

Land Management of Former Industrial Landscapes in The Economic Metropolis Ruhr

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ABSTRACT

In 1920, the current "Regionalverband Ruhr" (RVR) was founded as a settlement association in order to direct and guide the in that time rapidly increasing immigration of workers. 90 years later, the main tasks of the association are to minimize the economic and environmental consequences of the decline of the mining industry through comprehensive restoration measures. In the Ruhr area as one of the 11 metropolitan regions in Germany over 40% of the total area are nowadays used as settlement locations. Until today a continuous in-crease of the free surface expenditure can be observed: in North Rhine-Westphalia every day further 15.5 ha of undeveloped land are converted into urban areas and transport routes. This progressive wastage of free space means the loss of agricultural land, of forests, habitats and recreation areas. Free space has become a scarce resource. Its protection is a task of environmental policy at the highest rank.

The takeover of brownfields into public ownership is the most effective way of open landscape protection. Buying former industrial, commercial and traffic areas and develop them to greenfields is of vital importance. During the last 40 years, the RVR has acquired a total of approx. 17,000 ha real property in this segment and guided it to an ecological, non profit oriented habitat-specific useage. Development of a regional cycling-concept, transformation of mining heaps to recreational centers and the ecological reconstruction of military conversion areas are only a small part of the tasks.

To achieve these targets land acquisition activities will be carried out in the following key areas: - Transformation of former railway lines into develop bike and walking trails - Transformation of former railway lines for tourism or historical railway traffic - Acquisition of mining heaps for the further development of tourism and recreation - Preparation of land or forest land for reforestation, forest development and environmental development activities - Preparation of water areas for recreational purposes with ecological signifcance - Preparation of land for mitigation and compensation measures in the frame-work of an ecological measures land fund

In the last 40 years the land acquisition policy of the RVR has made a successful contribution to open space protection and development in the industrial landscapes of the Ruhr area. Particularly major projects such as the "International Building Exhibition Emscherpark 1989-1999" and the "European catipol of culture Ruhr.2010" drew national and international recognition to the RVR and its work.

1 INTRODUCTION: HEADLINE GOALS OF LAND MANAGEMENT AT REGIONAL ASSOCIATION RUHR

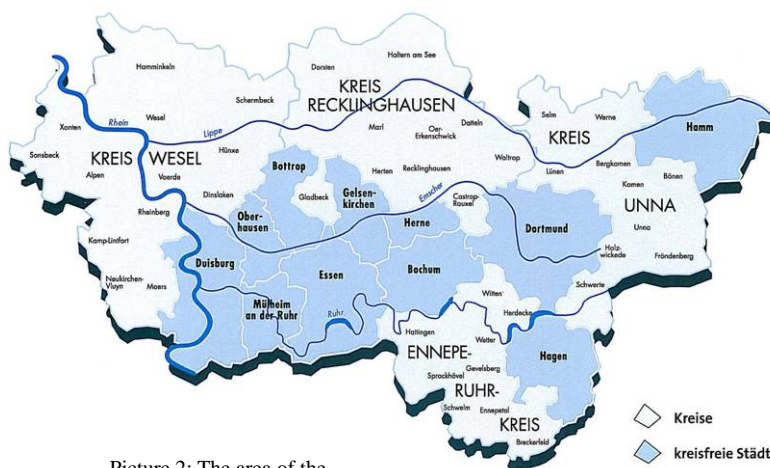
Being one of the 11 metropolitan regions in Germany (Picture 1) the Ruhr Region in the federal state of North Rhine-Westphalia (NRW) is one of the largest and most densely populated metropolitan areas in Europe. No other industrial metropolitan area has seen such a strong and accelerated growth like the Ruhr region. Within a few decades small villages of some hundred inhabitants have grown to really large cities. This development has caused an enormous consumption of open space. In some sections of the Ruhr region the share of settlement areas today accounts for more than two thirds of the total area. At the same time the share of developed areas in the cities varies from barely 20 % in Hamm up to 60 % in Herne. Up to today a continuous increase of open space consumption is to be noted. The reason for the increasing consumption of open space was primarily an increasing regional differentiation of the basic functions of life such as living/ residence, working and relaxing as well as the accordingly increasing demand



Picture 1: The Ruhr region in the centre of North Rhine-Westphalia

for goods, services and news and the necessary infrastructure. The increasing consumption of open space – in North Rhine-Westphalia further

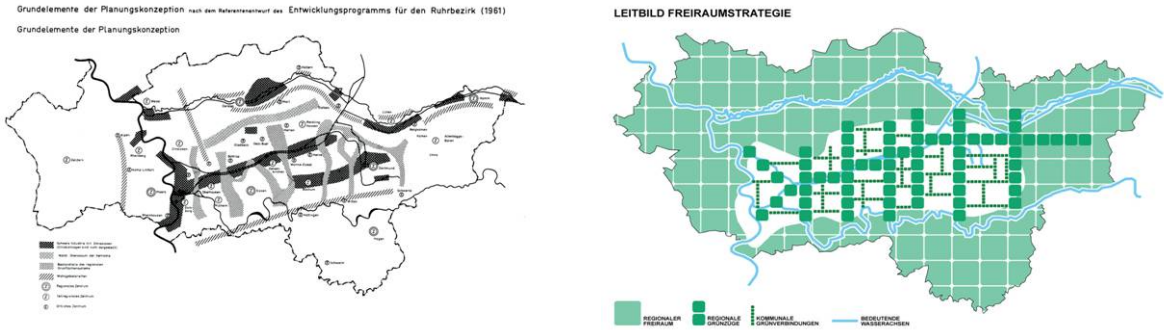
15.5 hectares of undeveloped landscape are being converted into residential areas and transportation routes per day – thereby leads to a significant effect on the [basic] functions of open space. Here a particular ecological disadvantage is that almost half of this space is completely sealed and lost forever as natural habitat and livelihood for plants and animals.



Picture 2: The area of the

Since the foundation of the former *Siedlungsverband Ruhrkohlenbezirk* (SVR) (approx: housing association for the Ruhr coalmining district) in 1920 (Picture 2) the preservation of open space is one of the most important supra-regional tasks, carried out with regional responsibility by the Regional Association Ruhr². Thereby it has turned out that

the transfer of open space to the assets of public ownership is the most effective form of preservation of open space³. Of particular importance is here the purchase [of spaces] for the renaturation of former industrial, commercial and transportation areas.



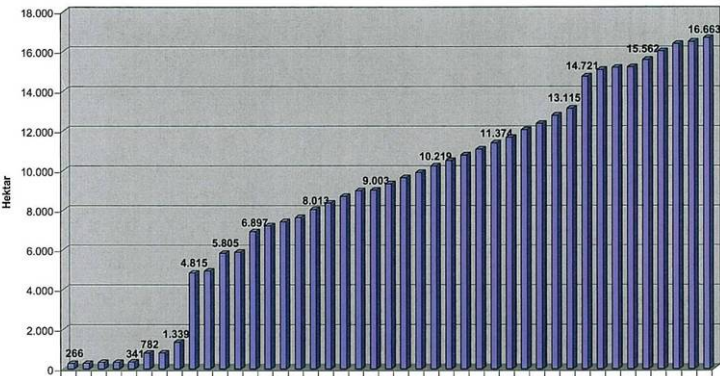
Picture 3: The development of principles for spatial planning 1960 – 2010

The Regional Association Ruhr can claim to be the pioneer of the current regional planning (Picture 3). Land management and regional planning take place as a constructive interaction which is proven, among others, by research projects such as „*Flächenmanagement durch innovative Regionalplanung – FLAIR*“ (approx.: “Land Management by innovative regional planning”)⁴.

For the first time in the 1960ies, funds were provided for in the budget of the Association in order to subsidise the acquisition of open space by the municipalities. Since 1968, the Regional Association Ruhr is authorised to independently use the acquisition of land as a tool

for the preservation of open space. To reach these goals, the Regional Association Ruhr has, during the last 40 years, purchased about 17,000 hectares of property. Thanks to its ecological and non-profit-oriented objectives these areas have been adapted to site specific uses. Thereby nature conservation and recreational use shall not exclude each other, “*Stille Erholung*” (approx.: “Quiet Relaxation”) as a spatial function unites both premises. Further guiding lights are the conservation and development of the particularly endangered

Entwicklung des RVR-Grundbesitzes in den Jahren 1968-2010



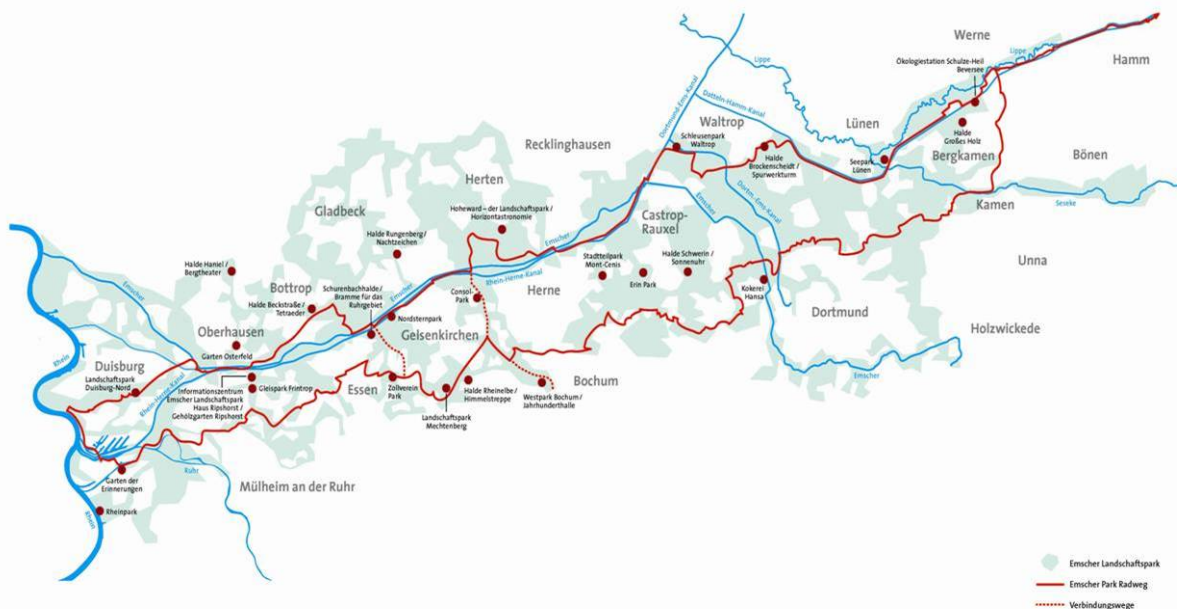
Picture 4: Development of the Property of the Regional Association Ruhr from 1968-2010

biodiversity in metropolitan regions.

Initially, the association had purchased larger connected forest and recreational areas in the border areas of the metropolitan region and particularly endangered green pastures in the inner metropolitan areas. Later it has also purchased areas deserving special protection. In the end the purchase of areas for the re-naturalisation of industrial, commercial and circulation waste land as well as the purchase of water areas for outdoor leisure have gained special importance⁵.

From 1980 onwards, the purchase and development of open space (Picture 4) was made possible by the special support programmes of the state of North Rhine-Westphalia of that time (the Ruhr programme, the programme for the purchase of mining tips and nature conservation). The re-orientation of the coal and steel industry and the mining industry as well as the re-organisation of the former *Bundesbahn* (= German railway association) and the German reunification with the eastern European expansion of the EU had, approx. from 1990 onwards, an important impact on the real estate market and the need for action resulting herefrom. In particular in the central region of the Ruhr area (the Emscher landscape park, Picture 5)⁶, but also in other areas (for example the Ruhr valley and the Lower Rhine landscape park) there has been and still is a significant need for action with regard to the protection and development of open space, which are both components of overall concepts and of regional importance⁷.

The acquisition of land for the preservation of open space is, however, not an end in itself! By the realisation of projects with high ecological interest the conditions of life for the population in the whole Ruhr region have improved substantially. The rehabilitation of the wasted areas serves to improve the open space situation, in particular in some parts of the overdeveloped, emptied or even densely populated region. The ecologically-oriented quality of the rehabilitation results in an upgrading of the little attractive residential areas and their being-



Picture 5: The Emscher Landscape Park

connected to the adjacent open spaces. To say it bold and simple: this **is** the development of

an “industrial core area” to the “Central Park” of Metropolis Ruhr⁸. At the same time the qualitative improvement of the habitats and residential areas represent soft location factors

which increase the acceptance for commercial uses by investors in the region.

Due to the realisation of multifaceted projects the region shall, in future, meet the requirements of an ecological, sustainable open space development, where leisure and tourism will take their place. Tourism as an objective for the reinforcement of the economic power is part of the overall concept. Mainly the projects in the Emscher landscape park, in the Lower Rhine landscape park and in the Ruhr valley must be considered as components of a touristic infrastructure whose realisation in total is destined to promote the region’s structural change.

The *Ökologieprogramm Emscher-Lippe* (ÖPEL) (approx.: Emscher-Lippe ecological programme), the *Städtebauförderung* (approx.: Urban Development Funding) and the *Kommunale Radwegeprogramm des Landes NRW* (approx.: municipal cycle track programme of the State of North Rhine-Westphalia) are the main financial instruments. In cases where EU co-funding is possible, it is made use of. For projects of high regional importance with no funding available, the projects are funded from the budget of the Regional Association Ruhr.

This essay will give an outline on the backgrounds and details of land management at the Regional Association Ruhr. Now and in the future the Regional Association Ruhr will – within the bounds of its possibilities - participate in this very important objective for the Ruhr region.

2 KEY AREAS FOR THE PURCHASE OF LAND

In order to reach the action goal “preservation of open spaces” measures taken for the purchase of land mainly focus on the following key areas:

2.1 Purchase of former railway tracks for the development of cycle and rambling trails.

During the last years cycling has become more and more important in the areas leisure and tourism, health and fitness as well as in the daily business. In former times being a means of transport for people with low income, the bicycle has in the meantime advanced to be a “trend device”. Cycling is the most favourite leisure activity and bicycle tourism is continuously growing in the Ruhr Metropolis. Being an urban and environmentally compatible means of transport, it has become an image factor of high importance. Thus the quality of the cycle trail infrastructure of a city or a region becomes a location factor. The highly increased political significance of cycling has two consequences:

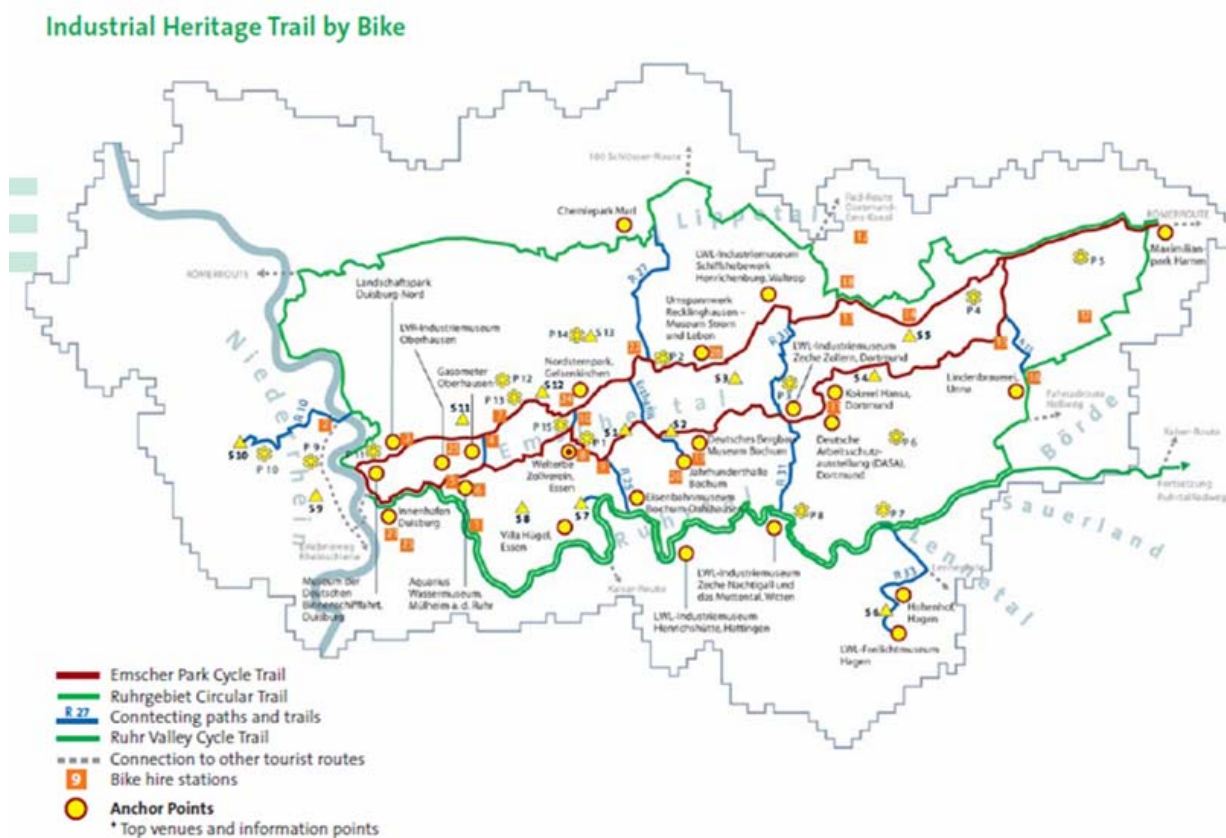
- Public funds for “cycling policy” have risen as much as the attention paid to it.
- An increasing number of actors are playing on this field: All cities and counties in the area of the Regional Association Ruhr are involved, the federal state and various associations promote cycling.

Furthermore, the Regional Association Ruhr had taken up the subject „bicycle“ at three levels and at an early stage:

- For the first time in the 1980s regional cycle trails had been planned in the landscape plans. The “Ruhr Region Circuit” developed by the Regional Association Ruhr was the first regional leisure and tourism route.
- From landscape conservation and forest management gradually emerged real estate development and route planning.
- In parallel with this development, cycling maps became a main pillar of the Association’s cartography activities.

From 1989 to 1999 - in the framework of the *IBA Internationale Bauausstellung* (approx.: International Building Exhibition) - the Association was the Project coordinator for the “*Emscher Park Radweg*” (= Emscher Park cycle trail), for which it had developed the concept and realised some sections. After the end of the *IBA* it has combined the “Ruhr Region Circuit” and the “Emscher Park Cycle Trail” - completed by north-south connections – under the family brand “Industrial Heritage Trail by Bike” (Picture 6) and has thus created a touristic context. From 2004 onwards and under the leadership of the Regional Association Ruhr the “Ruhr Valley Cycle Trail” as the present “highlight” among the cycle-touristic products⁹ was created.

Both trails form the 700 km long basic structure of a regional network which has been systematically developed over years. Both being quality products of high importance for leisure and tourism of the Metropolis Ruhr, they face a nationwide competition and must meet high quality (Picture 6) requirements.

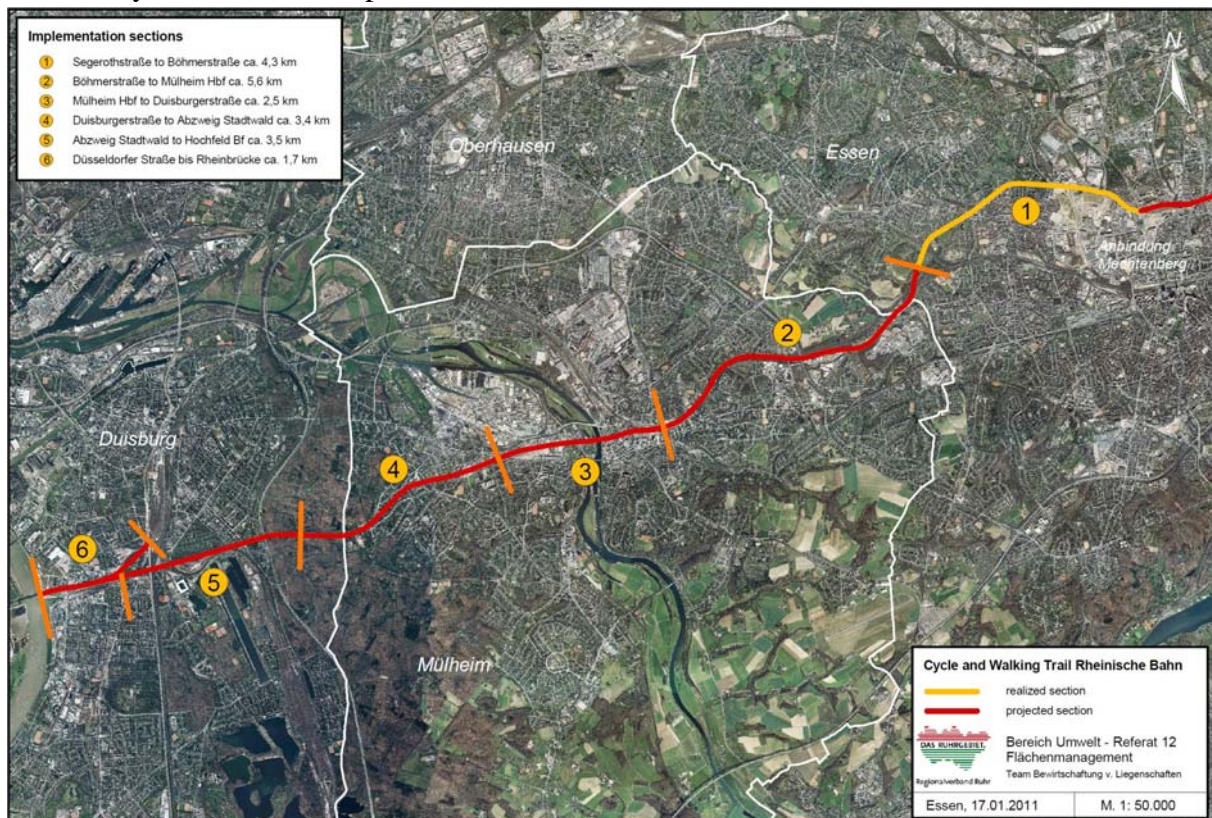


2.1.1 Example Rheinische Bahn Cycle Trail

The *Rheinische Eisenbahn-Gesellschaft* (approx.: Rhine railway company) had belonged to the three biggest railway companies, which, from the middle of the 19th century, had opened up by railway mainly the Rhineland, the Ruhr region and huge areas of today's North Rhine-Westphalia. The realisation of a city-comprehensive cycle and rambling trail on a former railway track which had been lying idle for years, leading from the university of Essen via the main station in Muelheim to the Rhinepark in Duisburg, with its overall length of 21 km, is the outstanding project in the framework of the realisation of the regional cycle trail concept (*Regionales Radwegekonzept*).

Thanks to the availability of the necessary train path properties, at first the route of approx. 4.3 km length and about 13.6 hectares large, in total located in Essen, is realised.

The eastern point of departure of this train path section is the northern inner city of Essen, directly south of the university. Directly adjacent – on the waste land of the former *Güterbahnhof Nord* (approx.: goods station north) – the new “*Universitätsviertel*” (approx.: university quarter) is under construction. In the western part, the train path is running mainly high level along the northern periphery of the so-called “*Krupp-Gürtel*”, a former industrial area, on which is being built among others the new headquarter of the company Thyssen-Krupp. These properties had been purchased together with the still existing trail infrastructure (rails, sleepers, points), their deconstruction was carried out during the development of the property. The sales revenue from the sale of the rail body components was included into the financing. On June 18, 2010 the solemn release of a first section took place, Picture 4 shows the already realised and the planned sections of the trail.

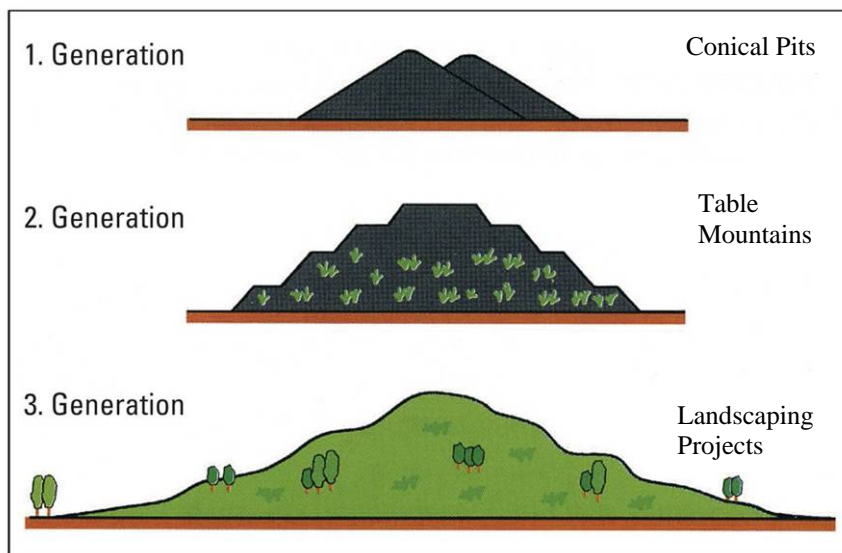


Picture 7: The Line of Rheinische Bahn between Essen and Duisburg

2.3 The acquisition of Mining Tips for the Development of Tips Tourism and Local Recreation

Tips (= *Bergehalden*) are tips of the mining industry, particularly from the hard coal mining industry. These man-made mountains are visible for miles and characterise the landscape in the hard-coal mining districts, particularly in the Ruhr region, in the Aachen region and in the Saar region. But the first part of the word "*Berge*" = "mountains" does not stand for the plural of the word "*Berg*" = "mountain" or "tip" in its topographical sense, but it is the miners' expression for "dead rock" or "waste rock". The increasing quantity of "*Bergematerial*" = "mine waste material" made it necessary to heap up as much material as possible on a surface as small as possible (Picture 8). Due to the transport of the waste material via conveyer belts, the so-called conical tips have developed. This first generation of tips normally consisted of several overlapping cones. Arising problems with smoke emissions, stability and problems with the greening of the conical tips have resulted in a new generation of tip forms: Terraced table mountains with stringent lines and hard contours. In the 1980s, protestations from the population and the local authorities against these shapes designed on the drawing board, resulted in a revision of the guidelines for the construction of tips.

These guidelines stipulated that future tips should be constructed as landscaping projects, which, in a rather holistic approach, took into account all local and structural, ecological, landscaping and safety requirements. This third generation of tips is characterised by a ground surface of more than 100 hectares and a height of 50 to 100 meters. Many of these tips have



Picture 8: Development of Pits, Source: Deutsche Steinkohle AG

now been developed for tourism. Meanwhile the heap up of tips often carried out in consultation with the mining industry, partly with respect to the future landscaping or modelling of the terrain.

After termination of the heap up of tips and all re-vegetating obligations to be executed by the mining industry in

accordance with the "Operational Plan for

Decommissioning" ("*Abschlussbetriebsplan*"), meanwhile more than half of the approx. 70 tips of the Ruhr region have passed into the ownership of the Regional Association Ruhr. In many cases the development of areas for local recreation incl. of the respective infrastructure, as well as the erection of landmarks have been realised by the Regional Association Ruhr. Meanwhile, due to some additional measures of the Regional Association Ruhr and the opening of the tips for the public, the so-called "tip tourism" has been created in the Ruhr region. A tip guide¹⁰ and modified trail maps facilitate "tip hopping".

2.3.1 Example Hoheward Tip

In the originally flat landscape of the northern Ruhr region the tips of the mining industry have created new horizons.

The Hoheward tip is one of the most eye-catching newly designed tips. It emerged from the heap-ups of several coal mines and lies between the cities of Herten and Recklinghausen. Together with the Hoppenbruch tip the Hoheward tip form the largest tips landscape in Europe (Picture 9). The highest point of the tip has already been reached at a height of 152.5 m above sea level, but probably they will heap up mine waste material on the west flank up to 2012. The Hoheward and Hoppenbruch tips are part of the “Industrial Heritage Trail” and of the Hoheward landscape park. Owner of both tips is the Regional Association Ruhr (RVR) which assumed the ownership from Deutsche Steinkohle AG. As the project sponsor, the Association is responsible for the development of the Hoheward tip. On a clear day you can see the Rhine Tower in Duesseldorf at 50 km distance.



Picture 9: The Hoheward Pit Landscape © www.steinkohne-portal.de

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The basic idea of the master plan for the tip landscape is to make “readable” the levels of this modelled landscape as “new horizons” – its 45 m high round steel arches of the sky



Picture 10: Obelisk, Sundial and Horizontal Observatory;
www.wikipedia.de

observatory can be seen as a distinctive landmark from far away. The architectural concept picks up the layers of the landscape monument. This is the playful and varying scenery for a new perception of space from different perspectives.

The central point of the scenery is the horizon observatory, visible from afar, which has been opened in October 2008 (Picture 10). The building structure itself is a short journey in time through the history of mankind. Modern materials such as steel and concrete facilitate sky observation which, to be precise, date from the Stone Age.

The open air planetarium consists of a circular plain surface of approx. 95 meter radius and a forum with a lowered centre and serves as an observation point. Two gigantic steel arches span the “Stonehenge of the Modern Times”. One of the arches divides the sky into the western and eastern hemispheres, the other one indicates the course of the sun on the day of the winter solstice. Seen from the lowered forum, the plateau serves as an artificial horizon. With the help of bearing monuments visitors can observe astronomical seasons, the solstice of sun and moon and a variety of further sky phenomena. Large information panels give easy orientation even for astronomical laymen.



Picture 11: The Dragon Bridge leading to the Hoheward Pit

In the direct vicinity, on the adjoining plateau, there is the horizontal sundial which was inaugurated in 2006. A 9 m high steel obelisk is the pointer. His shadow visualizes a thousands-of-years old time measurement. Around 20 km of footpaths crisscross the Hoheward landscape park. Ring and balcony promenades facilitate ground-level excursions, while the serpentines connect the different levels.

The lowest level is used by those people who live, work and spend their leisure time in the neighbourhood of the tip. A ring promenade of nearly 8 km surrounds the mountain, gives access to all ascents and connects the tip with the system of roads and footpaths of the surroundings. A further eye-catcher is a 165 m long “Dragon bridge” (Picture 11), leading pedestrians and cyclists over a heavily trafficked road to the tip. The 6 km long balcony promenade is the inner access trail and at the same time the middle horizontal level, which surrounds the tip at some 30 m high over sea level. Balconies built into the slope offer changing views of the landscape during the promenade and the ascent via zigzag serpentines to the top of the tip. At the end of the ascent, at some 100 m high over sea level, the “mountain climber” will be rewarded by the top horizon’s horizontal observatory and the horizontal sundial. There is one point from which they can reach the tip plateau on a direct way: Steel stairs to the balcony promenade form a straight-line sidewalk made from gabions with more than 500 steps. Whether visitors want to stay and enjoy the view, or climb to the top like a sportsman, or even make a scientific observation of the day or night sky – doubtlessly Hoheward tip has become a local place for distinguished perception and multiple uses.

2.4 Purchase of Land resp. Forest Terrain for Reforestation and Forest Development Measurements as well as Ecological Development Measures

Since 1968 the Regional Association Ruhr continues to purchase forest terrains on a significant scale. Almost always the objective hereof is the development of these forest terrains to areas for local recreation and the ecological optimisation by forest conversion and complementary measures for nature conservation. In the meantime the Regional Association

Ruhr is, with about 11,000 hectares forest terrain, the largest municipal forest owner in North Rhine-Westphalia, if not even in Germany.

2.4.1 Example Forest Üfte

In 2001, the Regional Association Ruhr has purchased a 1,490 hectare large connected forest terrain at the northern edge of the Ruhr region in the scenic *Naturpark Hohe Mark* (= Hohe Mark natural park) inclusive of the necessary buildings and structures of the forestry Uefte. Originally this forest was owned by a large German company and, on the occasion of the sale of its mobile phone unit, had passed into the ownership of another mobile phone company, who, however, was not interested in a further ownership of the area.

These forest areas, the so-called „*Üftermark*“, had been predominantly planted with medium mature coniferous wood population, the pine being the main tree species. The terrain is slightly hilly, a change of fields, forest and lawns shaping the landscape. The forest areas represent one of the best hunting grounds in North-Rhine-Westphalia for deer and wild boars.

With the purchase of this forest area *Üfte* the Regional Association Ruhr has set the goal to purchase a supra-regional important forest area, which until then had mainly been used for hunting by its private owner, and to rededicate the forest into an area of recreation for the population. Upfront this shall be realised by the opening and development of the forest area by the expansion of a hiking trail network and other measures for the improvement of the infrastructure.

Since its construction in 1984, the motorway A 31 had spaciouly been cutting into two this forest area hosting the largest lowland deer population in North Rhine-Westphalia. In order to compensate for this massive interference into the ecosystem and with resources from the *Konjunkturprogramm 2* (approx: Economic Programme 2 (Picture 12), the Regional Association Ruhr is currently building a green bridge allowing for unhindered game passes between the two areas¹¹.

2.5 **Purchase of Land for Compensating Measures in the Framework of an Ecological Ground Management**

With its 17,000 hectares of forest areas and green land the Regional Association Ruhr is one of the largest owners of open space in the Ruhr region. At the end of 1998 and simultaneously with the commencement of the new Building Code, the Regional Association Ruhr decided to offer those areas appropriate for compensation measures in its project “Ecological Ground Management”, thus offering a new service for members of the Association and other Third Parties¹². In the framework of the



Abb. 12: The Green Bridge Crossing the A 31

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project “Ecological Ground Management” areas are offered for compensation measures to companies, to investors and member municipalities, as in the Metropolis Ruhr compensation areas are only insufficiently available.

The constant demand for compensation areas by members of the Association and Third Parties confirms that this range of services of the Regional Association Ruhr offers a strategic land management and active property policy, allowing at the same time to actively support the Association members’ increasing spatial utilisation conflicts in fulfilling their municipal task of safeguarding the future. The Ecological Ground Management of the Regional Association Ruhr serves the purposeful strengthening of the preservation and development of open space in the region, the initial legal task of the Association, for example by further cross-linking and environmental revaluation of the Ruhr region’s typical green strips, its landscape parks and its tips.

The Association provides an extensive portfolio of landscape management and forest upgrading measures on their own spaces and in their own pool of measures. The Ecological Ground Management (*ÖBF = Ökologischer Bodenfonds*) offers compensation measures to project sponsors as a full package service. This full package service includes site securing, all engineering services such as planning, preparation, monitoring, invoicing and quality control. Furthermore the Regional Association Ruhr itself carries out compensation and cultivation measures, against payment of an adequate fee. Areas provided for compensation measures remain in the possession of the Regional Association Ruhr and will be permanently maintained, even after the 30 years period paid by the fee. Since the start of this range of services 10 years ago, the Regional Association Ruhr has signed approx. 60 contracts for a surface of more than 125 hectares and with a financial volume of 4.2 mio. € for the provision of these areas, the realisation of the planned measures incl. of the maintenance for a period of 30 years¹³.

2.6 Purchase of Water Surfaces for Leisure and Recreation resp. with Environmental Importance

The purchase of water surfaces relates to both natural and artificial waters so that it will be possible to facilitate subsequent uses for those areas which meet the respective needs. Often these are lake surfaces and (river) banks, which are prepared for leisure purposes (“Quiet Recreation”).

2.6.1 Example: The Gloer Valley Dam / Reservoir (*Glörtalsperre in Breckerfeld*)

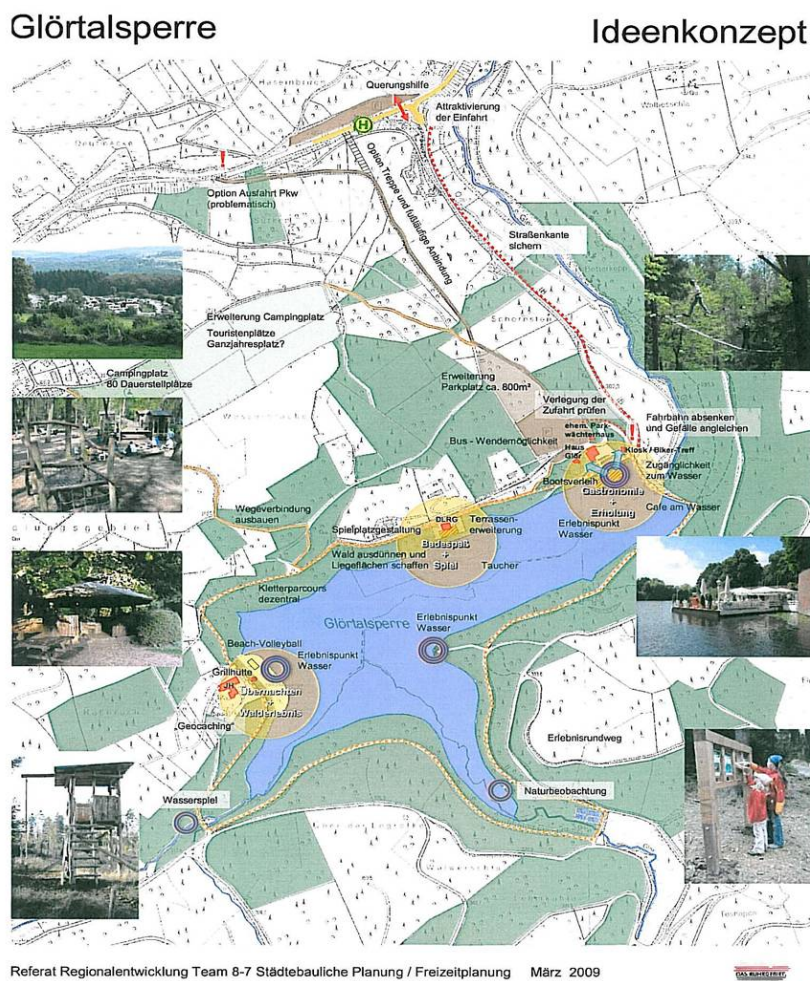


The *Glörtalsperre* (approx.: Gloer valley dam) was built during the years 1904/06 by damming the creek Gloer and was inaugurated on June 11, 1906. After its renovation from 2000 to 2004, the dam now shines in new splendour and again has become an all-season attractive destination for people looking for rest and relaxation from far and wide. Initially the 25 hectares

Picture 13: The Gloer Valley Dam in 1920: www.wikipedia.de

“large” lake – lying south of Hagen in the catchment area of Breckerfeld (*Ennepe-Ruhr-Kreis*), Halver and Schalksmühle (*Märkischer Kreis*) – has secured the supply with cooling water and works water for their water wheels for the light section iron and wiring industry. Later the dam has been serving as a reservoir of potable water and – to a small extent – for the regulation of the rivers Volme and Ruhr.

In 1998, the threatening shutdown due to high costs without any benefit met a strong protest among the population. In a petition they supplied about 10,000 signatures against the shutdown. In 1999, the local authorities of Ennepe-Ruhr-Kreis, Märkischer Kreis, Hagen, Breckerfeld, Schalksmühle and Halver and the Regional Association Ruhr signed an agreement for the restoration and new regulations for the continued existence of the dam. Together they founded the “*Freizeitschwerpunkt Glörtalsperre GmbH*“ (approx.: leisure activities Gloertalsperre limited) which should act as operator of the recreational area.



Picture 14: Concept for the Development of the Gloer Valley Dam

Today the *Gloertalsperre* is an oasis of calm in the middle of untouched nature, offering its visitors a number of attractions (Picture 13). The centre piece of the gastronomic offer is the restaurant with its large lakeside terrace. In the adjacent beer garden visitors can during summer months rest under chestnut trees and during the bathing season there is a beach café with a kiosk. The bikers’ point has always been a popular destination for bicycle enthusiasts from the immediate and distant environs. Two terraces providing a total of 60 places within sight of the motorcycles offer the bikers relax and recreation during or after their tour. The 3.4 km long

tour around the lake is well developed and can be walked in 45 to 60 minutes.

2.7 Generation of Renewable Energies on the Association's Properties

The guideline 2009/28/EG of the European Parliament and the Council dated April 23, 2009 regulates the promotion of the use of energy from renewable sources and provides for differentiated binding overall national objectives in the EU member states. For Germany the guideline determines a national objective of 18 % of the total energy consumption up to 2020. In 2009, Germany achieved a value of 10.1 %. North Rhine-Westphalia and in particular the Ruhr region is one of the most advanced and important energy regions in Europe. During the last 150 years very few regions in the world have gathered more knowledge and experience in the field of energy than North Rhine-Westphalia.

The energy policy of the state of North Rhine-Westphalia is clearly geared to the objectives efficiency, security of supply, as well as environmental and climate compatibility. Climate compatibility in particular has become extremely important in North Rhine-Westphalia. In April 2008 the state government of North Rhine-Westphalia has published its energy and climate protection concept. For example, the state has a very good position in the field of renewable energies. Local initiatives like "Innovation City", "Solarstadt Gelsenkirchen" (approx.: "Solar City Gelsenkirchen") or "Wasserstoffstadt Herten" (approx.: "Hydrogen City Herten") seize on the topic. For the purpose of regional coordination the Regional Association Ruhr has assumed the responsibility for "Zukunftsenergie Ruhr" (approx.: "Future Energy Ruhr"). However, the Association, being the owner of almost 17.000 hectares of land, also assumes the responsibility for the promotion of the development of regenerative energies. And the Association's property almost exclusively consists of undeveloped open space. Already since the beginning of the 1990s, the Association has practised the utilisation of regenerative energies, in its own projects or in cooperation with competent partners. A wind power plant, for example, has been erected on a tip and other tips have been purchased for the mere purpose of the utilisation of wind energy. In the meantime three additional sites have been leased for the energetic utilisation of mine gas. Thanks to the experience they have acquired it will therefore be appropriate in future projects to cooperate with competent companies of the energy industry. Inquiries to the Regional Association Ruhr are increasing all the time, first discussions about future projects under the mediation of the Energy Agency North Rhine-Westphalia have already been started. In general it is evident that there is a vital interest in land of the Regional Association Ruhr from outside organisations for the utilisation in the following areas:

2.7.1 Wind Power

With a share of 11 % each North Rhine-Westphalia and the Land of Schleswig-Holstein together hold the 4th place among the German federal states with respect to the installed wind power capacity. Another important topic is the exportation of technology. North Rhine-Westphalia is holding another 4th rank compared with other federal states with regard to the number of erected wind power stations. However, wind power is not only an issue of regional importance. Worldwide each second gear unit



Picture 15: The Wind Power Plant on the Hoppenbruch Pt. 14/21

installed in a wind power plant has been produced in North Rhine-Westphalia. For the No. 1 Energy Region Ruhr the development and use of innovative wind power technology is an important growth factor and a decisive step into the direction of climate protection and less dependence on fossil energies. After during the last 10 years the Regional Association Ruhr had not initiated any new projects, there are now specific inquiries for the erection of further wind power stations on the Association's tips or in appropriate forest areas.

2.7.2 (Open Space) Photovoltaic

Worldwide the photovoltaic sector has grown by about 40 % per year during the last seven years. Experts predict a market growth of 20 % per year by 2020. Half of the worldwide-used production technology for photovoltaic is "made in Germany". Some important elements of the value chain of the photovoltaic technology are already based at centres of excellence in North Rhine-Westphalia as, for example, in an around Gelsenkirchen. Beside the established solar power generation on roof surfaces and façade areas, more attention is now brought to open space photovoltaic. As the considerable use of space turns out to be a negative boundary condition for the application of this technology, former industrial and military conversion areas seem primarily to be appropriate for its utilisation. First discussions are currently being held on the construction of open space photovoltaic power plants on conversion areas of the Regional Association Ruhr.

2.7.3 Energetic Use of Geothermics and Mine Water

Geothermics represent an almost inexhaustible source for the heating of buildings and for power generation. The technological possibilities for the use of geothermal energy range from the supply of single-family homes by near-surface geothermics to the use of temperatures of an infinite deal more than 100° C from a depth of 5,000 meters for the supply of major energy consumers with heat and power from deep geothermics. The use of geothermal energy provides new chances for the economic growth and employment in North Rhine-Westphalia and in particular for the Ruhr region, as the Ruhr region is the leading European site for energy and mining technologies.

In order to get an idea of the structuring of the value chain of geothermal energy, all technologies, products and services were identified, described, logically linked and shown in diagrams. Mine water occurs from rising groundwater in disused mines. The deeper the mines were, the warmer the water is, so that in a depth of 1,000 m there is a water temperature of about 40° C. A water outlet located near potential heat consumers such as industrial, administrative or residential buildings allows for its economic use. Admittedly the industrial use is locally limited to the direct environs of the mines, but its level of efficiency is extremely high. On the property of the Regional Association Ruhr there are at least 5 old tip shafts. It is not yet clear whether the energetic use of geothermal energy or mine water will be worth considering in the future.

2.7.4 Mine Gas

For the generation of power and heat it is also possible to use escaping mine gas from tip shafts in combined heat and power plants (CHP). The gas is a mixture of coal gas, arising during the formation of hard coal, and the atmospheric air which, through shafts and slopes, flows into the beds of the coal mines. Coal gas is mainly composed of methane, it is explosive, is released during coal mining and degasses at the earth's surface. Methane can be stored and consequently be used for energy generation. In the Ruhr region this has been

practised since decades. In times of high gas and oil prices and as a contribution to climate protection, the energetic use of mine gas seems to be very reasonable. As the detrimental effects on the environment of methane is 21 times higher than those of CO₂, its combustion in combined heat and power plants (CHPs) not only saves the use of other fossil fuels, but also reduces the greenhouse gas effect of the otherwise released methane gas. As a consequence, the supply of electricity from mine gas into the public power grid is funded by the EEG (= *Erneuerbare-Energien-Gesetz* = Renewable Energy Law). The Ruhr region provides a high potential for the use of mine gas. Several plants are already in operation and the initial experience is positive. So far the Regional Association Ruhr and its partner Minegas-Power have concluded lease contracts for the extraction of mine gas at three locations. Thereby we must make two principal distinctions: Both the direct extraction of mine gas above existing shafts and the angle drilling to existing deposits are possible methods of production of mine gas.

2.7.5 The Future Energy Policy of the Regional Association Ruhr

For the future, the utilisation of renewable energies on the Association's areas must become a headline goal of the internal land management. There are current or emerging new projects for the sectors wind power, solar power and mine gas utilisation. Any other renewable energy sources shall be reviewed promptly for their possibilities of usage. Thanks to the numerous commercial project sponsors and plant operators, the Regional Association Ruhr does not need to act as an investor. It is rather vital to find partners for upcoming measures and projects and to lease to them the necessary existing areas owned by the Association. Thereby the parties involved must take into consideration the respective framework conditions especially with respect to planning law and, if appropriate, the compatibility with open space development measures which have already been realised. All future measures are intended to be in compliance with the goals efficiency, security of supply, as well as the environmental and climatic compatibility. As far as possible, the financial participation of interested citizens (*Bürgerwindpark* = citizen-owned wind energy plant), (*Bürgersolarpark* = citizen-owned solar parks) shall be promoted, the municipalities will participate by their own participation schemes resp. the incidental local business tax.

3 CONCLUSION

During the last 40 years the land acquisition policy of the Regional Association Ruhr resp. its predecessor organisation has made an important contribution to the preservation and development of open spaces in the former industrial landscape of the Ruhr region. Both in the framework of major projects such as "*Internationale Bauausstellung Emscherpark 1989 - 1999*" as well as of the current "European Capital of Culture Ruhr 2010" and in the "normal" daily business, the Regional Association Ruhr has invested about 200 million €. The development of former tips, the conversion of former railway tracks into an attractive network of cycle paths, the ecological redevelopment of large forest areas, the provision of water surfaces for "Quiet Relaxation", the conversion of disused military properties to leisure parks near the cities and many other things have led to the fact that the Ruhr region, after having nearly completed its structural change, today is experiencing a significant image improvement. The number of visitors is steadily increasing in a two-digit range, and on weekends the intensive use of the cycle paths network has almost become a new problem. "Holidays on the Doorstep" – this is not just the title of a flyer of the Regional Association Ruhr, it is not just a hollow phrase – this is daily-life practise. In the framework of Ruhr 2010

there was hardly any magazine which did not dedicate a title story to the Ruhr region. Thus the Association's land management has, with many of its outdoor projects, contributed directly or indirectly to the success of Ruhr 2010¹⁴.

For all projects cited the acquisition of land is a fundamental prerequisite for all subsequent developing measures. Land management and other additional tasks such as property management and ecological ground management – they all together represent interesting fields of work which, to a large extent, are carried out by surveyors and surveying technicians and – thanks to their typical goal-oriented way of working – thus are in good hands.

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