors, so much so that the idea has been repeated in later rural markets. All in all, more than 1 400 people visited the rural market. The selection of products on offer was again complemented by a cultural programme including music from the renaissance and baroque as well as folk music, a shadow theatre for children, a light dance, and artistic fire performance.

4.5.7 School project week - "Discovering cultural landscapes"

The school project was conducted in cooperation with the Jenaplan school in Jena. 28 children between 13 and 15 years old, almost all from Jena, camped for a week next to the Kemenate in Reinstädt together with their teachers and members of the organisation "Grund Genug". The central topics of the week were:

A cultural historical orienteering trail: Schoolchildren and teachers took part in a 5 km orienteering walk with 16 different stations and were asked to solve questions about local historical cultural landscape. The aim was to learn how to "read landscape", in particular how to identify and understand elements such as arid grassland, coppicing, quarrying, old paths, orchards, and medieval fortifications. The best group was awarded a prize.

Phot. 129. Bread information stand

Phot. 130. View of the Reinstädt Rural Market

Phot. 131. Orienteering in the cultural landscape

Phot. 132. Baking bread at the Kemenate in Reinstädt

Baking bread and a visit to the mill: Over the course of three days, around 20 loaves of bread were baked in the stone oven in Reinstädt by different groups of children. In combination with a visit to a mill, the children could learn about types of grain, their harvesting and processing, the resulting types of flour and forms of bread as well as experience the entire process of making bread from raw material to the end result.

Traditional means of conserving: The schoolchildren were asked to collect apples and plums from both older and more recently cultivated orchards. The fruit that was collected was then made into jam and marmalade using traditional methods. Enough was made to fill 130 jam jars!

Fruit pressing: Using an old fruit chopping machine and fruit press, fresh apple juice was made with the children for their own consumption from apples collected in the orchards.

Dying materials using organic plant dyes: Cloths and scarves were dyed using natural methods and plant extracts from madder, yellow camomile, and other plants from the region.

On the final day, the schoolchildren presented the results of the week to their parents and members of Grund Genug e.V. located in the Reinstädt area. At school, presentation boards were made documenting their experience and impressions of the project. Good weather during the entire project week made it possible to complete all parts of the planned project. The action-oriented approach to learning more about cultural landscape was received well by the children, their parents, and the teachers.

Both educational activities with children and young people as well as thematic markets with their respective product specialities contribute to raising public awareness of what "cultural landscape" is and how much it is worth. Many regional producers contribute to maintaining and cultivating the small-scale variety of landscape sustainable. Sheep graze on meadows, bees fertilize fruit trees, and herbs grow in the local microclimate. Regional markets such as the Reinstädt Rural markets are a good way of communicating the relationship between products and producers and teaching about the need to conserve and valorise historical cultural landscape.