Strategic Proposals for Sustainable Circular Water Management in Budapest

04 2022

1. Summary

The present study was conducted as part of the City Water Circles – CWC project with the aim to explore the stakeholders of the capital's water management, the nature of their cooperation and the possible ways to develop it more; to review and synthesize the innovative blue-green infrastructural solutions in Budapest; and to structure the opportunities on a Budapest and a district level and make recommendations.

In order to substantiate the recommendations, first we reviewed both the decisive legal and the current strategic environment from local to country level. During the research we conducted 23 interviews with representatives of numerous organizations related to water management to be able to synthesize the opinions of experts from different backgrounds; in addition to the synthesizing of the existing knowledge and experience our goal was to encourage and strengthen cooperation between the related stakeholders in water management. To validate the summarized results of these interviews and to further support cooperation we organized an online stakeholder event where more than 20 experts took part.

We put the results of our research in the study in several structures. In the case of the challenges, we looked at the origins of the problems and how they relate to the 5 main conditions – (1) nature-weather, (2) urban fabric, (3) legal, (4) economic and (5) social conditions – that we have defined. It is important to note that these are complex problems that are closely connected and strengthen each other. The tools offered for the challenges are put together in a way to show which are the ones that the capital can have an effect on its own, via the city management companies, by cooperating with the districts or by cooperating with or supporting NGOs.

The study provides a detailed stakeholder map where we have attempted to explore and illustrate the existing cooperation and relationships. In this chapter we also introduce the representatives of the most important interest groups the majority of whom we conducted interview with.

Then the specific intervention options are presented with an implementation toolbox, illustrating their potential with colorful examples. This section was supplemented by a collection of solutions already used in the capital while the implementation toolbox was organized in the target system previously created in the project.

The main result of our work is considered to be the synthesis and structure of water management challenges and tools as well as the overview of the exemplary intervention options and the compilation of stakeholder listing and mapping. On the other hand, we believe that the interviews conducted and the stakeholder event support professional cooperation and the utilization of a wider perspective while planning solutions to tackle water management challenges. Furthermore, this study can be used as a foundation for the just starting LIFE IN RUNOFF project where the capital is a partner.

2. The Main Challenges of Water Management

One of the main goals of the interviews conducted in the research phase of the project was to explore and learn about the challenges of water management from as many perspectives as possible. The interviews showed that this is a very complex issue that is part of a number of professions and often it goes beyond the competence of organizations directly involved in water management.

The problems identified have been structured to make them easier to see. The structure is based on the results of the interviews and the online stakeholder event.

2.1. Natural conditions

One of the main challenges in the category of natural conditions is extreme rainfall that was mentioned by almost every expert; they also added that this phenomenon will get worse due to the effects of climate change. Extreme rainfall causes problems from two directions: sudden heavy rain and periods of draught vary, and both cause unique problems.

Another outstanding problem area is flooding. We have to mention here flood protection and the measures taken to protect people and property that are getting harder to do due to more and more unpredictable phenomena and to the increased frequency of flash floods.

Another aspect of natural conditions is the situation with groundwater bases. In Budapest the biggest problem is the low and typically decreasing groundwater levels that makes the maintenance of parks and trees more difficult. An important task and obligation are the protection of drinking water. And in the case of Budapest, we have to mention the unique challenges regarding thermal water since the capital has a significant thermal water base beneath it.

Last but not least we have to mention that the districts of the city have different features and that in the case of water management the challenges don't stop at the city border since they concern the whole drainage basin.

2.2. Urban fabric

One of the central issues of the challenges in water management is the metropolitan environment. Some of these challenges relate to the density of buildings, others to the large and typically increasing proportion of paved surfaces. These conditions induce further problems such as increasing runoff, lower humidity, and the formation of heat islands. This environment establishes the challenges of maintaining urban vegetation.

Infrastructure is a given in a sense that downtown Budapest and the city in general has a mostly combined sewage system. The rainwater goes to the treatment plants along with wastewater, which leads to a number of problems during heavy rains. In suburban areas, where there is a separated sewage system,

there is a possibility to the drainage of rainwater separately, but the increasingly extreme precipitation distribution can lead to capacity problems here.

Another aspect of the metropolitan environment is the usage of clean water in every area. It is worth mentioning the difficulties associated specifically with the utilization of gray water. On one hand it is a financial question because the creation of a gray water system is very expensive – unlike changing to a more economical equipment – and it doesn't return its price only after a long time. On the other hand, its design needs an expert and using it is a community activity which means that it is hard to define responsibilities if there is a problem with the equipment.

2.3. Social conditions

The challenges regarding social conditions are diverse in both subject and stakeholders, since you have to consider the attitude of the decision makers, the experts and planners and the residents.

One of the aspects of the subject is related to knowledge and the lack of it. From the perspective of experts and planners this primarily means the difficulty of data gathering. Although experts and planners know about the innovative and alternative solutions this cannot be said about the decision makers. It is also worth mentioning at this point that often organizations that do not work in this field of expertise have to tackle challenges of water management and they do not have the effective and conscious solutions to specific problems.

Another important aspect of knowledge is approach. It is a general problem that instead of trying to keep it, residents, planners, experts, and decision makers all look at water as a problem and want to get rid of it. Lack of an integrated, holistic approach as a social condition is a common problem.

The third important aspect is the difficulties of communication that applies both in vertical and horizontal directions. In the case of water management issues, many professions should cooperate in each design process that cannot be realized without coordination and facilitation, while the cooperation desired by the parties is often hampered by bureaucratic obstacles.

In addition to these three, the unique problems of territorial design form another special aspect. It could be a challenge for planners, experts, and decision makers to see the big picture of water management and consider the whole drainage basin because of the changing responsibilities and impacts, while sometimes it is simply impossible to consider it as a whole because the problem is too complex and has too many stakeholders attached to it.

2.4. Legal conditions

On the one hand, legal conditions can be seen as instruments, as regulations can be made at the capital level, but national regulatory frameworks can also be interpreted as a given. In addition to national

regulation, it is important to mention EU regulations, which also often hinder the planting of innovative solutions.

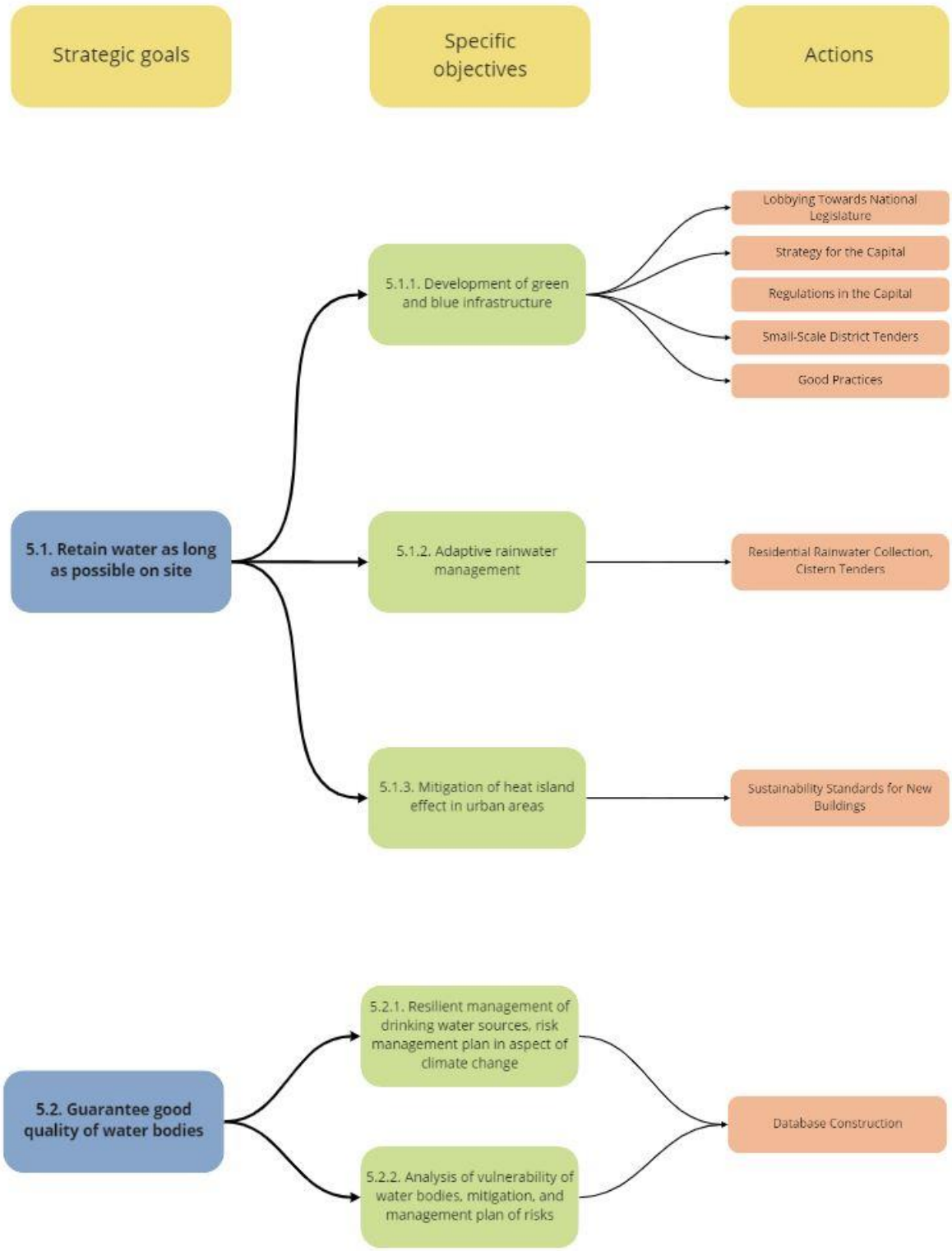
Almost without exception, our experts highlighted and identified as one of the most important problems that the rainwater system and treatment does not fall within the scope of the Water Utility Act that causes a number of challenges.

2.5. Economic conditions

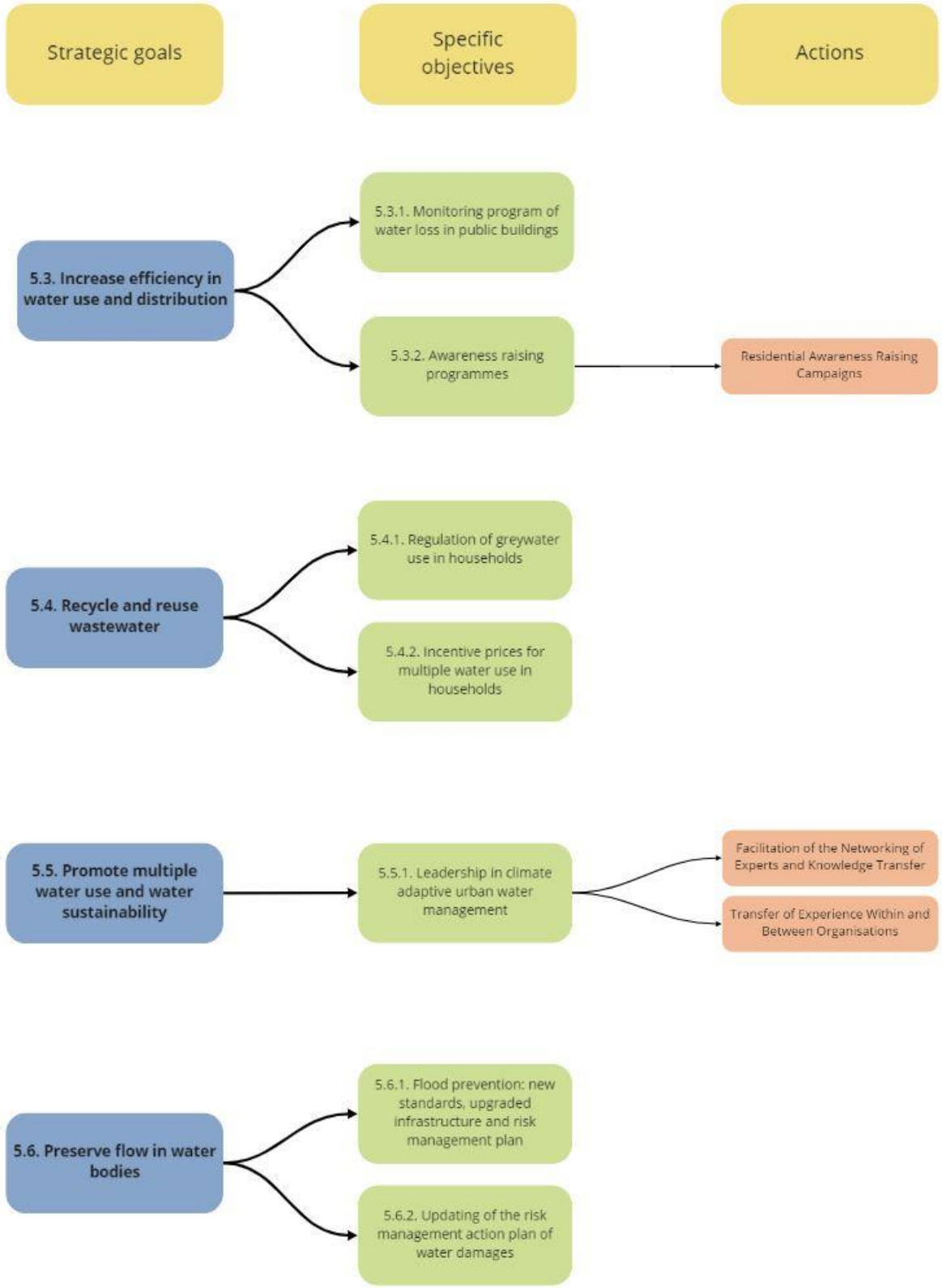
The economic milieu and the needs of economic operators also significantly determine the environment of water management. In addition to residents, the corporate sector is also a large user and a large wastewater emitter. Processes in recent years, the emergence of new industrial areas and the accelerating relocation of companies towards an agglomeration (economic agglomeration) in addition to the ever-increasing number of inhabitants attracted by this, reinforces the structural rearrangement, which poses specific challenges for the water utility network.

It can also be mentioned that the players of the corporate sector appear as customers in case of investments. The challenges previously highlighted in relation to knowledge and approach also prevail here.

3. Proposals



Strategic goals, specific objectives in the CWC project and Budapest-related actions, Source: Own graphics



Strategic goals, specific objectives in the CWC project and Budapest-related actions, Source: Own graphics

3.1. Lobbying Towards National Legislature

The capital can influence national regulation mainly through lobbying and by developing proposals in a legal task force. This proposal tool may, for example, be aimed at changing the rainwater treatment regulations that are not sufficiently defined in the Water Utility Act. We considered this tool important enough to be included in this list because the current regulatory environment was almost without exception mentioned among the challenges by our experts in the interviews, and they cannot be remedied by capital regulations alone.

In addition to the integration of rainwater treatment regulation into the Water Utility Act, a more ambitious demand was mentioned several times during the interviews, according to which a comprehensive water act would be required and the establishment of a State Secretariat that comprehensively deals with the tasks related to national water management and water utilities.

3.2. Strategy for the Capital

The capital can handle the situation within its borders comprehensively through strategy creation, thus defining the main guidelines. This can be done in the context of a specialized strategy such as the Dezső Radó Plan; or by including it in the sub-themes of the more general capital concepts, strategies, and programs. Strategy-making is a useful tool primarily because it gives space, awareness, and acceptance to important water management topics by including them and widens the perspective of various fields of expertise to the challenges while it can help with non-clear responsibilities and communication barriers.

3.3. Regulations in the Capital

The capital may also issue a regulation on its own territory to solve a water management challenge. This tool can be useful, for example, in the course of action against rainwater being illegally discharged from private residential areas into the sewage network. This seemingly simple challenge also presents a complex set of problems, which cannot be solved simply by introducing a rainwater drainage and management fee. The already relatively established soil load fee can be cited as a good example, but in the case of the rainwater drainage fee a number of complex issues have to be considered such as the acceptable rate of runoff or the appropriate amount of the fee. This measure and the problem it answers must be made visible and conscious by a residential awareness raising campaign while a tender for investment or tools can also increase support.

Another possible area is a regulation that enforces the green public procurement principles.

3.4. Small-Scale District Tenders

The capital, if it has the financial opportunity, can also launch small-scale tenders for the districts on the topic, which can help them to meet the challenges of water management. A good example is the

TÉR-KÖZ (SPACE-PUBLIC) tender that was already announced several times. this tool can mainly address the lack of resources and the resulting harmful prioritizations.

3.5. Good Practices

It can be a major asset of the capital to implement good practices in response to water management challenges on its own properties or on ones that are managed by it; this is already happening with such good examples as the renewal of the Városháza park or the creation of the grey water system at the Hétszínvirág Kindergarten in Zugló which is the district of the CWC project. These good practices can serve as an example for both the district government and private investment. The implementation of good practices is an excellent tool because, in addition to providing real practical progress, it can also play a significant role in shaping the attitude of both the decision-maker and the investor, as well as the lay residents, in promoting the opportunities that may still be considered alternative today.

3.6. Residential Rainwater Collection or Cistern Tenders

The most basic means of water retention in the metropolitan area is residential rainwater collection. Precipitation on residential paved surfaces can be gathered with cheap and simple infrastructure solutions and then it can be used to water the plants or to cool the area. Many districts of Budapest use rainwater collection tools to encourage the population to keep rainwater for future usage.

A more expensive solution is a complex rainwater collection system the essence of which is to form a long-term system with properly dimensioned, technically belonging, and fitting elements. There is not yet a district tender for the construction of a cistern, as its establishment is more costly and expertise-demanding solution.

3.7. Sustainability Standards for New Buildings

District councils also have the opportunity to take particular account of individual water management issues when issuing local regulations or designing Local Building Codes. This can be a response to new buildings, provided that the forward-looking solutions, parameters responding to each challenge are regulated. In this matter, the capital may act primarily in a coordinating, supporting role, and may assist in the coordination of regulations and in the course of its facilitator activity, it can promote and illustrate existing solutions as good practices.

It is also worth mentioning the actors of the corporate sector, who appear as customers in case of investments. The activity of corporations is especially important in relation to newly built real estate because, in contrast to existing buildings, a water-efficient investment may appear already in the planning phase, be it the design of rainwater storage or desiccation, water-saving taps and machines, or even a gray water system. This issue is currently presented as a challenge because these systems are

typically more expensive than usual during planning and construction, so it is not worth it for real estate investment companies to move in this direction.

3.8. Database Construction

It could be an effective tool for the capital to build databases for the foundation of future investments and to measure and collect data within them, while expanding and updating existing databases. The lack of data needed for planning was highlighted during the interviews and the expert workshop and it could also be a solution for the problem of data obsolescence.

The capital can bring together the available data of the districts through a data request and it can also make methodological and harmonization proposals to the districts, so that integrated databases can be used to better deal with cross-district water management problems.

Districts can, for example, collect data with smart devices from the sewage network, reservoirs and from additional surfaces (even roofs or asphalt) while assessing the rate of water drainage. And the capital can summarize, sort, and unify the results of the measurements, so the current conditions can be evaluated during future planning and investments.

The capital can carry out assets through city operations and capital companies. In addition to the aforementioned smart devices, the Budapest Sewage Works Pte Ltd. (FCSM) could help with the foundation of future planning and investments that are important for water management with runoff simulation tests and the channeling of their results. This tool can support, among others, the assessment of realistic options for the development of latency reservoirs and finding good terrain conditions. A good example for such a project is the planning of the reservoir at Szépvölgyi út.

3.9. Residential Awareness Raising Campaigns

Another important opportunity for the capital is public awareness raising, within the framework of which it can draw attention to several aspects related to sustainable water management. This can be achieved in the framework of awareness raising campaigns, tenders, or, for example, the district council may also aim to disseminate information on a wide scale by presenting the implemented good practices or by giving out educational materials.

Based on the experiences of interviews the awareness-making and educational activities are one of the most important tools, after all, many problems (e.g., water drainage instead of gathering) can be traced back to the lack of knowledge and the resulting approach that does not consider water management challenges.

Raising public awareness is also an important tool in relation to problems affecting public utilities, as some of the challenges are based on their habits and behavioral patterns. A great example for this is the “Csatorna-Robot a Zsír-szörnyek ellen” (Sewage-Robot Against Fat-Monsters) application developed by FCSM

as part of their “Mi változzunk, ne a környezet!” (We should change not the environment!) campaign, that draws attention to a problem typically caused by the population, in a playful way.

Cooperating with NGOs in this matter can be especially advantageous for the capital because the civil organizations that have a residential base can contribute to a number of tasks the city council otherwise wouldn’t have the capacity. As part of a strategic cooperation with the green NGOs of the capital, there would be an opportunity to promote awareness raising campaigns, residential tenders or to inform the public about the news in the city as well as to gather data from the public and to do research. NGOs are often able to effectively aggregate and channel the opinions and ideas of people living in a metropolitan area.

A more active presence in the online space can be a tool for closer contact with residential groups. Data service cooperation can be established with the operators of online platforms such as the Klímapanasz (Climate Complaint) page, but we can mention already existing cooperation with the Budapest Dialóg (Budapest Dialogue) or the Járókelő (Passer-By) pages. In addition, it is worth mentioning that the capital has also become increasingly active on social media in the past few years. In order to reach, inform and raise awareness among younger age groups, this can be further enhanced with a presence on Instagram.

3.10. Facilitation of the Networking of Experts and Knowledge Transfer at a National and an International Level

In addition to raising public awareness, expert networking is of paramount importance both at national and international level. For example, the opportunity for networking is available from EU operational programs and from direct Brussels tenders. The transfer of knowledge and experience at meetings can often result in completely new solutions.

The development of training programs for experts working in the capital and district municipalities, including professional trainings and study trips is a field related to the networking of experts. In addition to expanding sustainable water management approach and knowledge, these occasions may also have the opportunity to get the experts working in different offices and fields of expertise to know each other better so they can work together more smoothly.

In addition to awareness raising and educational activities carried out by the capital in its own circles, it can also apply this tool in cooperation with the districts. It can organize training courses for district experts and employees or promote public awareness through joint implementation or through tenders (such training could be the professional courses developed on the basis of Green City principles).

3.11. Transfer of Experience Within and Between Organisations

Learning within and between organizations is a major challenge and an opportunity. In the last two decades, as in other areas, implementation through projects, and thus the project approach, has become common in the field of climate protection and environmental protection. Among the many pros and cons of

this operating model, the challenge of not transferring the knowledge, experience and network gathered by a project into the next should be mentioned because this means that its results cannot multiply. The experience of individual participants in a project is difficult to transform into “organizational experience” through organizational learning. Similarly, the exchange of knowledge and experience between organizations is often disrupted, thus some parallel projects may have overlapping activities running which could be optimized by an exchange of experience.