Landfill Crkvicko Brdo

FC Zenica

Project indicative: Z1.1
Project type: complex project
Project starting point: 0-5 y
Project ending point: 10-15 y
Estimated costs: n.d.

NBS 1

Description of Study Area (NBS site)

The area covered by the Regulation Plan "Kamberovića ravan i padina"- KRIP is located on the eastern side of the city of Zenica on the right bank of the river Bosna. The coverage area of the Regulatory Plan (Zonal Urban plan developed for the area) is 66.85 ha, counting 2.756 inhabitants with a density of 42 inh./ha. Primary land use is residential in the surrounding area.

Unsecured coal mine that continuous to generate air pollution. Source: Mirza Sikirić

Relevant Legislation

According to the Regulatory Plan, the western slope is defined as a green area (parks and recreation). The site has a size of about 7.2ha. Pedestrian and bicycle paths and several pavilions for resting are planned.

Challenges of the site

- Accurate identification of barriers and specialized studies (ownership, planning, contamination, financial constraints, lack of capacity and knowledge related to the topic, political will, lack of financing, high risk of incidental situations, such as fire, explosions...)
- Lack of awareness among local stakeholders and decision-makers about the impact generated by recovery and remediation of the area.
- Slope terrain requires more expensive infrastructural works, paired with soil remediation investments.
- Lack of connections between east and west side, thus improving the connectivity of two neighbourhoods.

Scenarios

Do-it-all (best-case)

The municipality allocates funds for the project development. Soil stabilization and pollution control are top priorities and are seen as initial steps in the project preparation phase. Further, the project design should ensure that all necessary regulation plans are adopted and a legal framework in place for implementation. The co-design process will be initiated from the beginning and continued throughout the project development. Given the size of the area, the revitalization process will be staged over several phases. The outcome will be a new green leisure area accessible for local communities and improved local landscape.

Do-something-meaningful

For implementing this NBS a strategic focus from city administration to revitalise old coal mines is needed. Further, strategic interventions will be put in place, in an integrated approach – respecting zoning requirements of the Regulatory Plan . The next steps include securing funding and implementing a co-design process with relevant stakeholders.

NBS intervention specificities

Typology of NBS1 – Leisure activities of formed landfill

Leisure and sports activities on former landfill and potential clean energy (solar panels, on site/soil that cannot grow vegetation – the energy can be used for park facilities)

Description of planned interventions

Location Crkvičko Brdo will be stabilised and transformed into a valuable space for the local communities. The lack of high vegetation in the short and medium term is due to contamination levels. Interventions will ensure safety and protection of the environment. Given the lack of tall vegetation the space can have multiple uses: sports, dynamic community interaction, energy production (solar panels - on ground and/or above ground would be some possibilities). The design of the intervention will consider aesthetic components such as scenery and views. The area will be bordered by dense vegetation while considering valuable connections and visual relationships to the landscape.

Vision

Source: inhabitat.com | Turenscape's regenerative

Operational Objectives

Z1.1
Z1.1

1. Sustainable brownfield regeneration of the 7.2 ha site (specialized studies are needed, but it is recommended to first tackle the site's pollution and then assess options for phytostabilization and phytoremediation processes)
2. Creation of Urban Park (carrying capacity max. 4.000-5.000 users - based on planning standard of 2 hectares: 1.000 urban population)
3. Valorising the site by implementing nature-oriented landscape design:
    a. Community activities - multifunctional use.
    b. Aesthetic component and scenic views – using the terrain morphology.
    c. Green energy production - solar panels.

Targets

Focusing on three factors: communities' health & air quality, safety status & perception of citizens, environmental impact & clean energy produced. Targets/indicators will be clearly defined depending on studies for the site remediation and landscape design.

Qualitative analysis:

- Perception study to assess communities' perception of the impact of the former landfill redevelopment as a public park (comparison of satisfaction)
- Scenic view status evaluation (users)
- Assessment of the adequacy of green space provision based on local communities needs
- Perceived health status by local communities (safety status according to respondents, health perception before/after the intervention)

Quantitative analysis:

- Surface area of the remediated soil
- Surface area for plantations
- No. of solar panels
- No. of users (leisure activities)
- Measurement of the surrounding air quality
- Health status of the local communities (frequency of obtaining medical services)
- Increase of economic activities in the area

Development stages

0-5 year - perform site analysis and develop project documentation and specialized studies, which will serve as the basis for selecting a contractor that will do the rehabilitation works.

5-10 year - carry out rehabilitation works and establish permanent site monitoring.

10-15 year - monitoring

Partners/Stakeholders

Beneficiaries: Eko forum NGO, Forum Građana Zenica NGO, Faculty of Mechanical Engineering, Alba Ltd (utility company), City of Zenica, Zenica-Doboj Canton – cantonal level, Federal Governance – entity level, Public company for spatial planning, Zeka Comerce ltd, Energopetrol ltd.

Users: residents on both sides of the river. Employees of the firms nearby. Other citizens that are interested in leisure activities.

Actions

1. In depth analysis of:
- Site (contamination, soil types, etc.)
- Green solutions for securing and remediation the pollution.
- Landscape perception analysis - integrating the "remediated meadow" into the park design.

2. Ensuring site safety by sealing the former coal landfill and then covering it with soil

3. Ecological re-naturalization and rehabilitation:
- Planting native vegetation (grasses, shrubs, trees, etc.);
- Mixed grassland and progressive afforestation.
- Creating additional grassland & wetland habitats.

4. Implementation of co-design/ participatory process to enable public involvement

5. Clean energy solutions (i.e. solar panels)
- Creating a framework for future activities: Develop open-air green areas, partly dedicated to communal spaces linked to the residential dwellings.
- Creating larger multipurpose venues ready to accommodate different public programs (fairs, concerts, sports facilities, etc), linked to public service buildings.

6. Develop management and monitoring plan.

Design requirements

Accessibility

- Perform preliminary community survey:
- Connections with residential areas and the rest of the green infrastructure/network
- Develop links between main streets, additional pedestrian spaces, squares and green spaces.
- Pedestrian axes can be designed to improve connectivity between main and secondary areas; identify potential areas of interest (leisure areas, thematic landscaped areas, water features, etc...); creating visual axes directing users' interest towards key points of the site or its surroundings.
- Soft mobility and accessibility was identified as a top priority by residents: accessibility of living environment (people with sensitivity to life environment or allergy) followed by inclusive design (available to all users, regardless of abilities - wide roads, comfortable areas for rest and different sensory experiences) and visual availability (for people with damaged vision - tactile surface, sound signals and inscriptions in Braj's letter or great inscriptions)

Landscaping

- The landscapes will be planted with species of plants specific to the local area (functioning as an insulator against the rest of the industrial field) and a curtain of ornamental trees and vegetation, lawn.

Aesthetics/Ambiance

- Taking advantage of the slope for scenic views

- Preliminary community survey: Design (to create an attractive and visually attractive environment), vegetation, revenge, benches and contents, signalling, maintenance, community involvement.

Urban furniture and equipment

- The urban furniture should be simple, easy to maintain, with effective arrangement.
- Preliminary community survey: Benches and sitting places, garbage cans, lighting, bicycle infrastructure.

Infrastructure works (if needed)

- Soil remediation works and securing the pollution.
- Terrain systematization – create pathways that are usable by all groups of people (elderly, disabled, etc.)
- Landscaping works: additional vegetation, open areas (biodiversity-friendly lawns), functional areas (socializing area, places for sports, etc...)

Annexed functions and activities

- Redeemed spaces can host multipurpose exhibition pavilions, teahouses, café, commercial functions, creating job offers and contributing to urban and landscape design.
- Water mirror sites for picnics, ornamental fountains and pergolas, entertainment sites, playgrounds, public eating, major and minor lanes, parking spots.
- Equipping sports areas, e.g.: paintball, places to ride rollers, skateboards, tennis courts, basketballs and volleyball areas, swimming pools, table tennis.
- Preliminary community survey identified the site as appropriate for multi-purpose activities with a focus on sports and recreation, and solar energy production (energy production had less supporters). As additional functions include education and recreation.

Sustainability/Maintenance

- Solar panels providing energy for powering the park (optional)
- Preliminary community survey: Water Management (e.g., use of rainwater, drip irrigation, etc.), land health (e.g. composting, mulching and other soil construction techniques.), Maintenance plan (e.g. regular pruning, weed removal and fertilisation), plant selection, securing budget, community involvement (e.g. volunteer events, educational programs and events).

Environmental considerations

- This site represents a risk for health and overall well-being for residents and businesses.
- Recultivation will improve the quality of the environment, notably considerng effects of proximity of steel manufacturing of ArcelorMittal and effects on air quality.

Security

- Preliminary community survey suggests that most interviewees consider the area as unsafe.
- Investments required in the safety infrastructure of the site and adjacent places. Interviewees suggested the following security measures: Illumination, supervision, reacting in outstanding situations, risk assessment.