

Greening Deserts Research Centre Masterplan II Greening- and Reseach Camps for Surface Mining Deserts

Business Plan, Concept and Study on Sustainable Greening Methods, Greenhouse Management, Forestry, Agriculture and Culture Industry for Surface Mining and Post-Mining Landscapes

For a better overview, the concept is divided into different areas and topics,
which complement each other.

Free Scientific Work
1. Auflage, Leipzig, Oktober 2017
Urheber: Oliver Gediminas Caplikas

Table of contents

- 1 Foreword and introduction**
- 2 Unique Selling Points and special features**
- 3 Detailed description of a research camp and its primary tasks and goals**
- 4 Potentials of sustainable greening and research in opencast mine and post-mining landscapes**
- 5 Development of sustainable and varied cultural landscapes**
- 6 Greenhouses, gardening, landscape parks and forests for opencast mining or post-mining landscapes**
- 7 Climate protection, extreme weather and civil protection through preventive greening**
- 8 Cultural, social and economic aspects**
- 9 Possible conflicts, obstacles and risks**
- 10 Rights and obligations relating to the rehabilitation and reclamation of mining and open-cast mining landscapes**
- 11 Socioeconomic aspects and factors**
- 12 Improvement of regional nature conservation and global climate**
- 13 Further goals and ideas for the effective, sustainable and fast cultivation of surface mining landscapes**
- 14 Ideas and visions for the future**
- 15 List of abbreviations**
- 16 Notes / Remarks**
- 17 Person und Experiences**
- 18 Annexes**

1 Forward and introduction

Desert research, research and development of sustainable greening methods, greenhouse management, forestry, agriculture and cultural industries are the primary fields of the concept and greening deserts projects. The greening and research camp with a greenhouse, office and laboratory containers or tents for the research and development of greening and irrigation methods is the primary objective for opencast mine or post-mining landscapes. Secondary objectives, such as sustainable recreational use and tourism offers, can be realized during the operation over the years and are not necessary for the successful start of the research project and base camp in the opencast mining area or a post-mining landscape. This also eliminates all associated conditions, provisions and legal regulations, since for the time being no public recreational use or tourism operation takes place. Nevertheless, forward-looking considerations and planning approaches as well as extensive points on the areas or topics were worked out and summarized in this concept. Greening Deserts projects are always planned as long-term and sustainable as possible. Further tasks and goals of the projects are the education, research and realization of a sustainable greening, management and cultivation of all kinds of poor, barren and dry areas, landscapes (drylands) or regions. That's why the main projects of Greening Deserts treating not only typical deserts but all types of deserts, including surface mining deserts, concrete- or urban-deserts. This can all be done with suitable greening and research camps, stations or centers. In this work or in the concept possibilities are analyzed and discussed on the example of research and greening camps for opencast deserts, mining landscapes or post-mining landscape landscapes. The research camp should be an encounter, education and communication platform in post-mining landscapes, internally for experts, specialists and scientists, and in future open to the public. Earth sciences, natural, environmental and desert sciences are three of the main research areas.

For a start, the greening, nature and research projects focus on nature experiences, important experience and research in the particular area or terrain. Everything will be analyzed, documented and informed about interesting findings or developments. In the course of the project, with interested and competent bodies or persons will be communicated – via existing and new networks, and then on site as well. In addition to well-known environmental education instruments (tools) and programs, the active experience of nature and creative forms of exploration and experimentation also should be researched and developed. Particular attention is paid to the practice-oriented work, if possible outdoors. The motto is: away from unhealthy, artificial working and living spaces. Out of sterile offices or laboratories. Out of the house or city, work and live in healthy habitats, in positive environments of true nature or natural environment.

Extensive research results, discoveries, developments and experiences in all mentioned areas of projects can be exchanged and compared with international institutions and scientific institutions. Most of the information and results are public or online available and will be published according to their level of development or needs. This will further enhance development and

processes and can really help crisis or problem areas and poor countries (Third World / Emerging Countries). The research results, experiences and insights form a cornerstone for space gardening or space research in relation to professional greenhouse management, even for desert planets such as Mars. Also interesting would be a Mars Research Station for surface mining or post-mining landscapes. For this reason, with sufficient financial support or funding, further developments and research should be carried out, such as aquaponics or hydroponics, solar greenhouses and special biospheres.

During the first years additional places, paths and ways for recreational activities or leisure opportunities such as hiking and cycling can be planned and set up. For this purpose, with sufficient resources extra vantage points, experience rooms, rest areas, shelters, activity fields and art objects can be realized. Incidentally, with the right financial support or funding, an improved infrastructure can be set up. Of course, with clean technologies and renewable energies, such as solar powered LED lighting for important places and paths.

For the future, the greening and research camps could also offer other extensive activities, forms of use and programs like in the field of education, leisure, culture, social. A good example of possible forms, such as recreational use, can also be found in the work "Sustainable recreational use and tourism in open-cast mining landscapes" (NETB) of the Federal Agency for Nature Conservation, point 4.3.1. Uses are, for example:

- Camping, recreational living and trekking
- Nature experiences through educational and discovery trails, nature observation, nature discovery areas or terrain, animal enclosures and zoos
- Landscape-related recreation by hiking, running, cycling, horse riding,..
- Cultural and artistic life through building, nature and industrial monuments, landscape parks and gardens, galleries, museums, events and events
- Information and communication through viewpoints, meeting places, sightseeing tours, guided tours, information and education centers
- Sports, games and recreation with landscaped sports and games facilities, sports facilities, theme parks and other recreational facilities
- Water sports and recreation by swimming, boat operation and other water sports

The complete financing (financial aspects) and commercial realization is discussed partially in this concept. Concrete financial details or numbers are not dealt with here, as it is a scientific concept with a focus on research. The concept is partly business plan and study. An extensive description and details like all known costs, necessary resources, materials and equipment are summarized in a simple requirement and financial plan.

For the urban land use planning, planning approval procedure and environmental impact assessment, if necessary, documents are compiled and

responsible authorities are or will be involved. For more information see 4.1.4 and 4.1.5 in the basics section NETB (Annexes).

Good transport connections, paths, roads and parking spaces can be connected in consultation with the municipality and regional administration and used for future visitors. According to the State Development Plan for the Free State Saxony, post-mining landscapes (BFL) are counted among the areas with special development, rehabilitation and promotion tasks. Nature conservation, tourism, leisure and recreation in BFL plays an increasingly important role.

Regional Plan B sets out the following principles and objectives for the spatial development of the post-mining landscape:

"Through the design of the BFL in the southern area B, the mining and industrial touch of the area should be used as an opportunity to develop a new and unmistakable landscape structure that lives from a variety of contrasts and a long history of serious landscape changes. For this purpose, the preserved areas of the pre-industrial cultural landscape ... as well as selected ... particularly important industrial buildings, equipment and industrial settling ponds are to be preserved. Geological gullies, boulders, selected erosion gullies and landslides should be experienced and seen as long as possible, taking public safety into account ... (G.4.1.2.1)

In the BFL ... the new identity and the exceptional nature of the area should be emphasized, in contrast to the landscape typology of the neighboring natural spaces and the historical distribution of use. Smaller residual holes should be left entirely to natural succession ... (G 4.1.2.3)

The emerging waters in the southern and northern areas of Leipzig are to be shaped by natural, multi-faceted bank edge lines and, as far as possible, by marginal shallow water areas. Sport and leisure opportunities should be created by using selected residual lakes or parts of them for landscape-friendly recreational use ... (G 4.1.2.4)

In the regionally important recreational area "Südraum B" the conditions for a landscape-related recovery are to be created. For this purpose, a varied and eventful BFL is to be developed and to create a diverse range of sports and leisure opportunities across municipalities. (Z 5.6.1.2) "

Further information (texts, pictures, lists, tables, etc.) in the concept or appendix.

2 Unique Selling Points and special features

The business plan, concept and study on sustainable greening methods, greenhouse management, forestry, agriculture and cultural economy for opencast mine and post-mining landscapes can also be adapted as needed or revised for any situation or area.

In the following a few special Unique Selling Propositions (USPs) and innovative ideas are briefly summarized.

- Growing, cultivation and care of rare endangered species, especially plants of the Red List – with extra greenhouses and grounds (botanical garden, park, forest) can be established
- Biomass Research, production and recycling, processing or recycling of urban bio-waste for energy and soil production in opencast mine or post-mining areas (Biowaste Management)
- Development and testing of greenhouse types and equipment in extreme landscapes like deserts, offering professional services, product and quality testing in relation to the industries or manufacturers
- Greenhouse Management, Biosphere and Habitat Research
- Product reviews, product testing and (re)presentation for manufacturers
- Research into flexible, transparent or translucent solar cells for solar greenhouses, especially in terms of efficiency
- Research and development related to agriculture, forestry and renewable energy such as solar and water energy in or with extreme environmental conditions
- Cultivation of special crops and medicinal plants such as hemp
- Scalability of the concept, also for urban spaces and urban deserts
- Testing of various irrigation systems, greenhouses or greenhouse systems, including systems for efficiency, resilience and durability
- Testing and development of special constructions of solar greenhouses, office-, greenhouse- and laboratory-containers
- Comprehensive load test and quality tests for suppliers or products, if necessary even under extreme conditions (weather, temperatures,..)
- Improving education and development processes and learning methods related to nature, self-esteem and community environmental awareness
- Desert research in opencast mine, surface mining or post-mining landscapes – also known as open-pit deserts
- Space or planetary research in mining landscapes, sometimes called as lunar, Martian or Mars landscapes
- Testing, tuning and development of seed bomb or seedball drones

The most work, achievements or services can be realized with sufficient capacities and resources with a few helpers. With money, financial resources or support it is no problem to build or realise everything fast and efficient. The services are chargeable, but in some exceptions such as investments, joint ventures, sponsorships or similar collaborations may be free or mutually beneficial. Various constellations, partnerships and synergy effects are possible. Further information can be found in the Masterplan 2 and partner, investor or sponsoring concept.

3 Detailed description of a research camp and its primary tasks and goals

The Greening Deserts Research Camp is a research station and permanent establishment for professional greening, gardening, forestry and agriculture or agriculture. At the same time it is an educational center, nature conservation

station, information and communication platform. The research camp also serves as a meeting place, cultural and scientific center for open pit mining or mining landscapes in general.

The primary tasks and goals include a constant research and use of existing experience reports, studies and research results on the areas of interest of the research camps and research projects, especially for the research station in the mining area Leipzig South. First tasks are also the determination of the local conditions, the gathering of existing results and information. Missing data such as current soil types, nature of the terrain,.. can be determined and documented on site, including measurements of values such as nutrient, pH and pollutant values. If necessary, available data can be requested from respective institutes. These measures are important in order to find the exact location and to elaborate better suitable greening, renovation or restoration measures in the research area of the BFL. However, most of the research fields are largely unaffected, as separate soil and soil mixtures are used. Many of the research is done on extra test fields and in greenhouses - so like with container and pot cultures or cultivation.

Other tasks include the determination of biotic factors and information like current plant growth, vegetation in the terrain, than morphological factors like sea or land structures / soil condition. Important is also the water and soil quality like nutrient content, layers, types, number of bacteria, etc., including current abiotic factors such as in the basics NETB point 3.2.2 listed. It is also interesting to investigate the self-cleaning power of soils and waters in the research area. With the full operation of the research camp, these tasks can be carried out in full and on a regular basis, ie a continuous research and measurement of the above and other values of interest to research.

With sufficient materials, a very good preparation and long-term planning (3-5 annual plan detailed, 5-25 years simplified), the first on-site work can already begin in early 2018. In principle, with this concept already the exact plan and even long-term projects and plans formulated extensively. The goal is to set up the camp including buildings like greenhouses, office and laboratory containers, tents - with the required technologies and equip further sensible equipment in one year to ensure efficient and complete operation after one year. With the appropriate support and funding(s), it is also no problem to set up a good team quickly. It also makes it easier to attract more partners, investors and sponsors.

There are many people interested in Greening Deserts projects! Experienced and strong contributors or active participants are of course preferred. The goal is to involve interested and potential institutions and companies right from the start, whether schools or universities for hands-on education and training on-site or employees of training and education companies. Everyone is welcome to help and become part of the forward-looking projects, including refugees and immigrants from devastated countries and aid organizations. Honest, communicative, positive, social, transparent and cosmopolitan work and action is paramount.

Secondary tasks and goals:

- Offer of exhibitions, excursions, guided tours and seminars
- Providing and disseminating information about history, society, culture, landscape, nature, technologies, environment and region
- Building a lounge, cabin or gazebo for future events or events
- Further offers, tasks and goals can be found in many parts of the business plan and concept, especially in points 12 and 13
- continuous improvement and further development of all secondary tasks

4 Potentials of sustainable greening and research in opencast mine and post-mining landscapes

Innovative ideas and potentials for sustainable greening and research projects for post-mining landscapes and opencast mining (opencast mining) are briefly summarized.

- General desert research and studies on desert plants or vegetation
- Better drainage and distribution of surface, ground and ground water
- Education and training of a better understanding of nature and understanding, especially for the young generation
- Detoxification and detoxification of toxins and pollutants in the soil and water through surface mining operations and other environmental pollution
- Development, extension and improvement of soil production and irrigation methods
- Increasing the storage capacity, capacity and potential of soils, especially with loamy or other sealed soils and surfaces
- Good balance of technical potentials and future use targets
- Cultivation of medicinal and other useful crops in greenhouses and opencast mining areas
- Developing or researching of new and optimizing old farming and gardening methods or techniques
- Use of natural and artificial water reservoirs (tanks, ponds, reservoirs) for the production of various waters, e.g. Mixed, usable, mineral and drinking water
- Potential for events and events in the cultural, social and scientific fields, e.g. exhibitions, information events and music events
- Extensive and comprehensive information related to natural themes
- Extensive exploration and documentation of the opencast mining deserts and nature including the animal world, also microcosm
- Improve agriculture, hydroponics and permaculture methods or techniques
- Improvement of cultural, social and economic offers in the respective regions, thereby reducing the lack of employment and unemployment in mining and opencast mining areas
- Improved protection in extreme weather conditions, e.g. during flood

- catastrophes, storms and flooding
- Improvement of the water quality by proven and new water systems, overground and underground
- Reinforcement and improvement of the relation or connection between man and nature
- Water processing, filtration and extraction

Further good ideas and innovations can be found in the business plan, concept and on the official websites. A versatile communication and the extensive exchange by archives, experience treasures, data and / or information networks is aimed at. These are incorporated into the developments with good innovation, network and knowledge management.

5 Development of sustainable and varied cultural landscapes in surface mining areas

The Greening Deserts projects focus on sustainability and diversity, especially for greening and research camps in surface mining landscapes. The projects act lawful and forward-looking in the context of the experiences, possibilities and knowledge. Here are some important points.

- Vote and exchange with the relevant authorities, such as the nature conservation authority
- Other good or potential cultures, international developments and projects should also be integrated, through exchanging and sharing of experiences, research and development of better or new greening procedures and cultivation of potential crops for land and water
- Offers of social and cultural programs, guided tours, trainings, workshops and events
- Processing and offering a comprehensive sociocultural program with art and music, free of charge and paid
- Exhibitions from and for art, not just landscape art
- Observation, integration and creation of traditional cultural landscapes in post-mining landscapes, for example through typical healthy vegetation (mixed forests) and species diversity (diversity)
- Promoting the cultivation of flowering plants and protection of insects
- Botanical gardens or parks with plants and animals from all over the world can be integrated very well into extraneous natural areas or landscapes
- Another good idea is to establish the allotment gardens (allotments) in opencast mining or surface mining landscapes
- Integration of schools, universities and other educational institutions in the developments and development processes
- Sustainable landscape and nature oriented recreation for national and international tourism with the best possible natural experience, cultural and artistic life experience
- Creating lakes and water reservoirs by flooding surface mining holes, dips or valleys

- Cultivation of agricultural or cultivated crops like bamboo, potatoes, hemp or cannabis – they are great plants for top soil production
- Connection of culture and nature with relation to forestry and agriculture
- Lectures, photo and film shows, information and teaching events

In the case of extensive interventions in the landscape and nature (protective goods such as nature reserves), an environmental impact assessment (EIA) is prepared, although this is usually only necessary if a spatial planning or planning procedure is necessary. The assessment of environmental impact should be carried out not only voluntarily and for the site search, but also for all projects which could have a significant impact on the protection of the protected goods.

6 Greenhouses, gardening, landscape parks and forests for opencast mining or post-mining landscapes

The fields of horticulture, agriculture and forestry play a special role in the Greening Deserts research projects of the greening camps and research camps, so these areas are not only researched and developed but also documented and mediated. On the basis of practical and theoretical work and examples, old and new possibilities for opencast mining and post-mining landscapes are presented, improved and further developed. The first set-up of the greening campaign in the opencast mine area of Leipzig (opencast mining desert), is to create a multi-layered garden and park with test fields for regional, domestic and country-specific plant species and special species from all over the world. In greenhouses, in addition to plant breeding (young plants, cuttings or seedlings), possible environmental and climatic conditions are also simulated, in separate areas, rooms or boxes.

As also described in other parts of the concept, the focus is on the research and optimization of different types, types of bodies, lighting and irrigation methods. The improvement of soil production, soil quality and plant growth is another important focus.

The processes (irrigation, light and nutrient distribution) can be further optimized through effective and economical energy and resource consumption. These are also tasks and objectives for the sustainable greening and management of all sorts of barren and dry areas or landscapes.

Since pioneer plants populate the landscape relatively quickly in most opencast mining landscapes, thus loosening and ventilating the soils, it is easier to create new plantings such as garden plants, parks and mixed forests (mixed forests). This also results in further possibilities for future landscape design, such as, for example, experimental gardening, gardening, creative and artistic design of green areas and landscape parks.

7 Climate protection, extreme weather and civil protection through preventive greening

The Greening Deserts greening projects and research camps also develop and conduct research in the climate and weather sector. Effective methods and measures for climate and disaster control are and will be researched and developed. Below are a few approaches and ideas listed.

- Relief and prevention in case of extreme weather catastrophes, better ground protection against erosion and landslides, especially flood disasters
- Reduce the risk of flooding by planted areas or soils as they are better able to absorb water, drain more quickly and can store more water overall
- Flood protection and prevention in extreme weather conditions by protective walls of flexible and robust trees and shrubs, which can intercept or dampen also strong winds and extreme storms (storm surges, tornadoes, hurricanes, etc.)
- Improvement of flood retention and flood relief through large-scale greening and forest cover

A definition for flood protection according to DIN 4047:

“All the measures of watercourse development through water regulations and regulation, flood retention and / or structural alteration to the structures and facilities to be protected, which serve to reduce the flood area, lower the flood level and / or encourage flood discharge.”

The possibilities and potential of transparent working in mining landscapes are also important, as a result of which the overall image of the mining industry and the respective regions can be considerably improved. It also promotes awareness of nature conservation and positive change in the society. It is also important to observe and comply with other important provisions, laws, regulations, guidelines and values for nature conservation in connection with or in relation to sustainable tourism, leisure and recreational use in mining landscapes.

Throughout the concept, other important aspects and factors relating to climate, environmental and nature conservation are extensively described. The complete climate or environmental protection topic is too complex to deal with in just one point or chapter. Therefore, there is also detailed information in the annexes, on the official pages and in further sources of information (links) - for a better overview.

This work and this concept is called to participate, to contribute ideas and suggestions. This can be done via the public pages or channels and by the official contact information.

8 Cultural, social and economic aspects

The business plan and concept describe many innovative, cultural, social, economic and scientific aspects of professional greening and research projects for mining and mining areas. Here all important and further points are summarized.

- Agriculture, sustainable farming and agricultural forestation or agroforestry are important research fields
- Establishment and development of a professional network with experts in the fields of culture, business and science – especially in the field of nature conservation, sustainable greening, agriculture, forestry and greenhouse management
- Development and offer of an extensive sociocultural program with art and music, free of charge and paid
- Offer and sale of natural products (medicines and crops) and services, see concept and section 'Services'
- Exhibitions from and for art, not just landscape art
- Involvement of artists and works of art in the landscape and processes
- Introduction of landscape planning, nature conservation and socioeconomic areas or fields by integrating suitable and interested institutions, organizations and partners as well as persons and associations with potential or professional competence
- Promotion of the recultivation and rehabilitation of opencast mining areas for a better future use, sustainable nature conservation, cultural, social and economic purposes in connection with the respective municipalities and regions
- Integration of schools, universities and other educational institutions in the development and development process, but also through extra programs, guided tours, trainings, workshops and events
- Sustainable landscaped recreational use, national and international tourism with the best possible natural experience, cultural and artistic life experience
- Sustainable and economical management, optimization and improvement of the energy industry
- Use and adaptation of conditions and properties of opencast mining deserts for realistic desert exploration, especially in the summer
- Continuous research and development of forms or techniques of greenhouse, forestry and agriculture
- Further development and research of wind, water and solar systems within the framework of the research projects

9 Possible conflicts, obstacles and risks

A continuous discussion of the conflicts between the recreational and / or use forms and nature conservation is sought, also during the operation of projects

and ventures in Mining Landscape (BFL). This serves the smooth running on all sides, the improvement of synergies and the avoidance of errors and duplicate or really unnecessary work. Ignorance should be avoided and communication promoted, especially in these days. This applies to all participants or agents in the region of the respective surface mining areas.

The possibilities and potential of transparent working in mining landscapes are also important, as a result of which the overall image of the mining industry and the respective regions can be considerably improved. It also promotes awareness of nature conservation and positive change in the society.

It is also important to observe and comply with provisions, laws, regulations, guidelines and values for nature conservation in connection with or in relation to sustainable tourism, leisure and recreational use in mining landscape.

Minimizing conflict potential and risks in this regard must be a task and in the interests of everyone, and extensive risk management for the region should be sought from all sources. **Therefore, with this work and this concept is called to participate, to contribute ideas and suggestions. This can be done via the public pages and by the official contacts.**

Further conflict potentials such as usage competitions and nature conservation, are in the basics of the work NETB Chapter 4 and Chapter 6.

Balanced and far-sighted conflict and crisis management during project implementation is regularly reviewed, adapted or improved. The projects were and will be planned for the long term; risks are scattered and minimized through good distribution, alternatives and in some cases multiple hedges (equipment, resources or devices). Temporary help, outsourcing, financial buffers and alternative emergency workers are included. As far as possible or foreseeable, a multi-pronged strategy is pursued and a professional risk assessment and optimal risk diversification are sought. More about risk Management is extensively described in the financial plan in the area of risk management as part of controlling, change management and quality management.

Sustainable thinking and acting, meaningful and diverse action is very important for Greening Deserts. The projects are therefore developed and realized on different levels and ways.

10 Rights and obligations relating to the rehabilitation and reclamation of mining and open-cast mining landscapes

Responsibility for mining landscapes, utilization and restructuring regulations, as well as other duties, regulations and objectives shall be borne and financed jointly by programs and laws of the respective Federal States and the German Federal Government. The obligation to repatriate and reconstruct mining lands are comprehensively described in the Federal Mining Act, the obligations for water management remediation are listed in the Water Resources Act of the

Federal Government and the water laws of the respective federal states. These provisions, laws, regulations, duties and regulations must be observed, followed and, if possible, incorporated into any developments in mining or former mining areas. Further information is very well described in the example of the "Potential study on the sustainable use of open-pit mines in the catchment areas of the Spree and Schwarzer Elster for improved flood prevention and management" - hereafter referred to as the potential study.

"In general, the refurbishment of the mining landscape of the Lausitzer and Mitteldeutsche Bergbau-Verwaltungsgesellschaft mbH (LMBV) is responsible. Especially when it comes to water management rehabilitation, bringing the charred residual holes of the partially abruptly decommissioned lignite mines in a safe, environmentally friendly and water management or public use state. Here, the foreign water flooding of the remaining holes to opencast mining lakes is of particular importance. She serves:

- the security of public security,
- the regeneration of the areas claimed or impaired by mining, and
- the restoration of balanced, largely self-regulating hydrological and material-related process chains in the mining landscape

These "basic goals" are jointly funded and financed by the German Federal Government and the federal states concerned in the program of the "Altlastsanierung Braunkohle".

Also to be considered are legal bases such as Constitutional Law, EU Flood Directive (EU-HWRL), Flood Law (HWG), Federal Water Act (WHG), Federal Nature Protection Law (BnatzSchG), State Water Act, Regional Planning Act (ROG), Building Code (BauGB), Federal Land Utilisation Ordinance (BauNVO), State Development Planning (LEPro, LEP), District Development Plans (CEP), Building Regulations (BAUO), Urban Land-Use Plans, Civil Protection Act (ZGS), Disaster Control Laws of the federal states, Regulatory Authorities Act (OBG) and other required laws.

Further information on commercial, economic or economic aspects is described in detail in the concept and business plan.

11 Socioeconomic aspects and factors

Historical and cultural information on the past of the landscape and its use, also before the industrial mining period, are offered in the research camp as well as on corresponding pages on the Internet. Products such as books, pictures, photographs, films, works of art and antiques can be offered in a separate shop. Many socioeconomic factors and, above all, commercial aspects are in the area of health care, recreation, sports and tourism. There are many commercial and economic effects in terms of income sources, employment and

multipliers.

Other aspects:

- Annual analysis and adaptation of the target groups, needs and interests of the visitors and / or customers with regard to the new mountain landscape landscapes (BFL) or lake landscapes
- Direct and indirect employment and income effects, sales and profits through the sustainable management of opencast mining and mining landscapes
- Marketing, merchandising and promotion on all possible channels, networks and platforms in German and English
- Sustainable and forward-looking planning for the consumer and tourism sector
- Bringing to the landscape dynamics and development in all its facets, showing the natural development processes of the landscape and vegetation
- Use of local conditions and natural developments for unique natural experiences and experiences in the daytime landscape
- Improvement of the image of the former day building landscape, elucidation of current, completed and future transformation or transformation processes
- Arrangement of inexpensive tours and courses (for example, adventure walks, boat trips, bike tours) to the various natural themes, especially on the subject of nature conservation and natural forces

Financing can be provided through various sources of finance, such as crowdfunding, equity capital, debt capital, investment capital, credits, venture capital, private and public funding. The best is a good mix of uncomplicated and different financing, especially if there is enough evidence of efficiency and feasibility. Similar and successful concepts, feasibility studies and market analyzes in the relevant areas can make financing much easier. Profitable, long-term or future-oriented business ideas and concepts are often financed quickly. Unique features and strong references promote successful funding for new foundations, startups, projects or existing companies.

12 Improvement of regional nature conservation and global climate

Important goals are not only the education and information on issues of nature conservation, but also active programs and projects. If possible, parts of the former mining landscapes (ML), the post-mining landscapes (PML) should be converted into biosphere reserves, protected landscape areas, nature reserves, nature parks or national parks. The ultimate goal is to preserve existing natural monuments and to expand protected landscape features. In order to counteract the massive extinction of species more endangered species can be settled and appropriate biotopes or habitats (reserves) established. Primary is the improvement of the biosphere, soil and water quality. Very important is also the cultivation of flower and wild plants for insects (especially bees) to

reduce the insect killing.

Other goals are:

- Construction, expansion and improvement of natural water retention areas through ponds, lakes, parks and forests
- Consideration and consideration of nature conservation aspects and evaluations, such as in the basics NETB point 3.6.2
- Of course, the measures and project design take into account soil use, water management, land use and spatial planning, as well as comprehensive nature conservation
- Compliance with the European Flood Risk Management Directive, the Water Resources Act, the Federal Nature Conservation Act and all laws and regulations - it is important to identify and reduce sustainability deficits
- Establishment of near-natural barbecue areas and campfire sites with occasional camping facilities (tents) for multi-day nature experience tours and survival training or advanced experiences of living with and in nature or wilderness
- Deacidification, filtration and dilution of acidic water, if possible without chemistry or questionable 'proven' methods
- Research and development of alternative and sustainable methods of water improvement, support of natural processes of balancing or neutralization of polluted sea and groundwater
- Identification and research of the self-cleansing capacity of the mining, lake landscape and mining landscape
- Flood prevention by flood retention areas in opencast mining areas or open-pit mines if the filling condition (storage lamella) allows it and the geotechnical safeguarding of the bank areas or corresponding inlet and outlet structures or canals is available
- Interesting aspects and facts about the water quality in open cast mines, see also potential study p.52-53
- Sustainable and precautionary water management with existing or extra reservoirs and storage facilities
- Improvement of soil quality through humus producing and soil loosening plants, subsoiling and natural drainage by strong and deep rooting plants
- Improvement of microbial and nutrient content in soils, even without artificial substrates and chemical treatments, such as synthetic fertilizers, pesticides
- Alternative use of bamboo, beans, hemp, potatoes, lupins and other soil generators, which can quickly and efficiently form complex root systems and optimal loosening of soils, as a green manure, will quickly and efficiently produce the best soil or humus layers
- Improvement of water quality and quality of surface mines and groundwater by special aquatic plants and microorganisms
- Worm cultures (vermaculture), permaculture and other alternative soil, plant or land cultivation methods, also to improve soil and plant quality

13 Further goals and ideas for the effective, sustainable and fast cultivation of surface mining landscapes

In this article, further approaches and ideas for naturalization, rehabilitation, cultivation and recultivation will be presented in relation to all responsible persons and within the scope of the greening and research projects for surface mining or post-mining landscapes.

An important goal for opencast mine and post-mining landscapes or lakelands is the production of a balanced, stable and clean water balance as well as a good soil quality. The following points must be observed:

- Balancing the nutrient and pollutant content through filter systems and regulating the oxygen content by means of ventilation and circulation. This can also be achieved by integration into irrigation systems on land and with suitable plants, water plants and microorganisms
- Compliance with limit values and reduction if possible, for example noise level, loads and pollutants in surface mining or post-mining landscapes
- Comprehensive investigation, research and use of hitherto unknown methods of detoxification or cleaning and regulation, including the improvement of groundwater and soil
- Efficient fieldwork and advanced field research
- Exploration of further methods of improving soil and water quality, feasibility studies and weighing efficiency / benefits
- Achieve good water quality according to the EU Bathing Water Directive
- Encourage or support the self-cleaning of surface mining lakes
- Promotion of the settlement of endangered animal and plant species by the establishment, extension and maintenance of free, undeveloped nature reserves
- Research on improved methods of colonization and propagation of endangered species, the creation of suitable habitats and zoological gardens or parks
- Counteracting or reducing the entrophy and acidification of lakes and groundwater
- Monitoring of soils and water bodies using appropriate instruments
- Sustainable fish farming and aquaculture (aquaponics) in greenhouses, fish ponds and post-mining lakes
- Long-term planning and annual adjustment of the design concept as well as the renovation plans
- Creation of additional lakes and water reservoirs by flooding of other open pitholes, dips or valleys - also interesting for deserts and oases
- Subsequent integration of visitors from all areas into the entire process, providing exploratory tours and hands-on workshops in the research camp and secured terrain
- Shore and embankment protection as well as appropriate coastal greening should be preferred to pure gravel or sandy beaches
- Lectures, photo and film shows, information and teaching events
- Improvement of soil, air and water quality, reduction and reduction of soil degradation, desertification and global warming

Responsible organizations, institutions and persons must comply with the laws, regulations and guidelines, and must regularly prove this, if possible every year.

A good example of water body maintenance and aftercare is described in the "Sustainable recreational use and tourism in post-mining landscapes". Here is an excerpt:

"Water maintenance is the task of preserving or restoring the functionality of the water bed including the shores to the top of the slope. This also includes the ecological and land-cultural function of water bodies, in particular

- (1) the conservation and restoration of a native plant and animal population in natural diversity;
- (2) the maintenance and improvement of the self-cleaning capacity, unless other are required to do so;
- (3) the maintenance, cleansing and clearing of the waters and shores as far as is necessary;
- (4) the keeping of the waters and its banks of pests;
5. the removal of solid substances of the waters or the shores, in so far as is necessary in the public interest. "

Documentations and information on the cultural, settlement, social and economic history of the region can be processed in various forms or varieties in the future, e.g. in tourist offers. This includes, for example, the expansion of the leisure activities and the program by means of landscape-related sports and games. These are for example fitness facilities and activities, motor sports, mountain biking, aerial sports, water sports, winter sport and new sporting activities - all with the best possible connection to nature and nature conservation. In the future real recreational parks can be developed and built with a real relationship with nature.

Other forms of leisure and recreational use are explained in the work NETB Point 4.3.2.6 Sport, Spiel und Freizeit.

14 Ideas and visions for the future

Over the years, countless good ideas and innovations have come together. Here are just a few points summarized in connection with the Greening Deserts projects.

- Offering and arranging further research services
- Establishment of an information and communication center (platform) for sustainability, nature and environmental protection, clean and future-oriented resources, energies and technologies (cleantech and high-tech)
- Ripeness for feasibility studies and good examples of sociocultural economics
- Biotope, biosphere and space research - especially in relation to greenhouse management and research
- Development and expansion of greening camps for urban areas

- Research into the regeneration behavior of nature and the promotion of these natural processes by humans
- Substantial reduction of the negative effects of climate change (CO2 emissions, pollution) through expansion, export and promotion of Greening Deserts projects and concepts
- Advanced research and development of various services (services) in the field of land development, landscape design, as well as for green areas and creative forestry
- Advanced research and development in innovation and knowledge management
- Research on transparent solar technologies, wind and hydro power, as well as other green, innovative, clean technologies (CleanTech) in relation to the sustainable energy industry and agriculture
- Integration of developments or innovations of space research (biospheres, greenhouses, etc.) and use of satellites for global data analysis (soils, weather, ..) in relation to the concerned regions
- Improvement of land reclamation and land use, horizontal and vertical

Also interesting would be a lunar and Mars research station for surface mining landscapes (BL oder BFL). Further ideas will be added in future editions of the concept.

List of abbreviations:

BC	Backgroundcheck
BL	Bergbaulandschaft = Mining Landscape (ML)
BFL	Bergbaufolgelandschaft = Post-Mining Landscape (PML)
CDA	Confidential Disclosure Agreement
LoT	Letter of Intend – Absichtserklärung
NETB	Nachhaltige Erholungsnutzung und Tourismus in Bergbaufolgelandschaften

Notes / Remarks:

This work, study and concept was created largely by own strength, thoughts and previous work. Nothing was copied directly and all own texts are self-phrased and freely formulated. Excerpts and quotations from other works or sources are clearly marked and proven, and reference is made to them in corresponding passages.

I thank you for so much other works, good examples and works that have inspired me in and to this work. Hopefully it can be used by anyone in need or by interested people - and above all the world community - to counteract the biggest problems of desertification, environmental degradation, negative climate change processes and global warming. Of course, it is desirable to share or disseminate the work in the interest of improving education and

conservation, even if the content is the intellectual property of the author and subject to copyright. I hereby authorize copying and distribution under the Creative Commons license (by-nc-nd) attribution, not commercial.

If there is a lack of support (financially, technically, materially and socially), the project will be realized in open-pit mining areas or similar landscapes such as coastal and dry areas, if necessary or possible in the future completely private.

A rough financial plan for a business plan was created from the commercial aspects or parts of this concept and from the Greening Deserts General Concept and Business Plan. However, a daily, precise and concrete business plan can only be determined and created later on at the right time, with the secondary goals and exact data on work materials, services, third-party services, aids and other required funds or costs - much will only arise in the course of the project and the years. Therefore for unclear circumstances and items only simple estimates can be made. In addition, a detailed financial or demand plan for the first year will only be prepared with a realistic prospect and commitment for funding(s) and land or terrain.

The complete business and financial plan as well as some sensitive information, ideas and innovations (keyfactors, top secrets, etc.), numbers and other unique selling points are not public. Like certain trade secrets, they are protected from abuse (exploitation, industrial espionage, plagiarism, unfair competition). Such information is shared only after extensive or careful review and with security standards (BCs, CDAs, NDAs, LoTs, etc.). Unfortunately, too many ideas have been copied and used too often, so this is just a precaution.

Keywords: Agenda, Agriculture, Afforestation, Greening, Irrigation, Education, Business Plan, Mining, Mining Industry, Mining Landscape, Mining Landscape, Soil Production, Community, Desertification, Desert Greening, Development, Research, Forestry, Community, Society, Greening, Gardening, Greenhouse Management, Global Warming, Innovation, Investment, Coal Industry, Climate Change, Climate Change, Cultural Industries, Agriculture, Sustainability, Nature, Conservation, Planetary Research, Reformation, Opencast Mining, Opencast Mining, Opencast Landscape, Lakelands, Environmental Conservation, Water Management, Science, Knowledge Management, Desertification Research, Futures Research

From the city to the countryside, back to nature. Guidelines. See quotes.

References:

Archives, libraries and networks like the Internet were inspirational sources of information - natural as well as nature. Information that has been partially processed directly from sources in this work are:

- Sustainable recreational use and tourism in mining landscape
- Potential study on the sustainable use of open-pit mines in the catchment

areas of the Spree and Schwarzer Elster for improved flood prevention and management

- Wikipedia article

Other sources which were not used for the concept are in the appendix. Of course, they can be used as confirmation, evidence, sources of inspiration and feasibility studies.

About my person and experiences:

Through years of intensive experience, insights and studies in and with nature, I have gained advanced, sometimes professional expertise in nature, conservation, sustainable gardening and agriculture. During the last decades I've planted thousands of trees and different kinds of useful plants. So I've got good experiences in gardening and landscaping.

After countless tours through cities and countries in different nations and regions of the world, I can truly speak or write about a wealth of experience and knowledge.

More information about me can be found everywhere on the internet and of course on the official pages. www.greening-deserts.com

Best regards to the readers,
Oliver Gediminas Caplikas

Annexes:

Business plan and finance plan
Documentaries, presentations and films
General and special services
Photography of Leipzig and surface mining landscape
Confidentiality Agreement (CDA/NDA)
Investor-, Partner-, Sponsoring-Concept
Cooperation Agreement (CA, LoT)
Press Releases
References, Links
Quotes

Greening Deserts Masterplan 2 - Quotes

The world's increasing meat production and the necessary animal breeding cause more greenhouse gases today than all the cars in the world together. - unknown

The activist is not the man who says the river is dirty. The activist is the man who cleans the river - Henry Ross Pero

The reason for the pollution is man himself: the poisoning of his spirit, the devastation of his soul. - Phil Bosmans

The global farewell to coal has begun, and Germany threatens to miss the line. - Christoph Bals

The biggest natural disaster is man with his destructive power. - Thorsten Holt
Nature and man provide ever larger visible deserts, but only man creates the inner invisible deserts. - Rose from the Au

The forests are cut down, the mountains are mined, the streams are polluted. The meadows are filled with factories, the air is filled with smoke, people are restless, dissatisfied and homeless. - Peter Rosegger

A nation that destroys its soil destroys itself. - Frédéric Albert Fallou

Only when the last tree has been cleared, the last river poisoned, the last fish trapped, you will realize that you can not eat money. - Prophecy of the Cree Indians

Facts do not cease to exist because they are ignored. - Aldous Huxley

There are no rewards or punishments in nature. There are only consequences. - Robert Green Ingersoll

I do not believe in collective guilt. But I believe in collective responsibility. - Audrey Hepburn

In living nature nothing happens that is not in connection with a whole. - Johann Wolfgang von Goethe

The longer the so-called popular prosperity lasts, the uglier the country becomes.

No time to grieve for roses when the forests are burning. - Juliusz Słowacki

Our world is so polluted that no one wants to live in castles in the air. - Gerhard Uhlenbruck

What we are doing to the forests of the world is but a mirror reflection of what we are doing to ourselves and to one another. - Chris Maser

Who accepts injustice silently, makes himself complicit. - Mahatma Gandhi

Who understood and does not act, did not understand. - Josef Jenni

Protected environment is not only around us, but also within us. - Prof. Querulix

The new game: World Climate Poker. - Manfred Hinrich

The climate is going crazy because we are crazy about the climate. - Frank Dommenz

Humans believe that global warming can be managed through climate protection protocols. - Daniel Muehleemann

The best time to plant a tree was twenty years ago. The next best time is now. - Aleksey Andreevic Arakceev

Seriously taken human rights do not release from nature protection. - Martin Gerhard Reisenberg

It is expected with more and more storms, droughts and floods, the extreme weather events will increase. - Jeremiah Lengoasa

I see climate change as one of the biggest challenges of the time. He intervenes in all areas of political, social and economic life, ignoring this is in my opinion negligent. - Arved Fox

Ignorance leads to fear, fear leads to hate, and hate leads to violence. This is the equation. - Averroes

Climate protection is no longer possible today without combating corruption. - Hartmut Grassl

Better to plant a tree than complain about the forest dying. - Andreas Tenzer

We do not save our environment with the stopwatch or the computer, but only with our hearts. - Stefan Fleischer

Anyone who does not take environmental problems seriously is one of them. - unknown

A clean environment is a human right.

Where ignorance is our master, there is no possibility of true peace. - Dalai Lama

First the tree dies, then the human! - unknown

What is against nature is against God. - Friedrich Hebbel

If nature would treat us like we do with her, it is not sure if we are still alive. - Kurt Haberstick

Those who continue to fuel climate change are violating our human rights. - Sheila Watt-Cloutier

We live in a dangerous time. Man dominates nature before he has learned to control himself. - Albert Schweitzer

The earth does not belong to man.

It is the man who belongs to the earth.

Everything that happens to the earth, will happen to the children of the earth.

- Indian wisdom

On Mars we search for bacteria, on earth we eradicate the whales. - Dr. phil. Michael Richter

Life is an aphorism of nature. - Manfred Hinrich

The financial sector must and will play a key role in climate protection over the next two decades as a catalyst. - Joachim Faber

But are not we all a bit bank, mobile phone, computer, sports shoe and oil? - Martin Unfried

Fresh snow is the tentative attempt of nature to cover the environmental sins of the people for a short time. - Willy Meurer

Within the next 60 hours we lose forest the size of Berlin. - WWF Forest Loss Ticker 2011

Human rights violations and the deforestation of the last green lungs of our world should not be promoted with taxation. - Hubert Weiger

Soil erosion is like many environmental problems: the longer they are ignored, the harder they are to solve. - David R. Montgomery

Do the conservationists even take on the nature of man? - Martin Gerhard Reisenberg

Nothing will be more expensive than the unchecked climate change with hundreds of millions of climate refugees. - Franz Alt

Only those who solve the ecological questions will be able to solve the social questions. - Kai Niebert

Around two-thirds of all the trees that cleared people in their history cleared them in the last century. - Oliver Stengel

We Germans each year consume 20 million tons of paper alone. Per capita, this is an average of 235 kilos per year for kitchen rolls, paper cups, advertising leaflets, printer paper and handkerchiefs. This places Germany at the top of the EU. - Philipp Göltenboth

In all the crises, we experience the revelation of the short-term. All sectors are geared to making as much profit as possible in the short term and to mask out the medium and long-term costs, to socialize, to deport them to the environment. - Klaus Töpfer

We have no choice but to turn environmental protection into a growth industry and to ensure that market prices speak the ecological truth. - Richard Freiherr von Weizsäcker

We do not have to look upon nature as our enemy to master and overcome, but to re-learn to cooperate with nature. She has four and a half billion years of experience. Ours is much shorter. - Hans-Peter Dürr

We are in the middle of a third world war against nature. - Franz Alt

The processes used by previous generations to protect themselves from their foundations by damaging the environment can be divided into eight categories, each of which has different meanings:

- deforestation and habitat destruction,
- problems with the soil (erosion, salinisation, diminishing fertility)
- problems with water management
- excessive hunting
- overfishing
- Impact of imported animals and plants on indigenous species population growth and
- increasing per capita effect of humans.

Today we are dealing with the same environmental problems that have brought down earlier societies, and in addition four new ones are being added:

- man-made climate change
 - accumulation of environmental toxins
 - energy shortage and
 - full use of worldwide photosynthetic capacity.
- Jared Diamond, Collapse, Why Societies Survive or Perish, 2005

But they do not want to hide climate change. By investing in clean energy, they can make the most of their work and finances. - Jeremy Leggett

The solution to the climate crisis: Move the markets. And a lot happens.

Sustainable development, overcoming poverty in our world without destroying an intact environment is the peace policy of the future. - Professor Klaus Töpfer

"Green" investment can play a central role in a European growth package as it

can generate tangible employment momentum in the short term and positive fiscal effects in the medium to long term.

Study by the German Institute for Economic Research (DIW Berlin) with the Paris Institute for Sustainable Development and International Relations.

Green technology is cheaper. Investors get out of the coal. But much has to become even easier and the risks must be reduced. - Terry Tamminen

Climate protection and energy efficiency are opportunities, not a burden. Those who do not invest in these areas today will lose the markets of tomorrow. - Connie Hedegaard

Politics, economics and society in European countries must adapt to growing water scarcity and develop adaptation strategies. - Dr.-Ing. Martina Flörke

In the future, companies will only be successful if they understand the full meaning of the connection between economy, ecology and social responsibility, sustainability, and implement it in consequent action. - Monika Bruckmann

Charitable foundations around the world are promoting projects that improve the lives of millions of people on our planet. At the moment the system tilts.

The investments are deducted from the fossil business such as coal and put into renewable energy. If an investor has the choice to invest in a new coal-fired power plant or in a large solar power plant, then it is quite clear what the investor will do. - Hans-Joachim Schellhuber

Take Care and Think About Your Nature. - Oliver Caplikas

[Human Rights Sayings and Quotes!](#)

Greening Deserts Masterplan 2 – Links and References

[Better World Links](#)

[Desert Bamboo Project](#)

[Desert Rice Cultivation Project](#)

[Great Green Wall North Africa Chapter](#)

[Green Ring Africa Social Partner Network](#)

[Greening Coasts Startup Camps](#)

[Greening Deserts Festivals](#)

[10 Rainforest Facts for 2017](#)

[10 Oldest Forests in the World | AFAR](#)

[10 Largest Deserts in the World - WorldAtlas.com](#)

[Afforestation of savannas: an impending ecological disaster - ScienceDirect](#)

[Deforestation, Desertification, Land degradation, Reforestation - Wikipedia](#)

[List of countries by forest area, Outline of forestry, List of deserts - Wikipedia](#)

[Economic Report on Africa 2016 | United Nations Economic Commission for Africa](#)

[Definitions of Forest, Deforestation, Afforestation, and Reforestation](#)

[Effects of reforestation, deforestation, and afforestation on carbon storage in soils](#)

[Desertification Research Papers – Academia.edu, Scientific Facts on Desertification](#)

[How millions of trees brought a broken landscape back to life | Environment | The Guardian](#)

[Forestry statistics - Statistics Explained, Publications - Forestry and Timber - UNECE](#)

[United Nations Forum on Forests » UNFF » Six Global Forest Goals agreed at UNFF Special Session](#)

[Deserts of the World | The 7 Continents](#)

[Cost of an Outdoor Greenhouse - Estimates and Prices](#)

[Dew collector Greenhouse - grows food and produces water](#)
[DRI Desert Research Institute, Monitoring Vegetation From Space](#)
[Global count reaches 3 trillion trees : Nature News & Comment](#)
[Global Forest Watch GWF – Data and Monitoring Tools](#)
[Greening Europe's agriculture – European Environment Agency](#)
[How many trees are cut down every year?, Image Library](#)
[Interactive Map | Global Forest Watch, Wüste in Europa – Wikipedia](#)
[One billion tree target will take 'huge commitment' | Newshub](#)
[OpenTreeMap - Create greener communities and explore our urban forests, together](#)
[Ten Keys to Slashing Deforestation in Just Two Years](#)
[Trillion Trees Campaign - A call for global reforestation as a solution for our worlds greatest challenges](#)
[Roots Up's Dew Collector greenhouse provides veggies and water](#)
[Which countries are doing the most to stop dangerous global warming? | The Guardian](#)
[World Atlas of Desertification - European Commission](#)

Further Links:

[**Index of Economic Freedom 2017**](#)
[**10 Ways to Reduce Plastic Pollution**](#)
[**10 reasons to go green starting NOW**](#)
[**21 Types of Management - Simplicable**](#)
[**28 Quotes On Being Connected : John Paul Caponigro**](#)
[**Top 10 Recycling Countries From Around the World**](#)
[**EUROPEAN CENTRE FOR PRESS AND MEDIA FREEDOM**](#)
[**EU Business - Finance and Funding Programmes**](#)
[**Förderprogramm Umwelt & Technologie: förderland**](#)
[**Förderdatenbank - Förderorganisationen**](#)
[**Global Witness Hub for Independent Journalism**](#)
[**Hermes Center for Transparency and Digital Human Rights**](#)
[**List of anti-corruption agencies - Wikipedia**](#)
tbc.