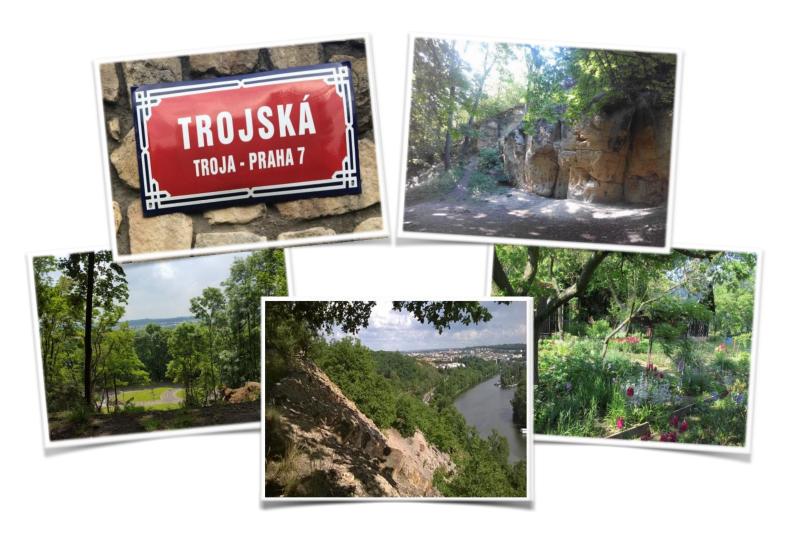
PATHWAYS TO THE FUTURE OF PRAGUE'S HILLSIDES

Recommendations for improvement based on an analysis of the current status including opportunities and threats



JULY 1, 2016
WAGENINGEN UNIVERSITY AND RESEARCH CENTRE

Disclaimer and Acknowledgements

Disclaimer

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Executive Summary

This consultancy report presents the findings of the project commissioned by the Prague Institute of Planning and Development (IPR) and conducted by Wageningen University. The project aims at contributing to the long-term goal of 'Improving the quality of life for the citizens of Prague'. Five hillsides, located north of the Vltava river, have been analysed. Data was collected through interviews with stakeholders, questionnaires, document reviews, and physical and social observations. A total of 616 questionnaires were handed out to local citizens and 37 interviews were conducted with various experts and stakeholders.

Key Results

There are multiple layers of governance, such as the subdivision of municipal districts into administrative districts. Furthermore, the lack of an overall vision and the relationships between all actors are not formalized which interferes with effective management. Additionally, the general management and maintenance of the public areas was found to be unclear. Interviews reveal a lack of a comprehensive long-term strategy for the development of the hillsides and their surrounding areas resulting in fragmentation of the green areas. Public surveys and interviews reveal that stakeholders and residents are in favour of nature preservation and improved leisure facilities which is in sync with the Metropolitan Plan. Urban development can emerge in areas labelled as 'transformational'.

The hillsides provides a diversity of functions which gives the areas a unique ecological, social and economic value. However, the lack of social and physical connectivity is a pressing issue that needs to be addressed. The hillsides have multifarious uses: orchards, vineyards, agriculture, private housing, gardens, parks, hospitals, zoos, etc. These provide various provisional and recreational services to the communities. Our survey depicts that most people visit the hillsides for nature walks and leisure with either their family, partner, children, colleagues, dog(s) or alone. Most of the hillsides have a viewpoint for touristic purposes. Additionally, indications of vandalism and illegal rubbish disposal were observed which may reduce the aesthetics and appreciation of the area.

Due to roads, tram, bus and metro lines, the external accessibility of the hillsides is adequate. Surveys show that most people prefer to go by foot with public transport ranking second. Paths on the hills are often absent, overgrown, not well-maintained or lack signs, which obstructs the internal accessibility of the hillsides. The connectivity between the hills is not convenient for users of public transport. Also, public perception, as expressed through questionnaires, revealed that the majority of respondents feel happy and healthy while visiting the hillsides. Even though the majority of the people like the current state of the hillsides, they still think there is scope for improvement. There is a strong distrust in institutions and politicians and the majority of the respondents feel that the municipality is not open towards citizens' ideas and concerns. Media can be a powerful instrument for public awareness, however media attention for the hillsides is inadequate. More than half of the people surveyed felt that they are responsible for maintaining the areas which indicates the feasibility of participatory planning.

The majority of the respondents affirmed that they feel safe at the hillsides. When asked to rank different options which could improve the hillsides, people perceived safety as one of the least urgent concerns. Analysis of the situation showed the major factors that reduce perceived safety to be the presence of homeless people living on the hillsides; especially those that abuse illegal

substances. Physical safety is sometimes lacking in several areas due to inadequate maintenance of pathways, railings or lighting.

Most of the study areas have rich biodiversity with faunal species such as a variety of beetle species, large animals such as wild pigs, as well as important pollinators such as butterflies and bees. Several red list reptile and vegetation species have their habitat in the drier areas. The green cover of the hillsides provides a variety of provisional and regulating services. Though the government envisions bio-corridors as a connection between green areas in the hillsides, the fragmented ownership of the public and private lands makes many of them non-functional.

Scenarios and SWOT

Two issues were selected to develop the axis for the scenarios: 'Governance and maintenance' and 'Development'. The former issue has either a 'top-down' or a 'bottom-up' approach and the latter is focussed on either nature development or urban development. The scenarios suggest four possible, equally valuable pathways that the hillsides can take in the future. The hillsides can be lead to the 'Grass roots' scenario where local citizens will be in charge, or at the other extreme side the 'Metropole' scenario, where urban development will dominate and the decisions will be made with a top-down approach. Another probable option is the 'Green rules' scenario where the top-down approach has its main focus on the environmental value of the hills. Finally, the 'Urban village' scenario includes maintenance and decision-making with a bottom up approach but focuses on urban development of the hillsides.

A SWOT analysis was conducted to identify the (S) strengths, (W) weaknesses, (O) opportunities and (T) threats for the hillsides. The strengths (for example the diversity in users and functions of the hills) and weaknesses (such as lack of maintenance and absence of a long term vision) apply to the present situation of the area. The opportunities and threats refer to points of attention while reaching each scenario.

Recommendations

Recommendations are provided in order to reach each scenario's purpose. The recommendations for the nature oriented scenarios focus on ways to prevent urban expansion and create green connections among the hills. On the other hand, for the urban-centric scenarios, recommendations are provided for the safety, the accessibility and the functions of the hillsides. Regarding 'governance and maintenance', the recommendations for the top-down scenarios aim to improve the communication among the authoritative bodies that are involved in the hillsides and the methods to inform the public. For the bottom-up scenarios, more effective communication and collaboration platforms for the local citizens are proposed, in order to stimulate their willingness to participate in the decision making process and maintenance of the hillsides.

In conclusion, our research covers new grounds by putting forward a structured approach and overarching framework for integrating stakeholder engagement in research, enabling a participatory involvement process and thus generating valuable insights from the communities.

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Chapter 1. Introduction

This consultancy project, commissioned by the Planning Institute of Prague (IPR), aims at contributing to the long-term goal of 'Improving the quality of life for the citizens of Prague'. The hillsides together with the river valleys and plateaus in Prague have a unique potential to contribute to this goal. At the moment the hillsides' potential is not fully recognized due to parts appearing underutilized and neglected. The green urban spaces need to see improvements towards their integral management and be acknowledged as functional parts of the city. Therefore, the purpose of this report is to assess and analyse the current situation in order to provide recommendations based on opportunities and threats identified for potential developments of the Prague hillsides.

Five hillsides are analysed in this report. They are all located north of the Vltava river and are defined as 1) Troja I, 2) Troja II, 3) Libeň, 4) Prosecké Skály, and 5) Vysočany (Figure 1). These five hillsides are representative for the diversity of all hillsides present throughout the city of Prague. As a result, this research approach can be applied to other hills as well.



Figure 1. Hillsides: Troja I (1), Troja II (2), Libeň area (3), Prosecké Skály (4) and Vysočany (5)

Our analysis is based on the perspectives of citizens and experts, and physical as well as social observations. In order to collect these perspectives, formal and informal interviews have been done, as well as questionnaires among citizens. Further information on the methodology can be found in the following chapter.

In the next step the results will be discussed. These are categorized in seven themes that were created based on the analysis of the researched areas (Annex 6.3). In chapter three, scenarios are made based on the outcomes and a SWOT analysis is done. Recommendations and concluding remarks are provided in the final chapters.

Chapter 2. Methodology

Our analysis is based on the perspectives of citizens and experts, and physical as well as social observations. The research was carried out by thirty students from Wageningen University, differing in cultural and educational backgrounds. For each hillside, we focused on the following five expertise fields: Policy and stakeholder, physical and ecological, management practice and use, Public perception and Scenario development.

Research methods

The terms of reference, provided by IPR Praha, and the theoretical foundation of different Master programmes have been the core of the European Workshop. To prepare for the field work, an initial analysis was done on background literature and GIS maps.

Throughout the project, we have been in contact with IPR about the results and there were several feedback meetings. During the fieldwork, 616 questionnaires were handed out, of which 173 in Troja I, 133 in Troja II, 104 in Libeň, 115 in Prosecké Skály, and 91 in Vysočany.

Furthermore, 37 interviews (Annex 6.7), and many social and physical observations were done (Annex 6.6). These were carried out during different times of the day and in multiple locations in each geo-area in order to cover the diversity of the area. The location of the questionnaires and observations are marked in a grid map (Annex 6.1). The field study ended with a presentation of our preliminary results near Troja on the riverbank of Vltava river.

Based on the data collected in Prague, there is written a detailed analysis for each researched area (Annex 1-5). Within the strengths and weaknesses of the current situation of the areas were identified using the structure of the Dutch layers approach to spatial planning and design (Schaick & Klaasen, 2011). The reports focusing on different hillsides can be seen as the foundation for this synthesis report. The synthesis report can thus be seen as an overall analysis of different areas, creating one integral assessment. The current situation of all hillsides has been analysed quantitatively (statistics) and qualitatively (see Annex 6.5 for more information). Quantitative analysis is done for questionnaire data. Most questions from the questionnaire were analysed for statistically relevant correlations. A scenario study and SWOT-analysis will point out the possible pathways IPR Praha can follow to reach a desired future state of the hillsides. In order to guide towards a desired future, recommendations are given per scenario based on the strengths, weaknesses, opportunities and threats.

Chapter 3. Key Research Findings

While analysing the data obtained from the field research, numerous themes arose. The issues that emerged in every hillside were placed into the following themes:

- **Governance and maintenance** describes the decision making, coordination between the stakeholders and the state and responsibility of the maintenance.
- **Development** describes the pathway taken by decision makers.
- Functions describes the functions that relate to the use and the users of the area.
- **Accessibility** describes the overall connection between the hillsides. Two distinctions are made: internal and external accessibility.
- Attachment refers to participation, cooperation and the sense of bonding of the people with the hillsides.
- **Safety** describes facilities, pathways and other infrastructure that may damage human integrity, as well as how humans perceive the safety.
- Ecosystems describes the natural history, the ecosystem services and the bio-corridors.

3.1 Governance and Maintenance

Prague has a multi-tier structure of governance, hence several institutions influence the policy-making process. This chapter discusses the most important authorities of the city and their influence on the Prague hillsides.

Policy Layers

The city-level policy is executed on three layers. The highest level is the Magistrate of the Capital City of Prague, further referred to as the City of Prague. Apart from the policy making responsibility of this institution, the City of Prague owns plots in the study area and is responsible for their management and maintenance. The next level consists of 22 administrative districts that are responsible for issuing building permits and local spatial planning (Interview 28). These administrative districts are further divided into independent municipal districts that have their own elected council. Furthermore, these municipal districts are organized into 22 administrative districts. However, they have to comply to national and city regulations like habitat regulations and the land use plan (Interview 5).

Governance

All districts are in contact with societal and economic actors like NGOs and small-scale businesses. However, there is a lack of overall vision and the relationships between all actors are not formalized. Moreover, subsidies are often given in an arbitrary way (Interview 29; Maier, 2003). This leads to problems with management of the site.

Policy Documents

Multiple policy documents are of importance for the current and future development of the hillsides. This chapter gives an overview of the most important EU, national and regional documents.

EU and national policy documents

The Czech Republic has to comply with EU legislation. Important for the Prague hillsides is the *Habitats Directive* (Council Directive, 1992), which aims to preserve biodiversity by conserving

natural habitats (European Commission, 2016b). The Natura 2000 network of protected areas is a result of the Habitats Directive (European Commission, 2016a). It is the responsibility of the Czech Republic to implement the Habitat Directive and to report the conservation status to the European Commission. Because of this status, strict conservation measures are applied which leads to high aesthetic and cultural value of the area. Relevant for the national level is the *Spatial Development Policy of the Czech Republic*. It is a planning document that has priority over regional documents (Ministry of Regional Development of the Czech Republic, 2015).

City level policy documents

Three city level policy documents are of importance for the development of the Prague hillsides: the Strategic Plan, the proposed Metropolitan Plan and the Public Space Development documents. All three of them are written by the IPR and approved by the Prague Municipal Assembly.

The aim of the Prague Strategic Plan is to set a long-term vision of the future economic, social and spatial development of Prague. The goals of the Strategic Plan have priority over the goals of other policy documents (Prague Strategic Plan, 2008). However, the Strategic Plan is not regulated by law and gives very general recommendations (Interview 5). Therefore, the opportunities for the hillsides are also not very specific. Some of the priorities of the Strategic Plan are to define opportunities for high quality functional public spaces, semi-public and semi-private spaces like community and allotment gardens and private spaces like vineyards, gardens and small businesses (Prague Strategic Plan, 2008).

The Metropolitan Plan is the newly proposed land use plan of Prague. It will replace the current Strategic plan when accepted by both the District Municipalities as well as the City. The final deadline for the acceptance process is set on 2020 (Interview 35). It is regulated by law and the districts have to comply with it. Regulations are different for different localities. Weaknesses are that the Metropolitan Plan is not connected enough with the Strategic Plan (Interview 19). A weakness related to the hillsides is that maintenance is not included (Interview 14). For more details about the Metropolitan Plan, see chapter 3.2.

The Prague Public Space Development Strategy, Design Manual and Action Plan aims to make the public spaces of Prague liveable and attractive because currently a lot of the public land is not used. The rules of the Manual are mandatory for the departments of Prague City Hall and all other organizations related to the city. For the districts, the Manual is providing guidelines, but it is not binding. The districts have regional policy documents and have to comply to the city level policies. They have no legal instruments to object to the above city level policies.

Management

The responsibility of management of specific plots is related to the ownership of the plot. A general distinction can be made between private and public owned plots within the hillsides of Prague. The general management and maintenance of the public area is unclear. The responsibility for managing public space is scattered across numerous entities without any system in place (Public Space Development Strategy, 2014). Some of the management is done by the municipality or city district departments.

After the fall of communism, mass privatization took place in the context of a lack of strategic planning (Maier, 2003). The City of Prague and the city districts can only ask private owners to maintain their plots but they have no authority to force private owners to do anything. Furthermore, it is not clear for each plot who owns it or the owners are not interested (Interview 14 & 15). As a

result, many plots are unused and overgrown. In some cases, plots are owned by multiple actors. For example, the bobsled rents land from different public and private parties. This fragmentation of the land makes the development of for example new pathways and bio-corridors very difficult. The municipality could envision to draw contracts with the owners for improving accessibility, but this is not currently in effect (Interview 2).

The management of areas that enable recreation is an important topic. However, it is also necessary to consider the fragile balance between human use and nature. It is important to keep in mind that People in Prague gain benefits from green hillsides, even when not physically accessing them. That is due to ecosystem services (Interview 17).

Improvements for small scale recreation can be done through the provision of signs and routes. There are interesting old walking paths that can connect the different parts of Prague (Interview 6). These walking trails however, are also sometimes hampered by either lack of maintenance or a (fenced) private property intersecting the trail (Stezky, 2016). Local recreation as well as environmental education activities could be developed in combination with cultural aspects by creating and maintaining paths through the areas (Interview 6). Small scale and localised projects that are spread across the hills can stimulate more diverse recreation. Many citizens of Prague already see the historic city centre as overcrowded by tourists. This makes it important to consider the hillsides not as a place for mass tourism nor to advertise them to become a place for tourism. It could be argued that making them valued locations mainly for the citizens of Prague is therefore more important (Interview 17).

3.2 Development

Within this theme, existing plans for the future development of the hillsides are discussed in terms of their respective focus on either nature preservation, or urban development, from the perspective of both policy-makers, and civil society.

Key issues

One of the key issues identified is the lack of a comprehensive long-term strategy for the development of the hillsides and their surrounding areas. As a consequence, development of the green areas is fragmented. In addition, visions on the most appropriate balance between nature preservation and urban development differ widely among municipal districts. This further obstructs the implementation of an integrated approach. Furthermore, it could be argued that the perceived uncertainty regarding the future of the area also partially fuels (urban development) pressure on behalf of investors/plot owners, and contributes towards the poor maintenance of the areas.

Based on interview and questionnaire data, societal stakeholders and residents are largely in favour of nature preservation and improved leisure facilities (Figure 2). The establishment of orchards, vineyards or other urban agriculture initiatives was identified as a promising compromise between human use and biodiversity protection. Maintenance and utilization is seen as the primary way for improvement. Figure 2 also shows that hillside improvement through increased safety measures or urban development is not considered important.

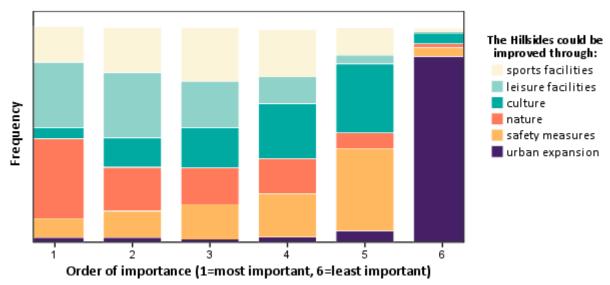


Figure 2. Distribution of preferences for developing the hillsides

The Metropolitan Plan

The Metropolitan plan indicates plots/areas that are likely to change in the future. The plan indicates most of the hillsides' greenery as either 'preserve as natural area' or 'transformational area for leisure'. Urban development can emerge in areas labelled as 'transformational'. The highlights in the Metropolitan plan are:

- Troja I is a green sight with deciduous tree vegetation. The plan considers this area available for transformation for recreational purposes, despite the fact that it is a designated natural protection territory, managed by the Nature Conservation Agency (AOPK). Furthermore, in this area there are also allotment gardens, complicating the management possibilities (Annex 1).
- A transformational area on the border of Troja II. The area on the north eastern side of [G9] and north western side of [H9] (Annex 6.1). Another point worth mentioning is the width of the bio-corridor in the south-eastern side of the hillside. The plan indicates that the bio-corridor has potential or urgency to be widened (Annex 2).
- The Libeň area has a big red line running through their area in the metropolitan plan. Indicating that the City of Prague will most likely build the new ring road (or tunnel) straight through/under the greenery (Annex 3).
- Prosecké Skály has a few areas labelled as 'transformational'. An area on the north side of
 the highway cutting the hillside in two, and two smaller plots in the eastern area. The height
 restrictions of 8 to 10 floors along the highway indicate a transformational area designated
 for apartments (Annex 4). However, transformational areas on both sides of the highway
 show opportunity for connectivity.
- Vysočany has a few 'transformational' areas in nearby urban land plots but has little to no rigorous changes. (Annex 5).

The highlights above can be used as indications to opportunities and threats for future developments. The transformational areas can be improved either to a more nature conservation or an urban development side of the scale. Result of the questionnaires show that local inhabitants are in favour of focussing development towards leisure and nature. In contrast to urban development, which is highly unfavourable.

3.3 Functions

The diversity of functions in the hillsides gives special ecological, social and economic value to the different regions. However, the different sub-regions are not interconnected socially and physically. This summary of the land use and activities of the five hillsides shows similarities and potential to connect the hillsides.

Land-Use

The hillsides were historically used for agricultural purposes and the production of wine. Nowadays the vineyard tradition is kept in areas Troja I and Vysočany. There is some small scale agriculture present in Troja 2, Prosecké Skály and Vysočany. The hillsides also host old and often abandoned orchards, as is for instance in Vysočany (Figure 3), where there is also a special program which integrates homeless people in maintaining the area. Troja 2 has two main land uses: private housing and forest. Human use within the hillsides does not differ a lot, mostly people are visiting the hills for nature walks and leisure. In the Libeň area, recreational gardening takes place in the Allotment gardens and Kuchyňka community gardens.



Figure 3. Vineyard in Vysočany

Activities

The people who visit the Prague hillsides usually go there with their family, partner, children, colleagues, alone or with their dog (Figure 4). Citizens who filled in the questionnaire indicated they visit the hillsides least with friends. People often gave multiple answers to this question, so they mostly visit the hillsides with different people.

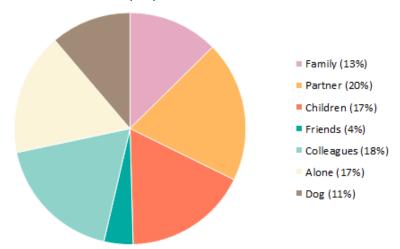


Figure 4. Response to the question: "with whom do you visit the hillside?"

The hillsides are mostly used for nature walks, leisure activities, and sports. Fruit picking is also popular in areas which are easily accessible to the public. However, these areas only make up a small percentage of the entire hillsides area, which might explain why it is a small portion in Figure 5.

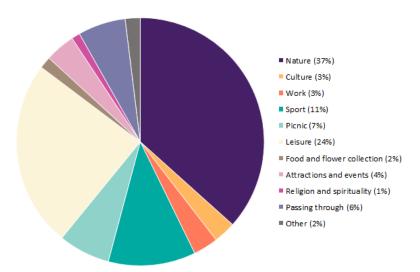


Figure 5. Response to the question: "what do people do on the hillsides?"

Most of the Prague hillsides also have signs for educational purposes, e.g. information boards about the special plant species and geological features of the area. The hillsides are also inhabited by homeless people. They mainly reside in abandoned plots and orchards.

Most of the hillsides have a viewpoint for touristic purposes. Due to the lack of well-maintained facilities, some of the hillsides do not have any other specific activities than viewpoints and allotment gardens. However, overgrown vegetation, illegal rubbish disposal and unmanaged pathways hinder the accessibility to these viewpoints. Infrastructure for hiking and cycling is present in some of the hillsides (Figure 6) and some of the pathways and stairs are used for physical education. Activities that are specific for each hillsides can be found in the reports attached to the annexes 1 - 5.



Figure 6. Park Pod Korábem

3.4 Accessibility

Accessibility relates to the overall picture of connectivity of the five areas. External accessibility describes the connectivity between the hillsides and other parts of Prague. Internal accessibility relates to the connectivity among the five hillsides. The internal and external infrastructure should create an overall system that supports the human use.

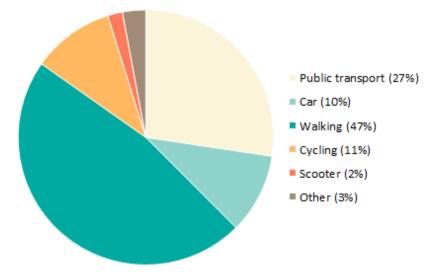


Figure 7. Amount of people visiting hillsides by different modes of transport.

External Accessibility

The external accessibility is fairly good. The roads leading to the hillsides are well-maintained and numerous tram, bus and metro lines lead to the hillsides. Figure 7 shows the most commonly used modes of transport towards the hillsides. Most people go by foot, public transport is ranked as second most often used mode of transportation. Approximately a quarter of the respondents state that they go to the hillsides either by bike or by car. There is no relation between travel time and which hillside people visit. However, people do not tend to travel longer than 45 minutes to reach the hillsides (Figure 8). Most people travel either 11-20 minutes or 21-45 minutes to the hills.

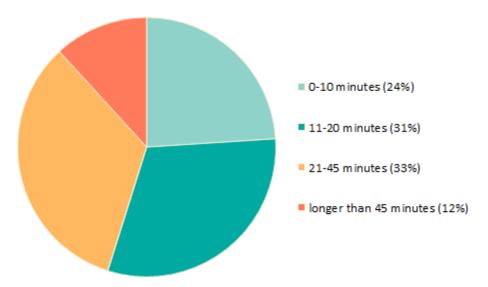


Figure 8. Required time for people to get to the hillsides.

Internal Accessibility

The large majority of the people think that the hillsides are easily accessible from the outside. These people also agree with the statement that they can move freely and easily within the area and like the area as it is now (Annex 6.5). Although the public transport in Prague can be described as good for the external accessibility of each hillside, the connectivity between different hills is not convenient for users of public transport. The distance between the two farthest points of the five sites is around 9 km and it takes up to an hour to travel between these places by public transport.

Paths on the hills are either absent, not well-maintained or lack indication, which obstructs the internal accessibility of the hillsides. This is specifically the case in Troja II and Libeň. The infrastructure that ensures the accessibility towards and on the hillsides can simultaneously be a barrier. For example the highway between Libeň and Prosecké Skály impedes pedestrians, bikers and bio-corridors, among others, to move from one area to the other.

3.5 Attachment

Attachment refers to the sense of bonding the people have to these hillsides. The sense of attachment is what drives people to take the responsibility of managing and maintaining the hillsides, it is the driver that gives the hillsides its existential value. This theme will elaborate on the perception of visitors and citizens participation on the hillsides, and on feasibility of public participation.

Perception

Questionnaire responses show that the majority of respondents feel happy (75%) and healthy (68%) while visiting the hillsides. When people go for a nature walk, significantly more (annex 6.5) respondents (78%) state to feel happy, in contrast to doing other activities, like cultural activities, sports or flower picking. This is also correlated to internal accessibility since 94% of respondents feel happy when they can move freely and easily within the hillsides.

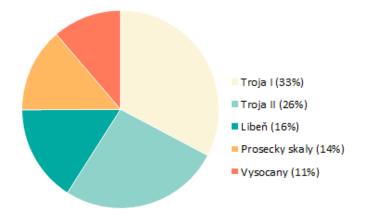


Figure 9. The relative popularity of hillsides

The popularity of visiting the hillsides is illustrated in Figure 9. The result demonstrates that the popularity of Libeň, Prosecké Skály and Vysočany is almost equal. Troja I and II are more popular. Figure 10 shows that the frequency of visiting also differs among hillsides. The data shows a trend: although Troja is the most popular hillside, most people do not visit it daily. Libeň significantly differs

with a large proportion that visits this hillside daily and a rather small proportion that only visits a couple of times a year (annex 6.5).

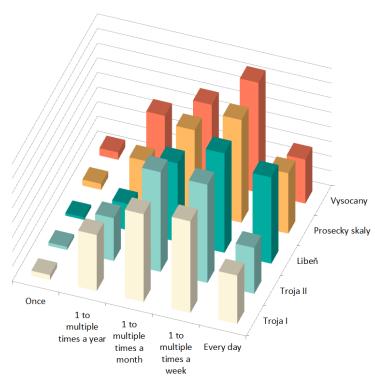


Figure 10. Visiting frequency among hillsides

A large majority (73%) likes the hillsides as they are now. However 80% of the people that like the hillsides as they are now, also think that the hills still could be improved. For example, 73% would like to increase the amount of green public space and 66% state that they would visit the areas more often if they would be improved. 73% of the people that do not like the hillsides as they are now, would also visit them more often, if they would be improved (annex 6.5). The majority of people wish that all hillsides would be improved, but Prosecké Skály stands out with 90%. These results address the importance for further improvement which might request different stakeholders, including the citizens themselves, to take responsibility.

Public Participation

The participation office within IPR Praha, focuses on developing and testing of new methods to engage people in participatory projects. In an ideal participatory planning, citizens should be involved from the beginning, continued in the design phase and final decision-making. Involvement of the public by IPR Praha is done by organising workshops; however, relatively small number of people attend such activities. The distrust in institutions and politicians is another challenge that impede the participation, which can be partly explained by the communistic history of the Czech nation. As a solution, the expert on public participation proposes a positive approach by bringing people into direct discussion and collaborating with NGOs to involve the public in critical issues and ensure a bottom-up process (Interview 12).

The analysis of the willingness to participate is based on the participation ladder of Arnstein (1969), which includes three levels: non-participation, tokenism, and citizen control. The results of the research can be found in Figure 11. Non-participation is about educating the people, who are a

passive audience. 46% of the respondents agree that the municipality should be in charge of the hillsides without public involvement. This could be because of a lack of trust citizens have in governmental institutions (Interview 12).

Tokenism includes informing, consulting, and involving the public about the area. The people are given a voice but no real power in decision making. According to the results of the questionnaires, 74% of the people would like to be more informed about the development on the hillsides. The media can act as an effective method to inform the public (Watanabe, 2001). However, media attention towards the hillsides is not considerable since half of the respondents chose 'not applicable' when asked about the hillsides media coverage. Besides, people in and around the areas do not perceive the level of consultation as high. Just 19% of the respondents feel that the municipality is open towards citizens' ideas and concerns. This might be due to public hearings being less valued and less encouraged by the municipality. Therefore, the willingness of the public to be informed and the actual information that reaches the public may show the demand for increased transparency in management. Moreover, 40% of the people would like to be more involved in the activities and maintenance regarding the area, and 42% would like to cooperate with urban experts and contribute with their own ideas.

The last level on the participation ladder covers partnership, delegation and citizens control. These include more or total decision making power and responsibility for the citizens. 60% of the respondents feel responsible for maintaining the areas, and 58% thinks that citizens should manage the area. The relatively high level of willingness for citizen control indicates the feasibility of participatory planning.

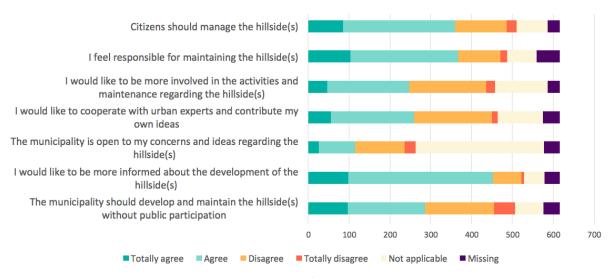


Figure 11. The overall result of the willingness to participate

3.6 Safety

Safety is an important topic for the development of the Prague hillsides, since it is closely related to the quality of life. To identify the perceptions of safety results of the questionnaires are analysed. In general it can be concluded that people have a safe feeling when visiting the hillsides: 86% either "agreed" or "fully agreed" to feeling safe. There were no significant correlations found between the time of the day and perceived safety in the hillsides. Furthermore, whilst ranking different ways in which the hillsides could be improved, safety was perceived as not important. Most often

improvements in safety were ranked 5th in a range of 1 to 6, where 1 is considered most important, and 6 is considered least important (Figure 12).

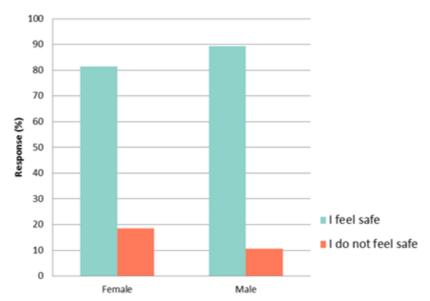


Figure 12. Perceived safety when visiting the hillsides of females and males. The percentages show the response of the two genders and add up to 100% for each gender.

There was no strong difference noticeable in the perception of safety for males and females, as shows in Figure 12. Eight percent more females responded that they feel unsafe at the hillsides, compared to men. This could be explained as in some of the hillsides, crimes were committed and women were sexually assaulted (Interview 14).

The major factor that reduces perceived safety as realized through interviews and observations are the homeless people living on the hillsides, mostly in inaccessible and remote areas. Moreover, there are signs of vandalism which reduces the aesthetics and appreciation of the area. Physical safety is sometimes lacking in several areas due to inadequate maintenance of pathways, railings or lighting.

Another correlation was found between negligence and safety (annex 6.5). Shown in Figure 13 are the differences in safety perception and perception of negligence. A large majority disagrees with the statement of negligence, which seems surprising as the hills are not seen as valuable green space (Interview 15). Additionally, in this group also the majority deems the hillsides safe. Far smaller differences are noticeable in the group that agrees with negligence. This most probably indicates that maintenance and usage are important factors in determining public safety. This data also corresponds with results from interviews where safety was considered partly a function of aesthetics and usage (interview 14). However, it should be kept in mind that perception of negligence is highly subjective and can vary strongly between individuals.

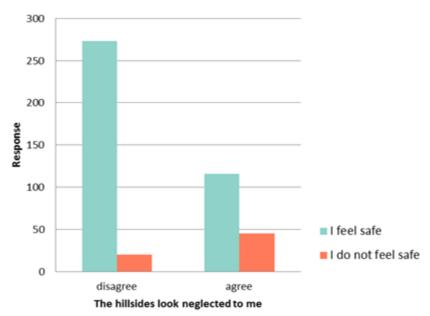


Figure 13. Perception of safety related to the perception of negligence. Results are based on 454 questionnaires.

3.7 Ecosystems

In the larger geological context the hillsides are part of the Bohemian Massif. The mining of sandstone in the past resulted in some places becoming potential landslide sites. At the start of the previous century, most trees covering the hillsides were cut down for fuel. As a result, the topsoil became susceptible to erosion. The loose soil hindered the infrastructure down the hill, as well as the small-scale agriculture on the hill. Part of the hillsides were reforested with non-native species like *Prunus spinosa*, *Quercus rubra* and *Robinia pseudoacacia* (Interview 32). Other invasive species such as *Arrhenatherum elatius* and *Calamagrostis epigejos* are present due to changes in vegetation partially caused by (human induced) eutrophication of the soil. The status of the protected green areas was allocated based on arbitrary motives rather than high biodiversity or the occurrence of rare species.

Abundant fauna species in the area include ground beetles such as *Bradycellus ruficollis*, *Harpalus rufipalpis* and *Trachyphloeus bifoveolatus*, phytophagous insects such as butterflies and birds such as jays, magpies, warblers and woodpeckers. Wild pigs are among the largest animals that can be found. The orchards are an ideal habitat for many arthropod species, including pollinators. Hymenoptera numbers are naturally high on the hillsides and maintenance of the dry grassland patches is important for them. This is also the habitat of several red list reptile and vegetation species that live in these drier areas (Interview 23).

The green cover on the hillsides contains a wide range of vegetation types ranging from orchard to forest. Overall they are aesthetically pleasing surroundings and present opportunities for providing food and materials to humans. Currently the green cover provides sufficient erosion control and rain water buffering. Additionally, air pollutants are trapped by the combination of slope and trees. The atmospheric deposition of e.g. soot, volatile organic compounds and NOx can be retained or broken down in the soil.

Bio-corridors form linkages between green areas that allow animals to move from one place to another, thus enhancing biodiversity. The government envisioned bio-corridors as a connection

between green areas in the hillsides. The problem is that these bio-corridors encompass both public and private lands. Most private owners have no incentives or knowledge to maintain these areas. Currently, no governmental organisation has power to enforce the maintenance. Consequently, most bio-corridors do not form green connections for flora and fauna. However, there are opportunities to increase the potential of bio-corridors through maintenance and design. Bio-corridors in public lands are maintained through selective cutting and grazing by sheep and goats. Currently, most of the green areas on the hillsides withstand further urban development due the municipality's land use plan (Interview 23).

In conclusion, it can be said that currently the ecosystems of the hillsides provide many ecosystem services to inhabitants and citizens living close to the hillsides. For most flora and fauna species it is important to ensure that urban development does not take place in their habitats and that some maintenance measurements such as grazing and selective cutting of invasive species is carried out. Generally, the bio-corridors function in varying degrees of effectiveness.

Chapter 4. Scenario Development and SWOT Analysis

In order to allow for an effective long-term strategic planning for Prague's hillsides, an analysis of the potential future scenarios is outlined below. Additionally, we carried out a SWOT analysis that is linked to the different scenarios.

4.1 Axial Framework

We used the aforementioned themes for the development of four scenarios (Figure 14). To come up with the scenarios two key themes were chosen: "Governance and maintenance" and "Development". These themes were identified as most uncertain but also have the most impact on the development of the hillsides. Some issues that were part of these themes were placed on two axes and acted as the foundation for the development of scenarios. This way the four scenario quadrants each represent a possible future. The remaining themes are addressed in each scenario's storyline in order and describe how the future will unfold.

In particular, for the y-axis, the theme "Governance and maintenance" is divided in two extremes: a 'top-down' or a 'bottom-up' approach. The first defines the initiatives and decision-making by governmental bodies for the wider public and the latter represents the decision-making by smaller groups of people, be it civil society actors or local community organizations. The x-axis "Development" consists of nature development or urban development. The first indicates inclination towards green preservation and the second describes more the built development of the hillsides and its surrounding areas.

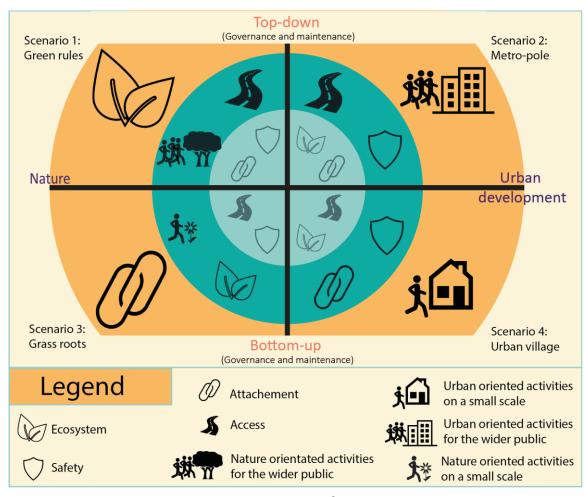


Figure 14. Overview of scenarios

4.2 Storylines

Each of the four scenarios is described by a storyline which includes all the aforementioned themes.

Scenario 1 - "Green rules" (top-down and nature-oriented)

In this scenario the government acts as the main facilitator and regulator. It is in control of the development of each hillside and the development of the hillsides is nature-centric. The top-down approach in development and management of these natural areas is expected to enhance the biodiversity of the hillsides and create a physical connection among society and nature. This also improves the external and internal accessibility of these areas. Improved mobility in the area is not only the case for humans but also for other animal species, thus providing opportunities for the creation of bio-corridors. Nature-oriented activities for the wider public like for example organized nature excursions is one of the focuses of the development of the area. Even though the internal and external accessibility of the hillsides is improved, the use of cars inside the green areas is limited. The government is responsible for the maintenance, however, extensive management is used on most hillsides.

For shaping this scenario, the sole responsibility of the budget lies on the government. However, the investment needed for development is low in comparison, due to the fact that the development is nature-oriented. Physical safety is prominent with improvements like the implementation of signs for internal connectivity. These signboards are also useful to provide valuable information about the history, geomorphology, ecology, landscape, biodiversity, etc. of the hillsides. The main challenge in this scenario is to involve local communities with the development of the hillsides by creating a sense of being and belonging.

Scenario 2 - "Metro-pole" (top-down and urban development)

This scenario follows a top-down approach where the initiatives and decision making are carried out directly by the government with little public involvement and a focus on urban-centric development of the hillsides. The city is expected to expand onto the hillsides; therefore, the quantity and quality of green spaces decreases. The top-down approach leads to organising large-scale activities for the wider public that will take place in an urban environment (e.g. concerts, sport events) instead of forests. There are almost no initiatives by local communities and hence there is a lack of social cohesion and public engagement in the management of the hillsides which diminishes the feeling of attachment the public has to the hillsides. People do not usually engage in activities with their neighbours and often live an individualistic life; consequently the feeling of perceived safety is lower. On the other hand, physical safety increases due to the well maintained pathways, presence of handrails, fences, lights, etc. Since the maintenance is a responsibility of the government, the needed budget is high. The high level of maintenance and development also make the hillsides easily accessible. People of all age groups can move easily on and around the hillsides via all means of transportation. Roads, paths and public transport are integrated with the rest of the city; thus all the hillsides are not only easily accessible from other parts of the city but are also very well connected to one another. However, the connectivity among the hillsides is only for people. Flora and fauna are confined to limited green areas inside each hill with no possibility for mobility. This leads to a decrease in biodiversity. Hence, there is not only reduction in availability of usable ecosystem services, but also in their recognition.

Scenario 3 - "Grass roots" (bottom-up and nature-oriented)

Grass roots scenario recognizes nature-development as the dominant element of the landscape and people are in charge of the ownership and maintenance of the hillsides. The wider public takes initiatives for their own interest, developing a strong feeling of responsibility and eventually, attachment to their neighbouring hillsides. People are concerned more about the natural habitats and the green spaces the hillsides provides and consider these areas their responsibility. This leads to positive changes in the biodiversity and other ecosystem services provided by these hillsides, increasing their ecological value. Furthermore, people try to conserve, protect and improve the natural environment with activities such as reforestation and afforestation. Most of the social activities are organised at a small-scale among local communities and are very nature-oriented, like hillside picnics, nature walks, etc.

However, in the Grass roots scenario the physical safety on the hills is lacking. The users of the area might have stronger perception of being safe than the reality affirms. This is because there is a very localized responsibility of the hills with small groups of people managing small parts of each hillside. This leads to fragmented management of the areas. However, minimum safety measures are taken by the people (e.g. fences, rock falling measures). Another issue that arises is the absence of physical connectivity between the different hillsides. Importantly, in implementing the Grass roots scenario, the municipalities need the least resources as compared to the other scenarios due to active involvement of the citizens. The residents are assisting more in maintenance and they have their own initiatives for public events and activities.

Scenario 4 - "Urban village" (bottom-up and urban development)

The Urban village scenario includes maintenance and decision-making with a bottom up approach but focuses on urban development of the hillsides. The people are divided in small communities with a strong sense of belonging and responsibility for their hillsides. However, they see the natural vegetation parts of these hillsides as an issue and want to convert these 'unmanaged' parts for human use with trimmed grass, higher connectivity, increased physical safety, etc. Many voluntary civil society actors like local NGOs are also a part of these groups and help to develop and manage the hillsides for fulfilling their own demands. Therefore the urban areas are intruding into the hillsides and the focus lies on small scale urban oriented activities (e.g. BBQ, urban gardening). People feel more connected to the area since they are in charge. The perceived safety also increases due to the increasing attachment. Since people have taken up the responsibility for maintaining both natural and built areas, municipal expenses become lower. However, the least attention is paid to the green corridors and the accessibility between and inside the hillsides. The low accessibility outside the hillsides, on the one hand, may lead to a small degradation of the nature but, on the other hand, may attract more homeless people and decrease the physical safety. Also, human intervention leads to hillsides losing their historical character and air and noise pollution increase. The increasing number of human activities in the developing area, for example; the allotment gardens, the community gardens, and the beer gardens, disturb the natural ecosystem and thus decrease the biodiversity of the areas.

4.3 SWOT Analysis

The four scenarios suggest four possible equally valuable pathways that the hillsides can take in the future. However, each scenario represents an extreme with all its advantages and disadvantages. In order to uncover and utilize the potentials of the scenarios, a SWOT analysis is carried out. SWOT refers to the analysis of (S) strengths, (W) weaknesses, (O) opportunities and (T) threats. Strengths and weaknesses refer to pros and cons of the current situation. Opportunities are the current issues that, remaining unchanged in the future, will help moving towards the chosen scenario. Taking the threats into account will be crucial in order to foresee the possible obstacles that can arise when developing into a certain direction.

Current situation

Strengths

- Mix of functions and activities on the hillsides.
- People feel safe, happy and healthy visiting the hillsides.
- The hillsides have natural interesting areas (e.g. Natura 2000 sites, caves and geological formations).
- The hillsides provide multiple valuable viewpoints on the city.
- The green hillsides provide natural habitats for animals.
- The green space benefits the microclimate of the city of Prague.
- The hillsides are used by a wide variety of people.
- The orchards and vineyards provide food/drinks.

Weaknesses

- No long term common vision and strategy on the development of the hillside.
- Lack of communication among the districts involved on the Prague Hillsides.
- Fragmentation of interest and unclear distribution of responsibilities.
- Lack of maintenance.
- The bio-corridors are under pressure due to urban development.
- Activities are limited in most of the public spaces due to lack of wellmaintained facilities.
- Internal connectivity is limited for human and fauna use.
- People are not aware of the walking paths due to absence of signposts in the areas.
- Lack of identity of the hillsides.
- Presence of people abusing unlawful substances.
- Lack of willingness of local citizens to cooperate with the municipality on the development of the hillsides.
- Bio-corridors between the hillsides are absent or interrupted.
- Pressure on the local ecosystem by invasive foreign species.

Scenario: Green Rules

Opportunities

- Presence of green areas enhance the nature development/protection of the hillsides. Pathways inside the green areas increase the possible mobility. Presence of existing green areas makes it easy to create bio corridors.
- The involvement of homeless people offers possibilities for low cost maintenance on most of the hillsides.
- Some stakeholders are willing to collaborate to develop environmental education programs
- People favour nature and leisure development on the hillside.
- Attractions such as the Zoo, Botanical Garden, viewpoints, caves and apple orchards have the power to attract tourists and visitors from the rest of the city.

Threats

- High amounts of privately owned land prevent nature development.
- Local citizens are not satisfied with the management of the hillsides.
- There are plans to develop more buildings and roads in the area.
- A rapidly changing political landscape makes an overall vision for the area unclear.
- Lack of budget for nature maintenance.
- Current urban development decreases the natural attractiveness of the hillside for tourists looking for nature oriented activities.

Scenario: Big City

Opportunities

- Unbuilt public space offers opportunities for developing public venues.
- Pressure for development attracts private and public investments and revenues for the municipality.
- Improvement of the existing transport infrastructure make it easy to improve connectivity.
- Population growth in Prague requires more housing/urban expansion.
- Presence of culturally valuable hotspots offer potential for tourists.
- Willingness of landowners for further urban development.
- Private landowners allow urban expansion inside their plots

Threats

- A rapidly changing political landscape makes it difficult to have a long-term strategy.
- Local citizens do not want more urban development.
- The budget is not sufficient for the development of the urban areas.
- Local citizens indicate that they want to be more involved in the management of the hillsides.
- Current forests and meadows are considered valuable by NGOs and users.
- The lack of urban areas decrease the attractiveness for people/tourists seeking urban/cultural activities.
- The Metropolitan Plan is in conflict with the development towards this scenario.

Scenario: Grass Roots

Opportunities

- Local citizens indicated that they want to be more involved in the management of the area.
- Local citizens indicated that they want to have more nature oriented development.
- Expansion of the current natural habitat on a small scale.
- Increase of the economic value of the area through food production.
- Absence of a long-term development plan leaves space for citizen initiatives.
- Willingness of society to participate on new initiatives.

Threats

- Many nested parties have interests in the hillsides.
- Fragmented ownership limited the mobility inside the hillsides for humans and animal species.
- There are plans to develop more buildings and roads in the area.
- Currently, the (ecological and economical) value of the green hillsides is not recognised.
- A rapidly changing political landscape makes the support for local initiatives insecure.

Scenario: Urban Village

Opportunities

- Willingness of society to participate on new initiatives.
- Growth of the local economy.
- Unbuilt public space gives room for urban development.
- Private landowners allow urban expansion inside their plots.
- Local citizens indicated that they want to be more involved in the management of the area.
- The unbuilt space offers opportunities for small scale urban oriented initiatives.

Threats

- Ownership of land leads to a fragmented neighbourhood.
- The constantly changing governmental administration makes the support for local initiatives insecure.
- Many nested parties have interests in the hillsides.
- There is a lack of resources and coordination between local citizens and initiatives to develop urban activities.
- The local citizens indicated that they do not want more urban development.
- The Metropolitan Plan is in conflict with the development towards this scenario.

Chapter 5. Recommendations

Table 1 below shows recommendations to reach one of the described scenarios: Green rules, Metropole, Grass roots and Urban village. The recommendations are aimed specifically at the five hillsides included in this report. The four columns on the right indicate which measures should be implemented to reach a certain scenario. Some of these measures fit multiple scenarios. The recommendations can be seen as a starting point for a detailed action plan for developing the hillsides and reach a desired outcome.

Green Rules

Table 1: Overview of recommendations

	e 1. Overview of recommendations		
1	The authoritative bodies that are involved with the hillsides (like City of Prague, districts of Prague 7, 8 and 9, Troja-Praha, etc.) should cooperate in order to establish a top-down management plan.		
2	For the vision of the bio-corridors define concerning species and locations to enhance biodiversity.		
3	Inquire experts for information about the ecological and biological status of the areas in order to see what is missing and what is already there to create bio-corridors according to the vision.		
4	Comply the bio-corridor vision with the management plan.		
5	Consult experts for possible designs to include human activity in the areas without disrupting the habitat of species created by the bio corridors. For example, ha-ha landscape design can create a barrier against entering areas that are nature-wise valuable.		
6	Build watch towers and observation posts in order to optimize the experience of the habitat of species, without interrupting their peaceful life, and for a panoramic view.		
7	Implement and improve signs and information boards to provide visitors with knowledge about the area; including history, geomorphology, ecology, landscape, biodiversity. Due to this a connection between society and nature can emerge. Maintain these signs throughout the year.		
8	Include local citizens in the implementation of the management plan, by providing task descriptions of jobs that can be carried out either on paid or voluntary basis. Including emptying bins, grass mowing, facility maintenance. The management should make sure that these tasks are executed.		
9	Ensure that plots of private owners comply with the management plan, by formulating binding regulations.		
10	Prohibit motor-vehicles to enter the area, by implementing signs and enforcing regulations.		
11	Increase physical safety by well-maintained pathways, presence of handrails, fences, lights, etc.		
12	Adapt the metropolitan plan to fit in urban development, but in a sustainable green way.		
13	Create collaboration between potential investors in urban development and local landowners.		

14	Improve the external and internal accessibility for a diverse mode of transport to make the hillsides accessible for the wider public.	L		
15	Find stakeholders to organize large scale urban activities with, like festivals.			
16	Inform local citizens about the activities, for example via social media, posters in the neighbourhoods, journal, radio, etc.			
17	Increase available resources, for example knowledge, budget and capital to support urban activities.			
18	Include the hillsides on a touristic map/ info folder.			
19	Improve cooperation between the users and the local citizens of the hillsides towards green development of the hillsides. Through workshops, lectures, common activities such as local food market.			
20	To improve attachment to the nature, provide resources to local citizens for organizing nature activities within the hillsides.			
21	To increase awareness introduce experts to the public and provide knowledge to the people regarding management and governance.			
22	Improve participation and responsibility of the local citizens in the economic management and development of the hillsides. As for instance including the local citizens in the decision making process.			
23	Municipalities should support initiatives which are meeting the needs in nature conservation policy (reforestation, afforestation, expand protected areas, restriction of cars, prevent city expansion on the hillsides).			
24	Create open green areas within the nature with small constructed facilities in order to host small scale activities (kiosks, open grasslands with benches etc.).			
25	Support external and internal green transportation routes, towards and in the hillsides, for instance bike lanes and walking paths.			
26	Make use of citizen's strong sense of belonging by involving them in local projects (e.g. workshops, working groups etc.) related to management.			
27	Make sure there is enough support to set-up initiatives: simplify administration and policy, help with coordination.			
28	Make use of Prague 8's approach for citizen involvement and bottom up initiatives (e.g. building design competitions for citizens, and 'Communication Hall' where citizens are involved in decision-making).			
29	Transform the remaining green areas in park like spaces.			
30	Set-up a platform for cooperation between construction companies and citizens to increase citizen involvement in urban development.			
31	Set-up a platform for cooperation between NGO's and citizens to assist in the management of the hillsides.			
32	Introduce the 'Neighbourhood Watch' concept (Starting Neighbourhood Watch Groups, n.d.) to increase safety.			

Chapter 6. Conclusion

We conclude with an overview of the current situation and the future opportunities and threats for development of the Prague hillsides. Prague's hillsides provide the pleasurable green spaces amid the dynamic urban life. They provide a multitude of different land covers, ecosystems and human uses. Orchards, vineyards and allotment gardens provide a space for provision, leisure and education but also support diverse habitats for insects and pollinators and other faunal and floral species.

Even with their diverse functions, these areas are not valued fairly. Multiple public and private actors are involved in the governance of the hillsides, leading to division of management, thus, lack of an overall strategy. Based on observations, vandalism, illegal housing and lack of maintenance are the particularly apparent issues at the hillsides. Additionally, different development approaches and lacking public participation exist within city districts. Internal accessibility from one hillside to other is poor and fragmented ownership of lands hinders the management and use of bio-corridors. Public perception surveys reveal that the citizens want to be informed and involved regarding the development and maintenance of the hillsides, however, the have a strong distrust in institutions and politicians.

Based on the thematic analysis of the areas, we developed four scenarios indicating the potential development of the hillsides. The scenarios were based on the two key themes, 'Governance and maintenance' and 'Development', which have the most impact on the development of the hillsides. Scenario Green rules describes a top-down approach and nature focused governance and development where accessibility to and within hillsides improves remarkably. The top-down and urban development approach of the Metro-pole scenario shows that there is an increase in physical safety and accessibility as well as social cohesion. The bottom-up and nature-centric approach of the Grass roots scenario exhibit increased attachment of the people towards their particular hillsides which leads to improved, yet, fragmented maintenance. Scenario Urban Village uses the bottom-up urban development approach leading to increased sense of community and responsibility but towards urban-centric outlook.

We formulated opportunities and threats and furthermore, several recommendations for scenariospecific pathways.

The report offers the different scenarios and the supporting recommendations which allows the readers to take a look into potential development pathways and initiate a discussion on the different kind of functions the hillsides can offer Prague. Thus our research and this report hopes to form a converged view for the future development of the hillsides.

References

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of planners*, 35(4), 216-224.

European Commission. (2016a). *Natura 2000*. Retrieved June 25, 2016, from http://ec.europa.eu/environment/nature/natura2000/index_en.htm

European Commission. (2016b). *The Habitats Directive*. Retrieved June 25, 2016, from http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

European Union, Council Directive. (1992). *On the conservation of natural habitats and of wild fauna and flora*. Retrieved June 25, 2016, from http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043

Maier, K. (2003). The Prague metropolitan region. In W. Selet, A. Thornley, & A. Kreukels (Eds.), *Metropolitan Governance and Spatial Planning*, 205–229.

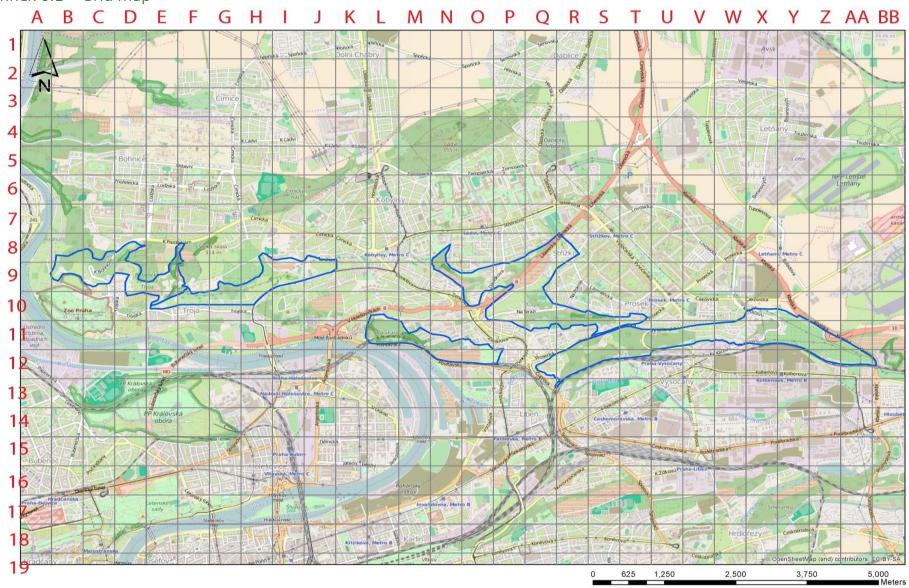
Ministry of Regional Development of CZ, Institute for Spatial Development. (2015). *Spatial Development Policy of the Czech Republic*.

Naučná stezka Městská část Praha 9 – severozápadní stezka (Vysočany – Prosek – Střížkov). (2010). Retrieved June 22, 2016, from http://www.stezky.info/naucnestezky/ns-vysocany-prosek-strizkov.htm

Strategy: Starting Neighborhood Watch Groups. (2016). Retrieved June 23, 2016, from http://www.ncpc.org/topics/preparedness/strategies/strategy-starting-neighborhood-watch-groups

Watanabe, M. (2004). *Public Opinion And Mass Media. Government and Politics*. Oxford, UK: Eolss Publishers (Webpage: www.eolss.net).

Annex 6.1 – Grid map



Annex 6.2 - Methodology

This consultancy centres on the perspectives of citizens, experts and physical as well as social observations, together with a theoretical foundation.

In total 616 questionnaires were carried out. The sample size is large enough to draw general conclusions, but the significance of the results depends on the response and type of respondents per geo-area.

First phase - Three weeks preparation

The terms of reference, provided by IPR Praha, and the theoretical foundation of different Master's-programmes have been the core of the first three weeks of the European Workshop. With maps and GIS-data provided by IPR Praha, there has been made a theoretical construct that helped us prepare for the data collection during the field trip to Prague. A basic understanding was created about the area due to the division of groups; geo-groups and expertise-groups. Five geo-groups were responsible for carrying out research of their respective geo-area. Within each geo-group, there are five different expertises: Policy and stakeholder analysis, Green Infrastructure - physical and ecological analysis, Green Infrastructure - management practice and use analysis, Public perception analysis, and Scenario development. Every participant of the workshop therefore belongs to either an vertical (geo-area), and a horizontal (expert) group. In order to coordinate the exchange of information between groups, a management team was made. This team keeps the overview throughout the workshop, and makes sure everything is done the right way.

Second phase - Two weeks Prague fieldwork

At the start of the fieldwork we prepared a presentation for IPR, to summarize our work in the previous three weeks, show our working structure and get feedback on the research so far. During the study, 616 questionnaires, 39 interviews, and social and physical observations have been done. These were carried out during different times of the day and in multiple locations per geo-area in order to cover the diversity of the area. The location of where the questionnaires, and observations, have been done are marked in a grid map. The field study was ended with a presentation of our preliminary results near the riverbank of Vltava river. This involved a presentation with the use of posters, a discussion and also an exhibition of the findings of every geo-group about their respectable geo-area.

Note: The various perspectives and opinions stakeholders might have can result in biased information. This, however, will be nuanced by making use of a stakeholder matrix in the georeports.

Last phase - Three weeks

Using the data collected in Prague, the 5 geo groups wrote a detailed analysis. Within these reports the strengths and weaknesses of the current situation of the areas were identified using the structure of the Dutch layer approach. This analysis resulted in the geo-reports. These geo-reports are the foundation for the synthesis report. The synthesis report can be seen as the ultimate analysis on the area. The current situation on Prague hillsides has been analysed quantitatively (statistics) and qualitatively. A scenario study and SWOT-analysis will point out the possible pathways IPR Praha can follow in order to reach a desired outcome.



Governance and maintenance

Firstly, this theme describes the process of decision-making: the type of governance (top-down or bottom-up), the involvement of the general public and NGOs and the coordination among different stakeholders. Furthermore, it includes information on ownership of the land and administrative obstacles that are encountered in managing the area. Last but not least, the state and responsibility of maintenance is described.



Development

Development theme describes the pathway taken by decision-makers for the hillsides: be it nature-centric or built urban-centric development. Both the pathways have its own pros and cons and the fate of development depends on the interests of the different stakeholders. The main driver is the pressure for urban development.



Functions

In this theme functions of the area are described. The functions relate to the use and the users of the area. The hillsides are used for a wide range of activities. People use the area for walking, cycling and other sports, but also for gardening or they are just passing through. The areas can be used by different groups of people, both young and old, large groups and individuals can visit the hills.



Accessibility

Accessibility relates to the overall connection among the five discussed areas. Can be classified in two categories: internal and external. Internal accessibility refers to the physical connection inside the hillside. External accessibility includes the physical infrastructure among the five studied areas and the overall system that supports the human use, such as public transport, pathways and roads.



Attachment

Attachment refers to participation, cooperation and the sense of bonding of the people with the hillsides. The sense of attachment is what drives people to take the responsibility of managing and maintaining the hillsides, it is the driver that gives the hillsides its existential value.



Safety

Safety can be classify into two categories: physical and perceived safety. Physical safety includes facilities, pathways and other infrastructure that may damage human integrity. Perceived safety refers to the feelings of the society that impact the use and activities in the hillsides.



Ecosystems

The hillsides offer a range of ecosystem functions and services on different spatial scales. Functions include biodiversity, bio-corridors and provision of wildlife habitat. Services include provisioning services, like production of food and water, regulation of air and water quality, and recreational benefits.

Annex 6.4 - Questionnaires

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	ou visit green public s	-	Location	1:				
□ Every day□ 1 to multiple time	s a week	□ 1 to multiple times a year□ Never (Go to question 27)	1					
□ 1 to multiple time		a nover (ee to question zi)	Date					
2. How often do yo	ou visit the hillside(s)	? □ 1 to multiple times a year						hillside(s)
□ 1 to multiple time	s a week	□ Once	□ No t	ime		□ N	ot the r	ight activiti
□ 1 to multiple time	s a month	□ Never————	□ Not <i>Go to</i>				ther	
3. Which hillside(s	s) do you visit most of	ten? (See map)	0010	que	3401	, ,,		
4. When do you vi	sit the hillside(s)? (Giverally	ve at least one answer per column))					
□ Morning (05:00-11:0	,	Δ During the week						
☐ Lunch time (11:00- ☐ Afternoon (14:00-18	, ,	Δ During the weekends						
☐ Evening (18:00-22:0	O Autumn							
	to the hillside(s) mos							
□ Public transport □ Car	□ Walking □ Cycling	□ Scooter □ Other						
□ 0-10 minutes □ 11-20 minutes 7.With whom do yo □ Family □ Partner □ Children	□ 21-45 minutes □ Longer than 45 min bu visit the hillside(s) ² □ Friends □ Colleagues □ Alone	utes ? (Multiple answers possible) □ Dog						
8. Why do you visit Nature walks Cultural activities For work Sports	t the hillside(s)? (Mult Picnic Leisure Attend an event Visit an attraction	iple answers possible) □ Religious/ spirituality □ Passing through □ Food/flower collection □ Other			Disagree	Φ D E	V agree	aplicable.
Please mark wheth agree with the follo		e, disagree, agree or totally		70ta	Disa	Agre	Tota,	Not
9. I think the hillside	(s) are easily accessible	e from the outside.						
10. I can move freel	y and easily within the l	nillside(s).						
11. I feel safe when	I am in the hillside(s).							
12. I feel more happ	y when I visit the hillsid	e(s).						
13. I feel responsible	e for maintaining the hil	lside(s).						
14. I like the hillside	(s) as they are now.							
15. I feel more healt	hy when I visit the hillsi	de(s).						
16. I think there is no	ot enough green public	space on the hillside(s).						

			otally a:	Disagrae	Agree	Totally agree	Not applicable
17. Citizens should	d manage the hillside(s).			7			
18. I would like to b	pe more informed about	the development of the hillside(s).					
19. I would like to d	cooperate with urban exp	perts and contribute my own ideas.					
20. I would like to s	see the hillside(s) improv	red.					
21. The hillside(s)	look neglected to me.						
22. If the hillside(s)	would be improved, I wo	ould visit them more often.					
23. I think the hillsi	de(s) have beautiful scer	nery.					
24. The municipalit public participat	<u> </u>	aintain the hillside(s) without					
25. I would like to be regarding the h		ctivities and maintenance					
26. The municipalit hillside(s).	y is open to my concerns	s and ideas regarding the					
27. The hillside(s) a	are often discussed in the	e media.					
28. The hillside(s) g	generally get positive me	dia attention.					
importance;1 Sports facilities (c Leisure facilities Culture (e.g. Conce Nature (e.g. urban c Safety measures		6 is the least importance) skateboarding, football/basketball court) playground, benches, bins) ent types of landscapes) ides, signs)					
30. What is your g		0.11					
□ Female	□ Male	□ Other					
31. What is your y	ear of birth?						
32. What is your co □ Employed □ Unemployed	urrent occupation? □ Student □ Retired	□ Other					
33. What is your m □ < 15,000 □ 15,000-30,000	nonthly income level (C	ZK)? □ >70,000					



1. Jak často navštěvujete Každý den 1 či vícekrát v týdnu	veřejnou zeleň?	□ 1 či	vícekrát v roce	Ti	me:					
□ 1 či vícekrát v měsíci			dy (Přejdete k otázce č. 27)	⇒z ja	kého	důvo	odu l	NEnav	štěvujet	te
2. Jak často navštěvujete □ Každý den □ 1 či vícekrát v týdnu □ 1 či vícekrát v měsíci	pražské svahy?	□ 1 či	i vícekrát v roce uze jednou	pra Js	ž ské s sou pro emám	o mn dost	y? e pří tatek	liš dalel času	-	
3. Jaké části pražských sv		e? (viz	z mapa)	(la □ Ne	vičky,	hřišt	tě ato		ů rch aktiv	it
4. V jaké době většinou na (Alespoň jedna odpověď j			ahy?	Přej	iděte l	k otá	zce	č. 17		
□ Ráno (05:00-11:00) □ V obědové době (11:00-14:0 □ Odpoledne (14:00-18:00) □ Večer (18:00-22:00) □ V noci (22:00-05:00)	O V zim	ě e	Δ V týdnu Δ Během víkendu							
5. Jakým způsobem se vět □ MHD □ Autem	i šinou dostáváte □ Chůze □ Na kole	k praż	žským svahům? □ Koloběžka □ Ostatní							
6. Kolik minut Vám obvykl □ 0-10 minut □ 11-20 minut	e trvá cesta se k □ 21-45 minut □ Více než 45 mi		pražským svahům?							
7. S kým většinou navštěv S dítětem S rodinou S partnerem	ujete pražské sva □ S kolegy □ S přáteli □ Sám/a	ahy? (Možnost více odpovědí.) □ Se psem			2				
8. Proč navštěvujete pražs □ Procházky v přírodě □ Kultura □ Práce □ Sport	ké svahy? (Více n □ Piknik □ Volný čas □ Houbaření/ Sbá □ Návštěva atrak	ěr ovod	□ Náboženské důvody □ Procházím tudy		hodnz	Nesouhica nesouhlasim	Souhlasim	Rozhodně souhlasí	Nemohu posoudit	72-
Každé tvrzení zkuste ohod	notit.				A02	Nes	Sol	Aos	Ne,	
9. Myslím si, že pražské sval	ny jsou z jejich oko	olí sna	dno dostupné.							
10. Můžu se snadno a svobo	dně pohybovat v	oblasti	pražských svahů.							
11. V oblasti pražských svah	ů se cítím bezpeč	ně.								
12. Jsem vice šťastný/á, kdy	ž navštívím pražsl	ké sva	hy.							
13. Cítím se zodpovědný/á z	a udržování pražs	kých s	svahů.							
14. Líbí se mi současný stav	pražských svahů.									
15. Cítím se zdravější, když r	navštívím pražské	svahy	<i>1.</i>							
16. Myslím si, že na pražskýc	ch svazích NENÍ d	dostate	ek veřejné zeleně.							

Prosím pokračujte na druhé straně dotazníku →

NEVYPLŇOVAT!

			Rozho	Nesouhlasi	Souhice	Rozhodně souhlasí	Nemohu posoudit
17. Obyvatelé by měli řídit ú	údržbu pražských svahů.						
18. Uvítal/a bych více inform	nací týkajících se vývoje p	ražských svahů.					
19. Rád/a bych spolupracov	/al/a s městskými odborníl	ky a přispěl/a svými nápady.					
20. Uvítal/a bych vylepšení	pražských svahů.						
21. Dle mého názoru jsou p	ražské svahy zanedbané.						
22. Navštěvoval/a bych praž	žské svahy častěji, kdyby l	byly vylepšeny.					
23. Pražské svahy se pyšní	krásnou scenérií (krajinou	1).					
24. Městský úřad by měl pr veřejnosti.	ažské svahy udržovat a ro	ozvíjet bez účasti					
25. Ráda bych byl/a více za týká pražských svahů.	pojen/a s aktivitami a údrž	bou, která se					
26. Městský úřad je otevřen se pražských svahů.	ý vůči mým nápadům a ob	oavám týkajících					
27. Pražské svahy jsou čast	o diskutované téma v méd	diích.					
28. Pražské svahy většinou	v mediích budí pozitivní p	ozornost.					
29. Pražské svahy mohou 1 nejdůležitejsi; 6 nedů Sportovní zařízení (např. B Volnočasové aktivity (např Kultura (např. Koncerty, festiv Příroda (např. městské zeměc Bezpečnostní opatření (na Expanze města (např. domy	ležité) ěh, cesta pro kola, skateboard, ř . Piknik, dětská hřiště, lavičky, ko aly, workshopy,) dělství, houbaření/ sběr ovoce, rú apř. osvětlení, zábradlí v blízkost	nříště,)) ůzné druhy krajiny,) i svahů skal, značky,)					
30. Pohlaví: □ Žena	□ Muž	□ Ostatní					
31. Rok narození:							
32. Jaké je Vaše současné □ Zaměstnaný □ Nezaměstnaný	zaměstnání? Student Důchodce	□ Mateřská dovolená □ Ostatní					
33. Jaký je Váš měsíční př □ < 15.000 □ 15.001 až 30.001	íjem (Kč)? □ 30.001 až 50.000 □ 50.001 až 70.000	□ >70.000					

Annex 6.5 - P values

The statistical analysis is made using IBM SPSS Statistics Data Editor v. 22. When possible Chi-square tests are conducted to derive the correlation of questionnaire data. In case Chi-square tests were not applicable a Fisher's Exact test is conducted. Table Annex X-1 below shows the question of the questionnaire that are tested, the corresponding P-value and what kind of correlation was found. The test level was $\alpha = 0.05$. All results with p < 0.05 are considered statistically significant.

Table Annex X-1: statistical data for multiple questionnaire items. P-values are significant when **<**0.05.

Question	P-value Chi-square	P-value Fisher's Exact test	Correlation
Accessibility			
Q9 & Q10	< 0.001	-	Positive correlation between people that think the hillsides are easily accessible from the outside and people that think they can move freely and easily within the area.
Q9 & Q14	< 0.001	-	Positive correlation between people that think the hillsides are easily accessible from the outside and people that like the area as it is now.
Attachment			
Q8 & Q12	0.019	-	Positive correlation between nature walk activity and feeling happy
Q9 & Q12	-	< 0.001	Positive correlation between respondents that agree that the hillsides are easily accessible and feeling happy
Q2 & Q3	0.001	-	Correlation between people that visit Libeň and visiting frequency
Q14 & Q20	0.001	-	Positive correlation between liking the hillsides as they are now and wanting to improve the hillside
Q14 & Q16	<0.001	-	Positive correlation between liking the hillsides as they are now and wanting more green public space on the hillsides
Q20 & Q22	<0.001	-	Positive correlation between wanting to improve the hillside and visiting the hillsides more often when they would be improved

Q14 & Q22	<0.001	-	Correlation between disliking the hillside as they are now and visiting the hillsides more often when they would be improved
Safety			
Q12 & Q30	0.017	-	Females and males correspond positive for feeling safe
Q21 & Q30	< 0.001	-	Disagree on negligence correlates positively to feeling safe
Q4 & Q11	0.483	0.528	Correlation between visiting the hillsides in the morning (05:00-11:00) and feeling of safety.
	0.222	0.261	Correlation between visiting the hillsides during lunch time (11:00-14:00) and feeling of safety.
	0.168	0.195	Correlation between visiting the hillsides in the afternoon (14:00-18:00) and feeling of safety.
	0.071	0.82	Correlation between visiting the hillsides in the evening (18:00-22:00) and feeling of safety.
	0.398	0.554	Correlation between visiting the hillsides in the night (22:00-05:00) and feeling of safety.

Annex 6.6 - Observation Frames

Underneath is the physical observation framework. For convenience for the synthesis report, we shortened the parts where we wrote down our observations. For the geo-locations the grid map was used.

Observer:	Geo location:	Date & time of observation:
Торіс	Description	Observations
External visibility: scope of view on the city while standing on the hill sides.	View obstruction on a 1-5 scale	
External quality: observation of the aesthetics and amount	The area of the hill that is visible green on a 1-5 scale	
of green of the hill from a distance.	Valuation of green and build cover on a 1-5	
Internal quality: observation	A 1-5 scale on how far you feel from civilization	
of the aesthetics and amount of green of the hill while on the hill.	Valuation of green and build cover on a 1-5 scale + comment section with description or photo	
Internal noise level: Measurements of loudness within the hillside areas.	Amount of noise (dB) on a 1-5 scale Source of noise?	
Regulating services: Climate regulation (air quality), water retention and purification. Erosion control.	Is there any visible water retention and/or connection to the water infrastructure. Are there any visible measures concerning erosion control.	
	Are habitats provided/protected for specific species. Is there any disturbance to this habitats/species. Is there any visible indication on supporting ecosystem services.	
<u>Check:</u> Compare maps with reality	Are there any noticeable differences between what you see and what remember from maps?	
<u>Check:</u> Hillside accessibility from outside	Can you walk on the hillside without obstructions and without trespassing (photos of obstructing elements)	

	Describe greenest route (for the people) from hillside green to outside green	
Check: What is the state of the bio-corridor(s) on the hillside	Describe the state of the bio-corridor. Attention is paid to elements that can be obstructive to the movement of animal species.	

Topic	Description	
External accessibility Define once, it is fixed. Except for the over/underutilized parking lots. (Just observe at some random moments throughout the day).	Public transport: • what type • how many stops • frequency (bus stops per hour) Parking lots: • Car parking lots (nr.) • Bicycle parking (not in nr.) • Are they over/underutilized? Roads: • What kind of roads lead to subject area? • How many routes to get there?	
Ownership This can be different than the Capital City of Prague.	Are there any signs, fences etc that indicate that there is a (private) ownership.	
Maintenance of the area	Does the area look well maintained, explain.	
Internal Accessibility	How many entrances are there to access the subject area?	
	What kind of paths are there in the subject area? (E.g. gravel, sand).	
Provisioning ecosystem services Are there any of those services in the subject area?	 Food services (vegetable gardens, etc.) Water exploitation (Wadi's, pumps, dam etc.) 	
Cultural ecosystem services Are there any of those services in the subject area? (Describe this into detail, with pictures.)	 Recreation (sports, leisure) Tourism (touristic attractions, must-see viewpoints etc.) Education (Educational signs, is it used for outside education etc.) Sense of place (What is your feeling of this place). 	

Explanation of the scale

	1	2	3	4	5
EV (1)	0-20%	20-40%	40-60%	60-80%	80%+
EQ (2)	0-20%	20-40%	40-60%	60-80%	80%+
(3)	Very unattractive	Unattractive	Neutral	Attractive	Very attractive
IQ (4)	Very close	close	Neutral	Distant	Very distant
(5)	Very unattractive	Unattractive	Neutral	Attractive	Very attractive
IN (6)	0-15 (dB)	15-30	30-45	45-60	60+

- (1): percentage of obstructed view on what otherwise would be the cityscape
- (2): percentage of observed green vs build cover: 0-20% means very little green and a lot of build cover
- (3): here we valuate not if there is <u>a lot</u> of nice green, but whether the present green and the built environment are attractive or not. For example can we see that it is a bad neighbourhood from a distance than we describe it as very unattractive. You look at a distance and you ask yourself would it be nice to walk through it?
- (4): do you have the feeling you are close to the city or do you feel outdoors. So do you see houses, fences, lots of road, skyscrapers etc. Whether this this is pleasant or unpleasant should be in the next.
- (5) evaluate the environmental attractiveness with the green cover and the built inside the hill. Describing the observed internal hillsides from different parts how they are eye catching or not. Do you feel at ease at this place in respect to its quality and do you want to return here or can't you wait to go.
- (6): dB measurements with a meter

Social observation framework

Underneath is the social observation framework. For convenience for the synthesis report, we shortened the parts where we wrote down our observations.

Observer:		Geo-location:	Date & time of observation:	
Age bin - child - teenager - adult - elderly	M/F	Composition/scope of group (family, friends, colleagues, etc)		Estimated time span of stay in slots of 15 min
Etc.				

Annex 6.7 - Table for interviews

Interview number and date	Name	Position
1 (01-06-2016)	Martin Šálek	Spokesperson of hospital Bulovka
2 (01-06-2016)	Eva Červinková	Representative of IPR
3 (01-06-2016)	Petr Kavka	Lecturer in the faculty of Civil Engineering, in Czech Technical University
4 (01-06-2016)	Zbynek Drozda	Headmaster of Základní škola Praha 8 Na Sutce
5 (02-06-2016)	Lucie Stejskalová	Representative of IPR
6 (02-06-2016)	Maria Kazmuková and Tereza Zběžková	Representative of IPR
7 (02-06-2016)	Jana Čeplová	Troja District, Environmental Protection office
8 (02-06-2016)	Sports center Na Korábě	Representative of Na Korábě
9 (02-06-2016)	Thomas Drdacky	Deputy-mayor of Troja
10 (02-06-2016)	Michal Sadil	Manager of Bobova
11 (03-06-2016)	Horakova	Allotment gardens coordinator
12 (03-06-2016)	Milan Brlík	Representative of IPR
13 (03-06-2016)	Jan Richtr	Representative of IPR
14 (03-06-2016)	Ondřej Zemánek and Jan Kadlas	Representative of IPR
15 (03-06-2016)	Štepán Špoula	Representative of IPR
16 (03-06-2016)	Jan Flegl	Representative of IPR
17 (02-06-2016)	Henry Hanson	Landscape architect professor in the North Carolina State University Prague Institute
18 (04-06-2016)	Marina and Vojtěch	Troja I allotment garden
19 (06-06-2016)	Vít Masare	City of Prague
20 (06-06-2016)	Lucie Herberová	Botanical garden

21 (06-06-2016)	Vit Céza	Councillor, Prague District 8	
22 (06-06-2016)	Štěpán Špoula	Representative of IPR	
23 (07-06-2016)	Jiří Rom	City of Prague, Environmental Protection office	
24 (07-06-2016)	Katka Kubánková	Na Ovoce apple orchard	
25 (07-06-2016)	Linda Erebai	Prague Zoo, External Relations Department	
26 (07-06-2016)	Sochorová	Vineyard in Vysočany	
27 (08-06-2016)	Rotislav Ortisal	Czech gardening association, Troja II	
28 (08-06-2016)	Lenka Burgerová	Prague 7, Urban Development	
29 (08-06-2016)	Dana Balcarova	Krocanos NGO and Councillor, Prague 9	
30 (15-06-2016)	Jan Valeška	Community Garden	
31 (07-06-2016)	Zdeněk Davídek	Councillor, Prague 9	
32 (03-06-2016)	Pavel Rosendorf	Czech Nature Conservation Union	
33 (08-06-2016)	Tomas Benes	Prague 8, Environment and Special Projects office	
34 (03-06-2016)	Eva Červinková	ProProsek NGO	
35 (06-06-2016)	Marie Janíčková and Jiří Deyl	Representative of IPR	
36 (02-06-2016)	Elderly people from the area		
37 (02-06-2016)	Local Roma People Kuchyňka		