OPERATIONALISATION STAKEHOLDER WORKSHOP

27. NOVEMBER, LJUBLJANA, SLOVENIA

LOCATION: JP VO-KA – PP 5 (HOST)

«CHALLENGES OF PROTECTING DRINKING WATER RESOURCES AND LAND USE MANAGEMENT»

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Table of content

1. Basic data of the 2nd national stakeholder workshop in Slovenia

1.1. Date and Location

The second national stakeholder workshop for PROLINE-CE project was held on November 27th 2018 at the great hall of JP Vodovod-Kanalizacija d.o.o. building in Ljubljana.

The goal of the workshop was to present the last results of the PROLINE-CE project and to discuss with stakeholders: (1) proposed BMPs for the Slovenian Pilot Action, (2) drinking water protection zones and spatial planning and (3) ecosystem and public services connected with drinking water and flood protection.

Invitation with program is attached in Annex 1.

1.2. Participants of the 2nd national stakeholder workshop in Slovenia

Invitation for the workshop was sent to all Slovenian stakeholders (see chapter 1). 42 participants took part in the workshop. Participants list is enclosed in Annex 2a. Participants were from different institutions or departments (see Annex 2b):

- 17 from governmental agencies: Slovenian Environment Agency, Water Agency, Nature protection agency, the Ministry of the Environment and Spatial Planning,6 from Public Water Utilities Ljubljana and Velike Lašče,
- 6 from Municipalities Ljubljana, Postojna, Komenda and Velike Lašče,
- 3 Universities – research institution: Biotechnical Faculty, Faculty of Natural Sciences and Engineering, Jožef Stefan International Postgraduate School,
- 2 SMEs and 3 others research institutions, dealing with water, ecology, environment and nature protection,
- 4 public experts.

The workshop was attended by 34 new stakeholders compared to the first national workshop. The novelty in the structure of the participants, according to the first workshop, is the participation of public experts, more Municipalities were represented and according to the workshop theme the Ministry of the Environment and Spatial Planning also took part with two different departments.

2. Workshop sessions

2.1. Workshop opening session

Workshop started with a welcome and an introductory speech from Director of the Waterworks sector of Ljubljana Water Utility (JP Vodovod-Kanalizacija d.o.o.), Jože Tomec (Figure 1). He emphasized the importance of such projects and cooperation, since they connect different experts, set an example for interdisciplinary cooperation and, consequently quality solutions, moreover they offer the possibility of acquiring new acquaintances and knowledge.

Figure 1: Introductory speech held by Jože Tomec, Director of the Waterworks sector of Ljubljana Water Utility (JP Vodovod-Kanalizacija d.o.o.)

The workshop continued with PROLINE-CE project presentations.

2.2. Presentation of project/PROLINE-CE objectives

First, PROLINE-CE project general presentation with emphasis on project objectives and latest results was held by Barbara Čenčur Curk, PhD (UL NTF; Figure 2). She presented how the project is organized, countries and project partners involved, how work packages are conceived and talked about the role of the participation of stakeholders within this. In conclusion all the participants were invited to final national workshop and PROLINE-CE & CAMARO-D final conference.

2.3. Presentation of Hydrogeological model of reserve, potential drinking water source Koseze

Hydrogeological model and proposal of drinking water protection zones (DWPZ) of reserve, potential drinking water source Koseze (Slovenian pilot action area) were next presented by Branka Bračič Železnik, MSc (JP VO-KA; Figure 3). Decree on Drinking Water Supply in Slovenia says that each public water supply system must have an independent reserve capture area from which drinking water can be provided in urgent cases. Within this the existing land use and

potential conflicts/problems when planning new land use - reserve drinking water source with DWPZ were presented. Numerical groundwater flow model was made for low and high hydrological condition with two years measurements, calibration of the model was made to determine optimal locations of wells and according to this the correction of boundaries of drinking water protection zones. Step that follows is to make additional research of the area (new observation wells) and to initiate a decree on protection of the reserve drinking water source.

Figure 2: PROLINE-CE objectives presentation by Barbara Čenčur Curk, PhD (UL-NTF)

Figure 3: Hydrogeological model of reserve drinking water source presented by Branka Bračič Železnik, MSc (JP VO-KA)

2.4. Presentation of Spatial plan of the Municipality of Ljubljana and it's restrictions

Spatial plan for the Municipality of Ljubljana (MOL) was presented by Mr. Miha Zorn (MOL; Figure 4). He explained how the plan was developing in the past, how the past extreme weather events/conditions have influenced its development and which challenges are showing in the future. The morphology of the City of Ljubljana and its preserved green areas, which stretch into the city, is actually the result of watercourses and drinking water sources protection. At certain intervals, a spatial act goes in the acceptance of amendments and additions based on resident's initiatives and comments, preliminary guidelines, changes in legal regulations and internal conclusions. On the area of the reserve drinking water source and it's DWPZs, today's land use is predominantly forest, green areas and agricultural, moreover part of the area is protected as Nature park Tivoli, Rožnik and Šiškenski hrib. However, on the western part of the proposed DWPZs a National spatial plan for the expansion of the motorway and the railway is envisaged.

Figure 4: Spatial planning and its restrictions regarding presented by Miha Zorn (MoL)

2.5. Presentation of Glinščica hydrological and hydraulic model

Primož Banovec, PhD (UL FGG; Figure 5) presented Hydrological and hydraulic model of Glinščica in which climate change scenarios were also taken into consideration. Three outputs were demonstrated, the existing situation, the optimistic scenario of climate change and pessimistic scenario of climate change. It was concluded that existing dry retention basin for flood protection is needed and that additional reservations for predicted climate change and consequently higher discharges are necessary.

Figure 5: Glinščica hydrological and hydraulic model presentation by Primož Banovec, PhD (UL-FGG)

2.6. Presentation of Ecosystem services

Ecosystem services (ESS) were presented by Špela Železnikar (UL BF; Figure 6). ESS are benefits that people obtain from ecosystems. Services provided by ecosystems contribute directly or indirectly to human well-being and maintain processes, which enable us to survive. In the last decade, research in this area increased as the possibility of integrating ESS into decision-making processes are studied. There are four categories of ESS: provisioning, regulating, cultural and supporting services. Supporting services are regarded as the basis for the services of the other three categories. One of the importance's of ESS is the possibility of integrating gathered information into enhancement of sustainable decision-making.

2.7. Presentation of Public services

Presentation of public services was held by Primož Banovec PhD (UL FGG; Figure 7). One of the three key tasks of each government structure is the establishment of public services. The characteristics of public services are absence of rival use, they are not exclusive, and they are often difficult to charge directly. It is a concept of transfer of/spill over benefits to society as a whole. The main aim is to accomplish maximizing of aggregated net social benefits.

Figure 6: Ecosystem services presented by Špela Železnikar (UL-BF)

Figure 7: Public services presented by Primož Banovec, PhD (UL-FGG)

2.8. Interactive stakeholder dialogue ("Carousel discussion")

The second part of the workshop was organized as carousel discussion about three topics within three groups. The aim of the carousel discussion was to acquire feedback from participants/stakeholders about:

(1) proposed BMPs for the Slovenian Pilot Action,

(2) drinking water protection zones and spatial planning of new drinking water source and

(3) ecosystem and public services connected with drinking water and flood protection.

Emphasis was given to themes important for the stakeholders in Slovenia.

The stakeholders were divided into three groups according to their professional background, working experiences and institution, so that each group consisted of various experts. Each topic had a moderator from the Slovenian PROLINE-CE project team:

TOPIC 1: Discussion of the proposed measures with stakeholders, led by Barbara Čenčur Curk, PhD (UL-NTF) and co-lead by Anja Torkar, PhD (UL-NTF); see Figure 8;

TOPIC 2: Planning the reserve drinking water source and drinking water protection zones, led by Branka Bračič Železnik, MSc (JP VO-KA) and co-lead by Urška Valenčič (UL-NTF); see Figure 9;

TOPIC 3: Ecosystems and public services, led by Primož Banovec, PhD (UL-FGG) and co-lead by Špela Železnikar (UL-BF); see Figure 10.

At the end a resume/summary of all discussion was made by group moderators (Figures 11 -13). A comprehensive report about the outcomes of the workshop was prepared (see Chapter 4).

Figure 8: Discussion of topic 1, led by Barbara Čenčur Curk, PhD (UL-NTF) and co-lead by Anja Torkar, PhD (UL-NTF)

Figure 9: Discussion of topic 2, led by Branka Bračič Železnik, MSc (JP VO-KA) and co-lead by Urška Valenčič (UL-NTF)

Figure 10: Discussion of topic 3, led by Primož Banovec, PhD (UL-FGG) and co-lead by Špela Železnikar (UL-BF)

Figure 11: Resume of topic 1, presented by topic 1 moderator Barbara Čenčur Curk, PhD (UL-NTF)

Figure 12: Resume of topic 2, presented by topic 2 moderator Branka Bračič Železnik, MSc (JP VO-KA)

Figure 13: Resume of topic 3, presented by topic 3 moderator Primož Banovec, PhD (UL-FGG)

2.8.1. TOPIC 1: Discussion of the proposed measures with stakeholders

For the workshop participants, we prepared a table with the 16 most important best management practices (BMPs) / measures and divided them into four sections: good practices in agriculture, measures to reduce floods, quality and quantity measures for drinking water and protected areas. The participants (31) selected 5 to 10 most important measures and good practices and classified them according to their judgment. Most participants selected up to 7 measures and good practices. The participants most often selected the measure "Adapting the land use in the flood zone". Most often, the measure "Restriction of fertilizers and manure on the DWPZ" was put in the first place.

Opinions, ideas, problems and additional measures and good practices of all stakeholders in the workshop are summarized in the following six chapters: (1) water protection areas, (2) awareness raising and education, (3) inspection, (4) agriculture, (5) monitoring and (6) floods.

In all three carousel groups, we talked about the general themes and the perception of the environment at the state level, namely that we need a single concept of social development that integrates the environment and integrates the various policies and ministries. The state must establish a hierarchy that the environment represents a priority and is in the first place, not the policy. The environment must be protected at the national level. The connection between various institutions such as the Ministry of the Environment and Spatial Planning (MOP), the Slovenian Water Agency (DRSV), the Slovenian Environment Agency (ARSO), etc., is very important, which is currently not functioning. The cooperation of these institutions should then form a policy. Long-term preventive measures, such as proper spatial planning and education and awareness at all levels, are very important. Greater importance should be placed on ecological modernization, which is a higher form of sustainable development. Ecosystem services should also be evaluated.

The participants pointed out that measures and good practices are not equivalent to each other, since one is a concept, while other measures are systemic or technical. Individuals pointed out two other problems: household septic tanks represent a burden on utility companies, and that many people themselves are exhausting the contents and releasing it into the environment, and that Ljubljana's Zoo has problems with the amount of water and needs additional water.

Discussion of BMPs is summarized in six thematic groups:

1) Drinking water protection zones (DWPZ)

Water sources for drinking water are protected in Slovenia by the Decree on Water Protection Area for each aquifer, where water protection areas (DWPZs) are defined, as well as prohibitions, restrictions and measures. The planners must therefore take into account all restrictions on the DWPZ. The DWPZ decrees are adopted too slowly (13 Regulations have been adopted since 2004) and should be speeded up, because in the meantime some data are outdated and are no longer accurate. According to participants, compensations for DWPZ are too low. Subsidies should be so high that it would stimulate farmers to organic farming. There should be no compromises on the DWPZ. There should also be green areas in the form of a meadow and not a forest in the inner DWPZ. Where is possible the inner DWPZ would be purchased by the municipality. The inner and middle DWPZ need to limit fertilization and adapt land use to VVO or even ban the use of fertilizers and manure. When setting limits and prohibitions, an integrated approach is needed at several levels. Measures should be stricter, which can then be

mitigated by coordinating. Also, pumping from wells should be controlled, as excessive pumping can also lead to water contamination in the well. Similarly, the construction of sewage systems on the DWPZ should be more closely monitored. The problem is also the salting of roads in the DWPZ.

2) Awareness raising and education

A national hierarchy of values is needed, which must be present in all policy organs. Existing rules must be respected, which can be achieved through certain systematic solutions. Measures should be separated according to how the environment is positioned, whether we adapt to the environment and implement prevention to protect it, or the environment is adapted to society and we perform curative behaviour in terms of technological processes. The goal must be that people living in the same area can identify and internalize joint efforts and recognize them as a public common good. Awareness and education is necessary and should be carried out by the professions, for example, hydrogeologists, water utilities, investor and local community. Awareness-raising and education must take place at all levels, and the involvement of stakeholders is crucial. People need to provide good, quality data and thus raise awareness of the importance of protecting water resources for drinking water.

3) Inspection

In Slovenia we have good environmental legislation, but it is noted that the problem is an ineffective inspection and a violation of legislation, which leads to pollution of the environment. The inspection in the field is insufficient. The operation of the inspection services should be strengthened, and the number of inspectors should be increased. Problems are also within the competence of the inspection, which requires systemic changes. The system needs to set up rules for conducting inspections, as there are quite a few problems appearing.

4) Agriculture

The agricultural policy must be regulated. There is already need for curative measures in agriculture. Farmers should be informed through the Agricultural Advisory Service, which is an example of good practice in Ljubljana. There are still conflicts between water conservation and agriculture. However, it should be emphasized that agriculture is not the only and the main pollutant of water. Contaminants are also roads, industry and, for example, artificial snow production, e.g. for the Zlata Lisica skiing competition, an enormous amount of artificial snow is made every year, which then melts in the area where downstream is recharge and water capture area. The negative pressures of bad agricultural practice have already been detected. Organic farming is superior standard and should not be included in the regulation because additional resources are needed. Nevertheless, organic farming can be marketed, so it could increase its share in the DWPZ. It is proposed to raise subsidies to stimulate nature friendly farming. The problem is the inadequate slurry storage space and the spilling of the slurry at an inappropriate time and quantity. Inadequate irrigation can lead to intensive farming and, consequently, to greater water pollution.

5) Monitoring

Drinking water monitoring is very important and should not be self-intended. Monitoring shows us the status of the waters, which is then followed by the measures or preventions. The problems are small water sources, where sampling is not frequent enough and, consequently, pollution can be ignored. Monitoring of drinking water should be publicly available. In addition

to quality monitoring, quantitative monitoring (groundwater level and water losses) should also be carried out. Monitoring could be upgraded by analysing the stable isotope composition of nitrate and carbon. Nitrate is found in water from two sources, from sewage and agriculture. By analysing the isotope composition of nitrate, we could determine where the source of the pollution is coming from, but the problem is in the availability of the analysis, because the price is very high. With the stable isotopic composition of carbon, they would get an insight into the entire carbon cycle, into all the disintegrating carbon products, but the current concentrations of it are too low and the interpretation of such analytical results may be controversial.

6) Floods

All participants agreed that water should be given space. It is also important to regularly clean watercourses, which is not implemented and present a problem, as there is a conflict of interests in cleaning watercourses. In flood zones, construction should be prohibited, or the land use in such areas should be adapted, for example, there are insured buildings that are illegally constructed, and the question arises who controls that at all. Also, ploughing to the watercourse is a problem because unwanted erosion occurs. Spatial planning must be integral and out of floodplains. In the floodplains, the sewage system is usually insufficiently dimensioned. Water and coastal lands should be bought back and regulate their legal regime. Coastal land should be regulated to have vegetation or protective forests on them, since some coastal land has a problem of illegal construction. Floods represent a conflict of interest; there are problems with owners in maintaining watercourses, in the supervision itself and, last but not least, with financial resources. One of the best practices was highlighted, namely the rehabilitation of the Water utility Brest, where the wells were equipped with a special shut-off system from the system, detecting the invasion of water into the well.

2.8.2. TOPIC 2: Planning the reserve drinking water source and drinking water protection zones

The discussion in this group was based on the following starting points:

1. How the drinking water protection areas affect individuals - stakeholders living or working within these areas?
    a. What do restrictions and prohibitions that come with each water protection zone mean?
    b. Are the given restrictions and prohibitions sufficient? Is there too many restrictions and prohibitions? What are the detected weaknesses?
    c. What needs to be changed, improved?
    d. Do we have enough information about what it means to live or work within water protection zones? Are we sufficiently educated why water protection zones have been established and how do our activities and actions affect the environment and water resources?
2. Spatial plan is the basis which directs development of a city
    a. Do residents know the municipal spatial plan?
    b. How much are they informed about the municipal spatial plan?
    c. How much and how is the public and the experts involved in the process of altering and adopting the municipal spatial plan?
    d. What are the weaknesses in the procedures for altering and adopting the municipal spatial plan? What could be improved?

3. Is it possible to include a new water source in the existing land use?
    a. How much and what are we willing to give up for the good of drinking water?

In individual groups we discussed drinking water protection zones and their role in spatial processes and uses, possibilities and challenges of placing/planning a new water source in the existing land use, current Spatial Plan of Municipality of Ljubljana, how it was formed, how past extreme weather events have influenced its development and what challenges it seems to be facing in the future.

In the discussions we reached the following conclusions and we have recorded the following thoughts and initiatives:

(1) Drinking Water Protection Zones (DWPZ)

- DWPZs are protecting water resources and environment due to industrialization and other land uses or processes which affect the quality and quantity of water.
- The regulations on the protection of drinking water sources have numerous prohibitions and restrictions - the participants believe that there are not too many of them. Priority should always be human health which is also conditioned by healthy drinking water.
- The problem of insufficient inspection control and authorization was highlighted, as well as the question why the inspection service never uses the power of expropriation of persons who are continuously failing to comply with regulations.
- Participants emphasized the importance of education and awareness. We should all contribute towards clean water sources and healthy drinking water. It is necessary to establish the overall concept of education in this field.
- In one of the groups they pointed out that even with education we do not always achieve the right effect and that internal decision is crucial for changing people's behaviour and action.
- Some of the participants think that people react most effectively if the motivation is financial stimulation or on the other hand, a fine.
- Practice shows that people are mostly informed about restrictions and prohibitions within DWPZs in reference to the construction or renovation of buildings but are not aware (or not enough) of how to manage gardens, agricultural land and forests within DWPZs. The proposal was to present the content about behaviour and life within DWPZs in municipal newsletters, leaflets, school curricula, in addition to the news broadcast on national television or even on bills for drinking water supply. The participants identified the JP VODOVOD-KANALIZACIJA d.o.o. (Ljubljana Water Utility) as an important part in education (because they are more in contact with the inhabitants than other institutions, as all inhabitants are drinking water consumers).
- An observation was made to adjust the size of Drinking Water Protection Zones according to consumption or pumped quantities.
- Continuous education at local level and within the agricultural education services is very important.
- There is not enough education provided for those living and working within DWPZ area. Education with an everyday language is necessary to help people change their way of thinking. They are not only farmers who leave a footprint of their activities on the quality of the groundwater, but also other activities (industry, transport, crafts, gardeners ...).
- Special emphasis should be given to education of children, as it has special power at age 5 and 6. It is vital that they comprehend the natural processes.

- Because of restrictions and losses of income on inner areas of DWPZs JP VODOVOD-KANALIZACIJA d.o.o. (Ljubljana Water Utility) pays compensations, but it does not have the authority to monitor whether farmers are obeying the restrictions and to take samples on their land. Amendment to the legislation that governs this area is necessary.
- It was highlighted that in Slovenia, there is a problem of excessive jurisdiction of local authorities and mayors who, with inadequate planning of land use, can worsen the situation on the area of DWPZs.
- Too many people in Slovenia are perceiving quality drinking water and its accessibility at all times for self-evident public good.
- The municipal spatial plan never shows how certain amendments and additions are affecting the net social benefits.
- We have an implementation deficit of applicable legislation and regulations.
- How to change environmentally unacceptable actions of individuals, companies ...? Suggestions: by force (inspection control), rewarding on the principle of carrot and stick, achieving changes in people's internal perception.

(2) Spatial Plan of Municipality of Ljubljana

- Municipality of Ljubljana, suggests that the existing settlement - urban area within the proposed DWPZ is not regulated like an exception with the Spatial plan decree (in written) but to appropriately reduce the areas of DWPZ.
- Participants of the workshop from the Water Directorate point out that the protection of water resources is an advantage in Slovenian legislation.
- One way of protecting water resources and controlling land use and activities on DWPZs is municipal spatial plan, however it should be complemented by good practices - organic farming, the establishment of a market with an up-to-date forecast of supply and demand that would enable farmers to plan the crop easier and regulate the price.
- In Slovenia the problem of legalizing illegal construction is widely recognized.
- It was pointed out that people should be encouraged to take an active part in the formation of the municipal spatial plan.

(3) Planning of a new reserve water source in the existing land use

- The participant from Municipality of Ljubljana says that the adaptation to the space or to social needs is a constant process, furthermore the consideration and planning of important activities that are a social benefit, like the supply of drinking water and a reserve water source, have an additional, special weight.
- Drinking water in Ljubljana is not technologically processed, which is a great value. In order to keep it this way, we need to make sure for proper land use planning. Priority should be given to land uses which are a social benefit.
- The deficiencies within the proposed DWPZs of new reserve water source which come with the existing urban area should be compensated by establishing appropriate technological, sanitary processes (sewer arrangement).
- The protection of a new water source and the establishment of the DWPZs is the state domain, the role of the local community is the regulation of the sewer.
- The role of the state is also to protect existentially important things/elements.

Some general findings and thoughts that came up during the conversation with the workshop participants:

- It is necessary to strategically define how the drinking water supply will be carried out in Slovenia in the future. There is a growing trend in the establishment of private water

resources, many people want to have their own water source; the lack of water protection zones or any kind of protection is a big problem here.
- Common agricultural policy is being prepared, and the role of the environment should be emphasized, more environmental content should be included in Pillar 1.
- It is necessary to establish the financing of " green " agriculture. Organic farming without the use of plant protection products and artificial fertilizers has a smaller harvest, furthermore products are more expensive. Many people are still buying cheaper vegetables in large supermarkets (either because they do not recognize the meaning of food origin and quality, either because they cannot afford to pay for quality?).
- Tax policy should be oriented towards praise and financial stimulation of those who contribute to social well-being (green farming technologies, etc.).

2.8.3. TOPIC 3: Ecosystems and public services

In the third topic, we discussed ecosystem and public services. The definition of both topics and a shorter interpretation of the concept of ecosystem and public services were presented to the participants. We then asked them to tell, if they had ever heard or dealt with the chosen topics, both in professional or private life. Later, participants were asked to define and prioritize ecosystem services in our Pilot Action (PA) at the Glinščica river basin. We also talked about how the ecosystem services defined in our PA should be evaluated and who should manage and care for them.

(1) Identification of ecosystem services

Provisioning ecosystem services: Participants identified food, water (clean water), genetic resources and various energy resources that are offered by ecosystems around the PA of Glinščica among the most important services of this group.

Supporting ecosystem services: Participants in this group, identified services that enable the process of photosynthesis, primary production, flow of nutrients and water in an ecosystem. They also recognized the impact of this group's services on the degree of biodiversity of a certain area, and the impact of services on the self-cleaning ability of water and the decomposition of organic matter.

Regulating ecosystem services: Among these services participants identified influence on climate (microclimate), on pollination, influence on the ability to cool the atmosphere, influence the retention of excess water and have effect on the prevention of erosion and floods. Participants also recognized various geological characteristic and the self-cleaning ability of an ecosystem, which are facilitated by various regulating ecosystem services.

Cultural ecosystem services: Among cultural services, the participants included the possibility of recreation and various forms of tourism that ecosystems enable us. They highlighted the educational and aesthetic function of space, which depends on the set of ecosystem services of an ecosystem. Among the forms of recreation, the possibilities of recreational fishing and different sports/walking activities of the ecosystems surrounding our test area were emphasized.

In all workshop groups there were experts that represented different fields of work, who have an impact on water management or land use, therefore the level of general previous knowledge (prior to the workshop) with the concept of ecosystem services was about 50%. On the other

hand, relatively few participants were thoroughly acquainted with the purpose of the concept of ecosystem services, its advantages, disadvantages and restrictions.

With a relatively balanced identification of ecosystem services on the Glinščica river catchment area, it was possible to conclude that Cultural ecosystem services stand out remarkably, since the role of this land use as a strong recreational area on the edge of the urbanized area of Ljubljana is very important.

Discussing the different views on ecosystem services also discussed the economic or financial aspects of ecosystem services. In particular, individuals who had previously been in contact with the concept of ecosystem services were aware of the challenges associated with the economic and financial aspects of ecosystem services. In the course of group discussions, the view was expressed that the concept of actual economic or financial value and transactions related to ecosystem services is very demanding and it is very difficult, if not impossible, to systematically enforce it.

In some groups, a discussion on the economic aspects of ecosystem services has developed, but it was recognized in the discussion that the very concept of economics of ecosystem services is rather incomplete, as the payment theory for ecosystem services does not have a consistent framework.

Who could be a caretaker or manager of ecosystem services (the institutional arrangement of the area)?

Among the ideas and views on who should manage and care for the ecosystem services of an area, a lively debate has developed between the groups. The proposals were for ecosystem services to be taken care of by the state or the community and by its interested individuals, who have to be adequately educated. There was also an idea of establishing the "Ecosystem Services Agency", which would cover the various areas of activity to which ecosystem services are linked (forestry, water management and water management, protected areas and various agricultural areas). The agency would combine the interests of the general public and various stakeholders and effectively manage the land use and its ecosystem services, take care of legislative and spatial arrangements.

Through the idea of establishing new institutions, which would be responsible for ecosystem services, the debate leaded to the question of why we have existing institutions (ministries, agencies, institutions, supervisory authorities, etc.). The participants came to the conclusion that the existing institutions should better integrate the concept of ecosystem services into their processes, as the establishment of new institutions would probably not be productive.

(2) Challenges of relations between ecosystem and public services

Most of the participants understood ecosystem services as kind of "services" that the ecosystem offers for our well-being, but they do not have to pay for them, because they appear where ecosystems are.

On the other hand, public services are paid, they arise where there is a public interest and usually have a defined standard of service provision.

Together we have come to the biggest problem of the concept of ecosystem services and the demarcation of ecosystem and public services. The problem arises in the monetization or economic evaluation of ecosystem services, which is often highly subjective, since the common

criteria is the human well-being. Challenges would be even greater if the monetization defined by the actual financial transactions were upgraded.

(3) Conclusions

The participants generally noted that education on the theory of ecosystem services, which was received within the PROLINE-CE stakeholder workshop, was extremely useful and expressed the desire and the need for improved dissemination of such content.

One of the important conclusions was that people obviously drifted away from nature and its significance for our existence. Moreover, conclusions showed that we would like to interpret the role of the very nature (environment, ecosystem) itself in such a way that it performs ecosystem services for us. It was found that actual conceptual comparability can serve as an aid to interpretation, but the unification of the two concepts is probably not possible in an operational way.

The proper relationship towards the environment with a full understanding of the importance of the environment itself in the widest sense for us is an area that is addressed by many concepts. The concept of ecosystem services may be advanced in this area and it allows for new insights, but we must have in mind that it is, however, only a simple concept that addresses the complexity of our multifaceted interaction with the environment.

3. Main Results/Feedback

3.1. Impact and benefits for the stakeholders

There was a great interest for the workshop, since we had 51 registered participants (excluding Slovenian project team with 8 registered participants); finally 42 participants took part in the workshop. Obviously, workshop topics were very up-to-date:

- BMPs for drinking water protection,
- drinking water protection zones and spatial planning of new drinking water source and
- ecosystem and public services connected with drinking water and flood protection.

Participants of the workshop came from different institutions: governmental agencies, municipalities, water supply companies, universities and research institutions, SMEs and there were also some individuals – public (master students).

Participants were interested in PROLINE-CE presentations and carousel discussion topics. Carousel discussions in smaller groups are very good, because stakeholders are debating in a small group and the participants are more willing and motivated to cooperate creatively; therefore we can evaluate this workshop as very positive experiences both for Slovenian PROLINE-CE team and stakeholders.

Participants gained new knowledge about the PROLINE-CE project results and relevant topics. Moreover, small group discussions influenced on attitude to these topics, both for stakeholders, as well as for PROLINE-CE team, since each stakeholder has his/her own experience, which was shared among all.

Such workshops with working groups contribute to establishment of more personal relations among stakeholders and foster better co-operation.

3.2. Transferability to other stakeholders and territories

Outcomes from the PROLINE-CE project on PA level are interesting also for stakeholders in other regions of Slovenia (e.g. municipalities, drinking water suppliers).

3.3. Lessons learnt

Discussions among stakeholders from different institution levels (national – local) and different education (natural sciences – spatial planning – social sciences) are very important, therefore we have to continue to have such intensive workshops with stakeholders in order to implement proposed BMPs.

ANNEX 1

Invitation

Operalisation stakeholder workshop in SLOVENIA

Date: 27.11.2018

Location: JP Vodovod-Kanalizacija d.o.o., Ljubljana

VABILO

2. nacionalna delavnica za deležnike

"Izzivi varovanja virov pitne vode in upravljanja s prostorom"

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torek, 27. november 2018, ob 9.00 uri

v veliki sejni dvorani JP Vodovod-Kanalizacija d.o.o.

Vodovodna cesta 90, 1000 Ljubljana

JP Vodovod-Kanalizacija d.o.o. in Univerza v Ljubljani (Naravoslovnotehniška fakulteta in Fakulteta za gradbeništvo in geodezijo) vas vabita na 2. nacionalno delavnico transnacionalnega projekta PROLINE-CE. Cilj projekta je priprava smernic v zvezi z učinkovito zaščito virov pitne vode. Ta namen bo dosežen skozi razvoj ukrepov za učinkovito upravljanje rabe prostora, katerih cilj je varovanje vodnih virov pitne vode, kot tudi zmanjšanje vplivov poplav in suš v skladu z izzivi podnebnih sprememb.

Cilji delavnice so:

- predstaviti zadnje rezultate projekta PROLINE-CE in
- ugotoviti vaše izzive in možna navzkrižja pri vsakodnevnem delu v zvezi z varovanjem virov pitne vode in upravljanjem prostora ter varstva pred poplavami.

Vljudno vabljeni,

mag. Branka Bračič Železnik	dr. Barbara Cencur Curk	dr. Primož Banovec
JP VO-KA	UL NTF	UL FGG

Udeležbo na delavnici potrdite na: **proline_ce@geo.ntf.uni-lj.si** do **22.11.2018**

http://www.interreg-central.eu/PROLINE-CE

Program:

8:45	Registracija in kava
9:00	Otvoritev delavnice in predstavitev ciljev projekta PROLINE-CE (*dr. B. Čenčur Curk, UL NTF*)
9:15	Hidrološki in hidravlični model Glinščice (*dr. P. Banovec, UL FGG*)
9:45	Hidrogeološki model rezervnega vodnega vira Koseze (*mag. B. Bračič Železnik, JP VO-KA*)
10:15	Ekosistemske storitve (Š. *Železnikar, UL BF*) in Javne storitve (*dr. P. Banovec, UL FGG*)
11:00	Prostorsko načrtovanje z upoštevanjem omejitev (*dr. Liljana Jankovič Grobelšek in Miha Zorn, MOL*)
11:30	Odmor za kavo
12:00	Delavnica: → Diskusija predlaganih ukrepov z deležniki → Umeščanje rezervnega vodnega vira v prostor → Ekosistemske in javne storitve
13:30	Povzetki delavnice in zaključek
14:00	Pogostitev

ANNEX 2a

Participant's list

Operalisation stakeholder workshop in SLOVENIA

Date: 27.11.2018

Location: JP Vodovod-Kanalizacija d.o.o., Ljubljana

PROLINE-CE 2. nacionalna delavnica za deležnike - Lista prisotnosti

JP Vodovod-Kanalizacija d.o.o.
Ljubljana, 27. november 2018

Zap.št.	Priimek	Ime	Podjetje	Podpis
1	Bahor	Maja	Inštitut za ekologijo	
2	Banovec	Primož	Univerza v Ljubljani, FGG	
3	Batkovič	Tanja	Študentka Mednarodne podiplomske šole Jožef Štefan	
4	Belaj	Marko	Vodokomunalni sistemi d.o.o.	
5	Bračič Železnik	Branka	JP Vodovod-Kanalizacija d.o.o.	
6	Cerar	Janez	Direkcija RS za vode, Oddelek za varstvo in rabo voda	
7	Cilenšek	Ajda	Univerza v Ljubljani, FGG	
8	Čenčur Curk	Barbara	Univerza v Ljubljani, NTF	
9	Čermelj	Svetlana	Mestna uprava, Oddelek za varstvo okolja	
10	Draksler	Andrej	Strokovna javnost	
11	Flis	Lara	Ministrstvo za okolje in prostor, Direktorat za vode in investicije	
12	Frantar	Peter	Agencija RS za okolje	
~~13~~	Gacin	Marina	Agencija RS za okolje, Sektor za kemijsko stanje voda	
14	Glavan	Matjaž	Univerza v Ljubljani,BF	
15	Gorjup	Renata	Ministrstvo za okolje in prostor, Direktorat za prostor, graditev in stanovanja	
16	Grabar	Greta	JP Vodovod-Kanalizacija d.o.o., Razvojna služba	
17	Gregorin	Špela	Mestna občina Ljubljana	
18	Grošelj	Alja	Zavod RS za varstvo narave	
19	Gspan	Marko	JP Vodovod-Kanalizacija d.o.o., Razvojna služba	

PROLINE-CE 2. nacionalna delavnica za deležnike - Lista prisotnosti

JP Vodovod-Kanalizacija d.o.o.
Ljubljana, 27. november 2018

Zap.št.	Priimek	Ime	Podjetje	Podpis
20	Hiti	Tadej	Agencija RS za okolje	
21	Jamnik	Brigita	JP Vodovod-Kanalizacija d.o.o., Razvojna služba	
22	Jankovič Grobelšek	Liljana	Mestna občina Ljubljana, Oddelek za prostorske planske akte	
23	Korošec	Maja	Občina Postojna	
24	Kovačič	Tadej	Ministrstvo za okolje in prostor, Direktorat za vode in investicije	
25	Kramarič Zidar	Vlasta	JP Vodovod-Kanalizacija d.o.o., Razvojna služba	
26	Kranjc	Stojan	Direkcija RS za vode	
27	Lukek	Miha	Hidrotehnik Vodnogospodarsko podjetje d.d.	
28	Lukšič	Andrej	Inštitut za ekologijo	
29	Meljo	Jana	Direkcija RS za vode, Oddelek za varstvo in rabo voda	
30	Mihelič	Barbara	ZOO	
31	Mihorko	Polona	Agencija RS za okolje, Sektor za kemijsko stanje voda	
32	Nagode	Klara	Študentka	
33	Oven	Irena	Ministrstvo za okolje in prostor, Direktorat za vode in investicije	
34	Papež	Jože	Hidrotehnik Vodnogospodarsko podjetje d.d.	
35	Pavlič	Urška	Agencija RS za okolje	
36	Pintar	Marina	Univerza v Ljubljani,BF	
37	Podbrežnik	Aleš	Zavod RS za varstvo narave	
38	Potočnik	Marjan	Občina Komenda	

PROLINE-CE 2. nacionalna delavnica za deležnike - Lista prisotnosti

JP Vodovod-Kanalizacija d.o.o.
Ljubljana, 27. november 2018

Zap.št.	Priimek	Ime	Podjetje	Podpis
39	Rejc	Urban	Strokovna javnost	
40	Savšek	Boštjan	Ministrstvo za okolje in prostor, Direktorat za vode in investicije	
41	Souvent	Petra	Agencija RS za okolje	
42	Strgar	Ana	Strokovna javnost	
43	Šorli	Maja	JP Vodovod-Kanalizacija d.o.o., Razvojna služba	
44	Šparl	Luka	Snaga Ljubljana, Krajinski park Tivoli, Rožnik in Šišenski hrib	
45	Torkar	Anja	Univerza v Ljubljani, NTF	
46	Ulaga	Florjana	Agencija RS za okolje	
47	Vahtar	Marta	ICRO - Inštitut za celostni razvoj in okolje	
48	Valenčič	Urška	Univerza v Ljubljani, NTF	
49	Verbič	Darja	Direkcija RS za vode	
50	~~Viršek~~ MARIJA IVAVC	~~Roman~~ CAMPA	Občina Velike Lašče	
51	Volker	Kaja	Direkcija RS za vode	
52	Vreča	Polona	Institut "Jožef Stefan"	
53	Zorn	Miha	Mestna občina Ljubljana, Oddelek za prostorske planske akte	
~~54~~	Zupan	Martina	GWP Slovenija	
55	Železnikar	Špela	Univerza v Ljubljani,BF	
56	Žerjav	Andreja	Ministrstvo za okolje in prostor, Direktorat za vode in investicije	
57	Žmuc	Tomaž	ZOO	
58	Žvab Rožič	Petra	Univerza v Ljubljani, NTF	

PROLINE-CE 2. nacionalna delavnica za deležnike - Lista prisotnosti

JP Vodovod-Kanalizacija d.o.o.
Ljubljana, 27. november 2018

Zap.št.	Priimek	Ime	Podjetje	Podpis
59	MURŠEC	METKA	MOP DPKS	
60	TOMEC	JOŽE	VP VO-KA	
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ANNEX 2b

Participant's institutions - stakeholder list

Operalisation stakeholder workshop in SLOVENIA

Date: 27.11.2018

Location: JP Vodovod-Kanalizacija d.o.o., Ljubljana

Institution	Department	Type of institution	Participant name 2nd National stakeholder workshop
Agencija RS za okolje	Sektor za analize podnebja in vodnega kroga	Governmental - Agency	Peter Frantar
			Pavlič Urška
			Petra Souvent
	Urad za stanje okolja		Hiti Tadej
Direkcija RS za vode	Sektor za razvoj in plan, Oddelek za varstvo in rabo voda	Governmental - Agency	Jana Meljo
			Cerar Janez
	Oddelek za vodne pravice		Verbič Darja
			Volker Kaja
			Kranjc Stojan
Zavod RS za varstvo narave	OE Ljubljana	Governmental - Agency	Podbrežnik Aleš
JP Vodovod-Kanalizacija d.o.o.	direktor sektorja Vodovod	Water Utility	Jože Tomec
	Razvojna služba		Marko Gspan
			Maja Šorli
			Jamnik Brigita
			Grabar Greta
Mestna občina Ljubljana	Oddelek za varstvo okolja	Municipality	Svetlana Čermelj
	Oddelek za prostorske planske akte		Zorn Miha
	Kabinet župana (Projekt GeoPlasma-CE)		Gregorin Špela
UL, Naravoslovnotehniška fakulteta	Katedra za stratigrafijo, paleontologijo in regionalno geologijo	University / Research	Petra Žvab Rožič
Inštitut za ekologijo		Research	Bahor Maja
			Lukšič Andrej
Mednarodna podiplomska šola Jožefa Stefana		University / Research	Batkovič Tanja (študentka)
Vodokomunalni sistemi d.o.o.		Water Utility	Belaj Marko
Strokovna javnost		Public experts	Draksler Andrej
			Strgar Ana
			Nagode Klara
			Rejc Urban
Ministrstvo za okolje in prostor	Direktorat za vode in investicije	Governmental - Ministry	Flis Lara
			Kovačič Tadej
			Savšek Boštjan
			Žerjav Andreja
			Oven Irena
	Direktorat za prostor, graditev in stanovanja		Gorjup Renata
			Muršec Meta
UL, Biotehniška fakulteta	Oddelek za agronomijo, Katedra za agrometeorologijo, urejanje kmetijskega prostora ter ekonomiko in razvoj podeželja	University / Research	Glavan Matjaž
Občina Postojna		Municipality	Korošec Maja
Hidrotehnik Vodnogospodarsko podjetje d.d.		SME	Lukek Miha
Občina Komenda		Municipality	Potočnik Marjan
Snaga Ljubljana, Krajinski park Tivoli, Rožnik in Šišenski hrib		SME	Šparl Luka
ICRO - Inštitut za celostni razvoj in okolje		Research	Vahtar Marta
Občina Velike Lašče		Municipality	Marija Ivanc Čampa
Institut "Jožef Stefan"	Znanosti o okolju	Research	Vreča Polona
18	**24**		**42**