



# PROLINE-CE

## WORKPACKAGE T1, ACTIVITY T1.3

### D.T1.3.3 LESSONS LEARNT: SYNTHESIS REPORT ABOUT START-UP STAKEHOLDER WORKSHOPS

October, 2017

Lead Institution	Croatian Geological Survey
Contributor/s	Josip Terzić, Jasmina Lukač Reberski, Ivana Boljat, Matko Patekar, Ivona Baniček
Lead Author/s	Ivana Boljat
Date of last release	10/2017





<b>Contributors, name and Institution surname</b>	
<b>Austria</b>	
Claudia Kollarits	PRISMA solutions GmbH
Elisabeth Gerhardt	Federal Research and Training Centre for Forests, Natural Hazards and Landscape
Roland Köck	University of Natural Resources and Life Sciences, Vienna, Department of Forest- and Soil Sciences, Institute of Silviculture
Hubert Siegel	Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management; Forest Department
Christian Steiner	Office of the Lower Austria Federal State Government
<b>Croatia</b>	
Josip Terzić	Croatian Geological Survey, Department of Hydrogeology and Engineering Geology
Jasmina Lukač Reberski	Croatian Geological Survey, Department of Hydrogeology and Engineering Geology
Ivana Boljat	Croatian Geological Survey, Department of Hydrogeology and Engineering Geology
Daria Čupić	Croatian Waters
Matko Patekar	Croatian Geological Survey, Department of Hydrogeology and Engineering Geology
Ivona Baniček	Croatian Geological Survey, Department of Hydrogeology and Engineering Geology
<b>Germany</b>	
Daniel Bittner	Technical University of Munich; Chair of Hydrology and River Basin Management
Prof. Dr. Gabriele Chiogna	Technical University of Munich; Chair of Hydrology and River Basin Management
Prof. Dr.-Ing. Markus Disse	Technical University of Munich; Chair of Hydrology and River Basin Management
<b>Hungary</b>	
Robert Hegyi	General Directorate of Water Management
Magdolna Ambrus	General Directorate of Water Management
Peter Molnar	General Directorate of Water Management
Tamas Belovai	General Directorate of Water Management



Barbara Bezegh	Herman Otto Institute Non-profit Ltd.
Matyas Prommer	Herman Otto Institute Non-profit Ltd.
Mihaly Vegh	Herman Otto Institute Non-profit Ltd.
<b>Italy</b>	
Cinzia Alessandrini	ARPAE Emilia Romagna
Daniele Cristofori	ARPAE Emilia Romagna
Andrea Critto	CMCC Foundation
Gisella Ferroni	ARPAE Emilia Romagna
Sergio Noce	CMCC Foundation
Silvano Pecora	ARPAE Emilia Romagna
Vuong Pham	CMCC Foundation
Guido Rianna	CMCC Foundation
Giuseppe Ricciardi	ARPAE Emilia Romagna
Anna Sperotto	CMCC Foundation
Silvia Torresan	CMCC Foundation
<b>Poland</b>	
Przemysław Gruszecki	Krajowy Zarząd Gospodarki Wodnej
Norbert Jaźwiński	Krajowy Zarząd Gospodarki Wodnej
Marcin Walczak	Krajowy Zarząd Gospodarki Wodnej
Piotr Zimmermann	Krajowy Zarząd Gospodarki Wodnej
Joanna Troińska	Krajowy Zarząd Gospodarki Wodnej
Andrzej Kaczorek	Krajowy Zarząd Gospodarki Wodnej
Edyta Jurkiewicz-Gruszecka	Krajowy Zarząd Gospodarki Wodnej
Grzegorz Żero	Krajowy Zarząd Gospodarki Wodnej
Olga Sadowska	Krajowy Zarząd Gospodarki Wodnej
Anna Goszczyńska-Zajac	Krajowy Zarząd Gospodarki Wodnej
Michał Falandysz	Krajowy Zarząd Gospodarki Wodnej
Joanna Czekaj	Górnośląskie Przedsiębiorstwo Wodociągów S.A.
Mirosława Skrzypczak	Górnośląskie Przedsiębiorstwo Wodociągów S.A.
Laura Lach	Górnośląskie Przedsiębiorstwo Wodociągów S.A.
Marek Czechowski	Górnośląskie Przedsiębiorstwo Wodociągów S.A.
Andrzej Siudy	Górnośląskie Przedsiębiorstwo Wodociągów S.A.
Sabina Jakóbczyk - Karpierz	University of Silesia
Sławomir Sitek	University of Silesia
Andrzej Witkowski	University of Silesia
Jacek Rózkowski	University of Silesia



Bartosz Łozowski	University of Silesia
Andrzej Woźnica	University of Silesia
<b>Slovenia</b>	
Barbara Čenčur Curk	University of Ljubljana, NTF
Primož Banovec	University of Ljubljana, FGG
Anja Torkar	University of Ljubljana, NTF
Ajda Cilenšek	University of Ljubljana, FGG
Matej Cerk	University of Ljubljana, FGG
Branka Bračič Železnik	Public Water Utility JP VO-KA



## Table of Contents

Table of Contents .....	5
1. Introduction .....	6
2. Dates, venues and participants of the workshops .....	7
2.1. Organization of the workshops .....	11
3. Summary of major workshop topics .....	13
3.1. Water management vs. land use .....	13
3.1.1. Austria .....	13
3.1.2. Croatia .....	14
3.1.3. Germany .....	14
3.1.4. Hungary .....	16
3.1.5. Italy .....	17
3.1.6. Poland .....	18
3.1.7. Slovenia .....	18
3.2. Flood risk management .....	19
4. Summary of issues explored during discussions .....	22
5. Feedback on the workshop from the stakeholders .....	31
6. Issues for possible consideration .....	33
7. References .....	34



## 1. Introduction

The Deliverable D.T1.3.3 “Lessons learnt: Synthesis report about start-up stakeholder workshops” presents compilation of the results of the seven start-up stakeholder workshops, organized in each PROLINE-CE project partner country (Fig. 1), under the framework of the Work Package T1: “Capitalization: Capacity Building and Stakeholder Engagement” as a part of the Activity A.T1.3.: “Identification of strategies and measures to be integrated into existing policy guidelines” coordinated by Croatian Geological Survey (HGI-CGS).



Figure 1. Map of the partner countries<sup>1</sup>

One of the goals of the PROLINE-CE project is identification of strategies and measures that will be integrated into policy guidelines done through intensive key stakeholder involvement.

These workshops were the first active involvement of stakeholders in the project activities. During the events the current challenges of protection of drinking water resources and protection against floods and droughts through integrated land use management were presented, as well as examples of best management practices.

The involvement of authorities, experts and decision makers has resulted with the identification of current gaps that occur in their specific daily operations. Their feedback is essential for the development of further strategies and approach to the issues at hand. The workshops objectives were to start interdisciplinary discussion between stakeholders through joint communication.

This report is compiled based on the inputs from the seven national workshops provided by the project partners.



## 2. Dates, venues and participants of the workshops

The main organizational data on the held national workshops, such as dates, locations and partners involved, along with the total number of attending participants and stakeholders can be seen in the table1.

**Table 1.** List of the workshops

Location	Venue	Date	Responsible project partner + Supporting partner(s)+ Associated partner(s)	Number of participants	Number of stakeholders
Austria, Vienna	“Alte Schieberkammer” Vienna Waters	31.05.2017.	Municipality of the City of Vienna - Vienna Water (MA31) Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) Municipality of Waidhofen/Ybbs (MWY)	22	16
Croatia, Zagreb	Croatian waters	12.06.2017.	Croatian Geological Survey (HGI-CGS) Croatian waters	30	22
Germany, Munich	Technical University of Munich	03.05.2017.	Technical University of Munich (HRBM)	17	17
Hungary, Budapest	Conference Centre of Herman Ottó Institute	07.06.2017.	Herman Otto Institute (HOI) General Directorate of Water Management (OVF)	23	12
Italy, Rovigo	Fondazione Ca’ Vendramin	16.05.2017.	Euro-Mediterranean Centre on Climate Change Foundation (CMCC) Regional Agency for Prevention, Environment and Energy in Emilia- Romagna (ARPAE)	36	22
Poland, Katowice	Silesian Waterworks PLC	24.05.2017.	Silesian Waterworks PLC (GPW) National Water Management Authority (KZGW) Regional Water Management Board (Warsaw, Cracow, Gliwice, Gdansk, Wroclaw, Szczecin, Poznan) University of Silesia in Katowice	61	39
Slovenia, Ljubljana	JP Vodovod- Kanalizacija d.o.o.	18.05.2017.	JP Vodovod Kanalizacija d.o.o. (JP VO-KA) University of Ljubljana (UL) Global Water Partnership Slovenia	36	22
<b>TOTAL</b>				<b>225</b>	<b>152</b>

Concerning the reached target groups, many of the attending stakeholders were related to the pilot action areas of the project countries whether through their activity or expressed interest (Table 2) whereas some of the attending stakeholders were from national (state) ministries and agencies and/or their regional offices.



---

In **Table 2** the number of attending stakeholders as well as the list and number of institutions which represent target groups of the First national stakeholder workshops is shown. It should be pointed out that from larger institutions also departments were counted as one stakeholder.

The table also includes the category of overall target group value that the project aims to actively involve. The target group category “Other” was present only on the workshops in Croatia, Hungary, Italy and Poland.

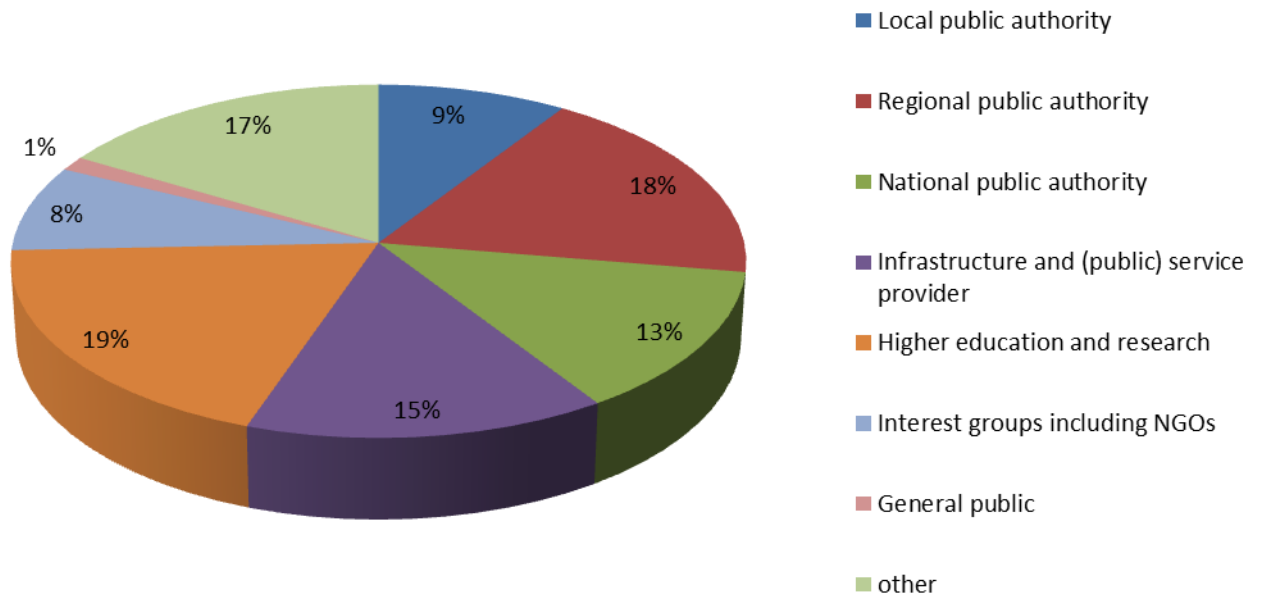
The number of stakeholders exceeded their targeted value in regional and national public authority, higher education and research institution and others like meteorological services and medical laboratories (**Table 2**). This indicates a high interest rate among the relevant groups and is a positive input for developing further strategies. Graphical presentation of the percentage of participating stakeholders per target group is depicted in the **Figure 2**.





Table 2. Number of various stakeholder groups on all seven national workshops

Target groups	Specification of target groups	Number of stakeholders	Number of institutions	Overall target group value
Local public authority	Forest management of the city of Vienna MA 49 (1), City of Waidhofen/Ybbs (1), City of Zagreb-City office for energetics, environment protection and sustainable development (1), German water supply association of the Harpfing Group (1) and Freising-Süd (1), Municipal administration in Neufahrn bei Freising, Germany (1), SPD Munich - department of Environment and Energy (1), Budapest VIII. district Mayor's Office - environment protection officer (1), Polish District office in Tarnowskich Gorach (1), City government office of Tarnowskich Gorach (1), Polish office of City Chorzow (1), Slovenian municipalities: Cerklje na Gorenjskem (1), Škofja Loka (1), Ljubljana - Department of Environmental Protection (1)	14	14	32
Regional public authority	Lower Austria Federal Government (6), Croatian counties representatives - Sisak-Moslavina county (1) and Dubrovnik-Neretva county (1), Bavarian State Office for the Environment (1), Italian Regional agency for the prevention and environmental protection of Veneto (2), Italian regional council Aipo (8), Italian Regional administration Emilia-Romagna (1), Reclamation Consortium of the River Po (1), Po River Basin Authority (2), Regional Directorate of State Forests in Katowice (3), Polish Regional Fund for Environmental Protection and Water Management (2)	28	11	18
National public authority	Croatian Ministry of Environment and Energy (3), Bavarian State Agency for Agriculture (1), Hungarian Army Chemical Protection and Information Center (1), Hungarian Ministry of Agriculture (3), Slovenian inspectorate for the environment and spatial planning (2), Slovenian Environment Agency (5), Institute of the Republic of Slovenia for Nature Conservation (1), Slovenian Water Agency (4)	20	8	16
Infrastructure and (public) service provider	Croatian Water supply Zagreb Ltd. (1), Croatian Water supply Source Ploče (1), Croatian VG water supply (1), Munich communal company (1), Polish water supply representatives - Ruda Slaski (1), Dabrowa Gornicza (2), Gliwice (3), Żory (1), and Chrzanow (2), Polish sanitary-epidemiological inspection (6), Slovenian public water utilities from Ljubljana, Krško, Kranj and Domžale. (4)	22	9	12
Higher education and research	Technical University Vienna (1), Austrian Federal research institution for Forests (2), University of Life Science Vienna (1), Croatian Faculty of Agriculture (1), Meteorological and hydrological service of Croatia (3), Croatian research institute OIKON Ltd. (2), IRES ecology (3) and Green infrastructure Ltd. (1), Ludwig-Maximilian University Munich (2), National Hungarian Agricultural Research and Innovation Centre (1), Debrecen University - Water and Environment Management Institute (1), Szent Istvan University - Department of Agriculture (2), University of Bologna (1), University of Trento (1), Fondazione Ca'Vendramin research institute (1), Ca'Foscari University of Venice (1), Institute of Environmental protection - National Research Institute Warsaw (1), Polish Geological Survey (1), Slovenian ecological engineering Institute Ltd. (1), Urban spatial planning institute of Ljubljana (1), Slovenian Geological Survey (1), University of Ljubljana (1)	29	21	21
Interest groups including NGOs	Vienna Business Agency (1), Austrian Association for Gas and Water (1), Croatian water course protection association SLAP (1), Bavarian Farmers' Association (4), Hungarian Climatological Association (1), Italian Nautica Torricella Association (1), Italian voluntary ecological group G.E.L.A. Guardie ecologiche (1), Global water partnership Central and Eastern Europe (1), Global water partnership Slovenia (1)	12	8	18
General public	Italian journalist for La voce di Rovigo (1) and Il Gazzettino (1)	2	2	7500
Other	Prisma Solutions consulting organisation (2), Terra Compacta Ltd. (1), Aqua Kem Ltd.(1), Bavarian farmers (1),SEBA Hydrometrie Ltd. Germany (1), Bavarian field seeds producer (1), Planning office ECOZEPT (1), Hungarian VTK Innosystem - Nature, water and environmental protection Ltd. (1), Head Gardener of the City of Nyiregyhaza (1), Polish Medical laboratory JARS Sp. z.o.o. (13), Integraph Polska Sp. - provider of software for environmental analysis (1), Slovenian consulting group IRGO in engineering, hydrology and environment protection (1)	25	25	10
<b>TOTAL</b>		<b>152</b>	<b>98</b>	

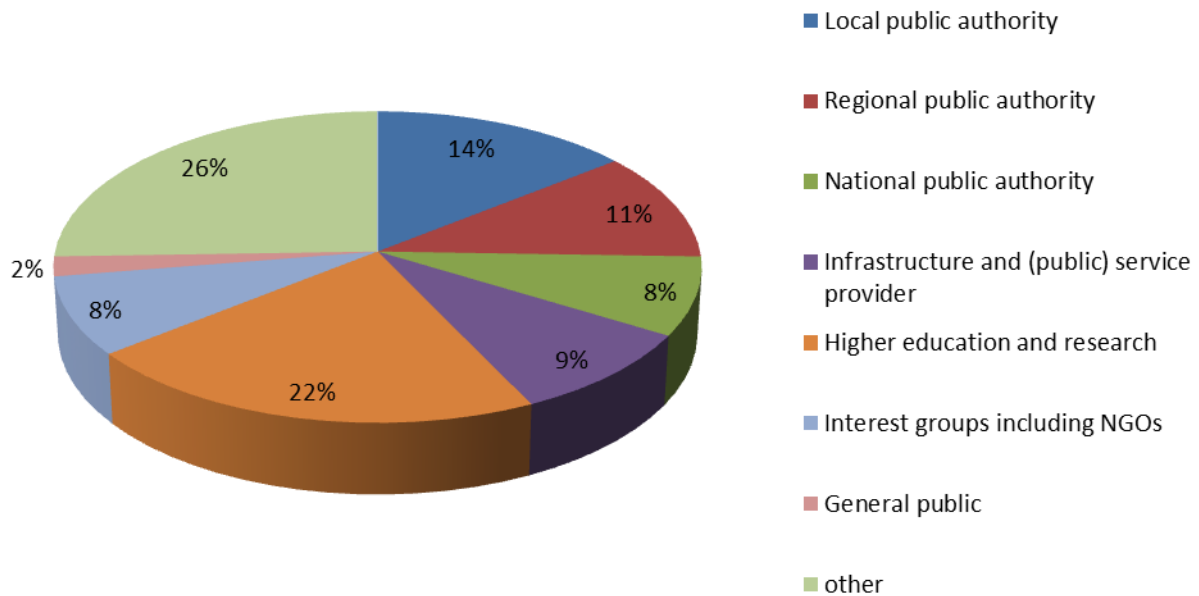


**Figure 2.** Stakeholders reached during the workshops

From the figure 2, it is visible that the distribution of stakeolders was quite even, ranging from 8 % to 19 %, except the category “General public”, which was only present in Italy via journalists from renowned newspapers. The highest range of participating stakeholders was from Higher education and research (19 %), following by regional public authorities (18%), expert community (others; 17%) and Infrastructure and (public) service providers (15 %).



**Figure 3** Represents the percentage of target groups (institutions) that attended the First national stakeholder workshops.



**Figure 3.** Target groups reached in First stakeholder workshops

## 2.1. Organization of the workshops

The workshops were divided into three parts:

- The PROLINE-CE objectives presentation
  - > a general presentation of the project
  - > capacity building presentations from the experts;
- An interactive dialogue with stakeholders in order to collect feedback on different aspects of land-use management and flood protection;
- A feedback questionnaire.

In the first part of the workshop the target groups were informed by the project partners on the main objectives of the PROLINE-CE project. In this way the target groups were given the insight



of the main project activities, its measures and existing best management practices that are not implemented. Furthermore, this helped to raise the awareness of the participators on the current problems in land-use and flood management related to drinking water protection.

Flood risk management, as the second topic presented within the workshops, encompassed the best management practices in flood protection as well as all the existing policies, strategies and action plans in the project partner country, respectively. Positive and negative management practices were also presented in order to give good examples to the stakeholders.

After these, presentations followed by different field experts displayed the significant issues that are occurring in the water and land-use management sectors and that impede the effective legislation implementation and sustainable development. Their aim was to familiarize the participants with the current gaps and proposed policy recommendations which prompted further dialogue. The experts covered the topics of the existing national water policies, strategies and action plans regarding drinking water protection in comparison with the EU regulations. Moreover, the participants have been informed about the non-structural measures in the country.

The number of presentations ranged from three (Germany), four (Croatia), up to five (Hungary and Poland) and six (Austria, Italy and Slovenia).

In the second part of the workshop dynamic discussion was performed that involved all attendees. Austria, Croatia, Germany and Slovenia had a carousel panel discussion within small groups with rotating posts, while Hungary, Poland and Italy **opted** for sessions with one coordinator proposing the problems at hand and steering the debate with all attendees. The discussed issues and proposed measures were written down and processed in the project partner workshop reports.

The stakeholder inputs coupled with relevant administration levels contributed to the development of improved implementation of drinking water protection strategies in land-use management. Without the local and regional authority, as well as institutions in higher education and research, the implementation of proposed measures would be impossible. A strong stakeholder involvement will disseminate results by existing networks on a national, transnational and EU-level and support further developments on the topic.

~~The third part of the workshop constituted of the feedback questionnaire that offered an insight into the stakeholder opinions and proposals for the improvement of further workshops.~~



## 3. Summary of major workshop topics

### 3.1. Water management vs. land use

#### 3.1.1. Austria

After the introductory words by the Head of the Vienna Water and the Lead Partner representative Mr. Hubert Siegel (**Fig. 4**) regarding the project, Mr. Markus Hochleitner provided the stakeholders with general information on the pilot area of Waidhofen/Ybbs: location, catchment area, type of soils, water regime. He introduced the “Forest Hydrotope Model” as well and its effects on the “Water-Forest-Household”. He presented the impacts caused through climate change and transition in the catchment area. Among other, he demanded stable forests, regulation of the game stock, small-scale forest use and restricted road construction. Furthermore, agreements with the forest owners would be essential.

Mr. Gerhard Kuschnig from Vienna Waters introduced the general facts and information for the pilot area of Vienna Waters that included the height distribution, geology, land use, hydrology etc. He emphasized that the land use activities pose potential risks of hazards.

Mr. Christian Steiner from the Office of the Provincial Government of Lower Austria explained the basis of existence and functions of soils, potential hazards and activities for protection. He also referred to the EUSDR Strategy for the Danube Region regarding the four Pillars and EUSALP.

Mr. Roland Köck from the Institute of silviculture explained impacts on forests and water, how forests can protect water resources and best practices for water protection. He also presented protected areas in Austria and explained the criteria for protecting drinking water and avoiding floods. Furthermore, the “Forest-Hydrotope-Model” was presented as a basis for “best practice”.

Mr. Georg Frank from the Federal Research and Training Centre for Forests, Natural Hazards and Landscape provided the participants with an engaged presentation concerning the topic forest and biodiversity and its dependencies.



**Figure 4.** Lead Partner representative presentations and welcome speech in Austria



### 3.1.2. Croatia

Mr. Josip Terzić, Head of the Department of Hydrology and Engineering Geology of the Croatian Geological Survey, introduced the project and its objectives.

Mr. Želimir Pekaš from Croatian Waters, who works in water management, outlined the current issues in drinking water protection, explained the difficulties of syncing national legislation with the European one, gave a risk assessment and announced the planned activities for groundwater protection (Fig. 5). The results of detailed chemical analyses were presented and the risks connected to the decline of water quality. Drinking water spring protection zones were depicted on the state map showing a very graphic portrayal of the unsatisfactory degree of preservation on a national level.

Mrs. Marina Bubalo Kovačić, a postdoctoral researcher from the Faculty of Agriculture who specialized in melioration and water management, analysed the impact of various contaminants on water resources, mentioned the project of national groundwater quality monitoring and the locations of sampling. The presentation included the maps of land use in regards to agriculture, pesticides and fertilizers used for individual crops and maps of aquifer and soil vulnerability.



Figure 5. Presentations of (a) Mr. Pekaš and (b) Mr. Kušan on the Croatia workshop in the Croatian Water headquarters

Mr. Vladimir Kušan from OIKON Ltd. who lectured on the Faculty of Forestry and Faculty of Agriculture and is a GIS expert, illustrated the complication with conflicting land use data, mentioned various models of water retention in regards to the land use and how evapotranspiration and filtration vary depending on the degree of urbanization.

### 3.1.3. Germany

Mr. Markus Disse, Head of the chair Hydrology and River Basin Management at the Technical University of Munich discussed the importance of processed modelling of the local flood protection measures. He dissected the procedure starting from the impact of land use on the soil characteristics which should be monitored and analysed regularly, up to the installation of the





measuring technology and the computation behind it. The results showed expected high waters for various land-use types. It raised an interesting dialogue during the discussion (Fig. 7).



**Figure 6.** Stakeholder panel discussion during the Germany workshop

Mr. Daniel Bittner from the Department of Civil, Geo and Environmental Engineering on the Technical University of Munich introduced the best management practices for an integrated approach to drinking water and flood protection. The best land-use practices in agriculture and forestry were mentioned. SWOT analysis is also present illustrating the positive communication between the land owners and water suppliers, the obligation for compensation measures that stimulates good cooperation between the involved parties, the ever growing awareness in the public and the expansion of drinking water protection zones, just to name a few.



**Figure 7.** Start-up stakeholder workshop in Germany, the panel discussion



### 3.1.4. Hungary

Mr. Mátyás Prommer, policy officer of the Herman Ottó Institute in Budapest (HOI), presented an overview of best practices which included:

- protection of drinking water resources by international cooperation,
- the existence of a demand for developing “multi-functional forest” in EU,
- expressed the need for further legislation and additional conservation efforts in grassland management, focussing on ecosystem services aspects and adequately financed projects for regional cooperation efforts,
- the need for a strong transnational regulation in wetland management,
- mentioning a trend in management of agricultural areas, turning towards ecological services and for finding new innovative tools for drinking water resource protection.

Ms. Ágnes Tahy, a representative from the General Directorate of Water Management (OVF) in Budapest, offered her input in efficiency of legislation on protection of drinking water resources, vegetation regulations interventions on floodplains (flood risk management) and drought strategy - effects of irrigation development on water resources. Furthermore, the question of agro-forestry was raised which engaged the attendees in a lively discussion afterwards.

Mr. Attila Borovics, Forestry Science Institute, spoke of agro-forestry practices as a new approach to agricultural production, water resources protection and nature conservation. He discussed the potential of new/old role of trees within the agriculture for protection, increase of biodiversity, creation of favourable micro-climatic conditions and many more (**Fig. 8**). The newfound popularity of agro-forestry was mentioned, using natural resources in a sustainable way, generating new sources of income and else. Due to all of that, one of the most urgent tasks is to bring in harmony the objectives of forestry, water management and nature conservation.



**Figure 8.** Lectures by (a) Mr. Borovics and (b) Ms. Tahy on agro-forestry and flood risk management on the workshop in Hungary





### 3.1.5. Italy

Secretary-General of Po River Basin Authority, Mr. Francesco Puma, introduced the Po basin Water Balance Plan approved in December 2016, highlighting that it is based on the following principles: information, cooperation (f.e. between Regions and Central Government), stakeholder involvement and quantitative protection of water resources. In this perspective, these principles represent an innovative approach for Italy in an attempt to reach shared solutions through participatory decision processes and to reduce current gaps. Such approach has been implemented by establishing the National Permanent Observatory Network on water uses that aims to strengthen cooperation and dialogue among relevant parties and promote sustainable use of the resource, as well as actions needed for the proactive management of drought events. It brings together public and private authorities at different levels including authorities for irrigation and drinking water, reclamation consortia and energy-managing bodies. Activities and meetings of the Observatory are strictly linked to water availability conditions acting as the “Steering Committee” for hydrological and water resources monitoring and forecasting during water crisis.

Afterwards, Mr. Silvano Pecora (ARPAE Emilia Romagna) provided an exhaustive frame about the Low flow monitoring and forecast supporting water resources management in the Po river basin performed by ARPAE (**Fig. 9**); he highlighted the key role of proper monitoring and predictive activities to clearly retrieve actual conditions and deal with future challenges on short and long term horizons. The presentation covered meteorological forecasts (monthly, seasonal forecasts), hydrological low flow forecasts, hydrological and water balance models, hydrological frequency analysis and indexes SPI/SFI, available water resources computation, discharge and water level monitoring and measures, saltwater intrusion and snow cover. Those topics tended to point out the extreme complexity characterizing the Po river basin.



**Figure 9.** Presentations on water resource management of the Po River Basin on the Italian stakeholder workshop



### 3.1.6. Poland

Mr. Norbert Jaźwiński (coordinator of the project for the KZGW), who presented the current state of water management in the country and the results of SWOT analysis, the strengths, weaknesses, opportunities and threats of water management in the presentation titled "Challenges related to land use in the context of protection of water resources".

Mr. Andrzej Siudy, the head of Kozłowa Góra and Goczałkowice reservoirs, administered by the GPW S.A. presented an extremely interesting presentation titled „Water management in tanks managed by the Upper Silesian Waterworks Company in the light of the water management instructions in force”, in which, based on examples of existing flood events, pointed out the need for rigid flood management instructions.

Ms. Joanna Czekaj, a coordinator of the project for the GPW S.A., offered a review of the current best practices in land use management in the context of the protection of the water resources in the Pilot Area - Kozłowa Góra reservoir basin, from the source of the Brynica River to the dam section. Analysis of the available documents has highlighted the lack of regulation on good practices in forest management in the context of the protection of the aquatic environment (Fig. 10).



**Figure 10.** Presentations by Mr. Jaźwiński and Ms. Czekaj during the stakeholder workshop in Poland

### 3.1.7. Slovenia

After the welcome from Mrs. Nataša Šušteršič from the Research department of Public water utility JP Vodovod-kanalizacija Ljubljana and a speech regarding the project’s integration with the Agency’s mission by Suzana Stražar from the Slovenian Water Agency, a presentation from Alja Grošelj from the Institute of the Republic of Slovenia for Nature Conservation presented establishment, development and management of Tivoli, Rožnik and Šišenski hill Landscape Park, which is a part of the Slovenian Pilot Action. Barbara Čenčur Curk from the University of Ljubljana offered the general presentation of PROLINE-CE project and its first results (Fig. 11), followed by the lecture from Branka Bračič Železnik of Public water utility JP Vodovod-kanalizacija Ljubljana that presented the challenges of drinking water resources protection from the point of view of land use management for the case of Ljubljana and Dravljje valley pilot action.



Figure 11. Presentations of (a) Ms. Stražar and (b) Ms. Čenčur Curk during the Slovenian stakeholder workshop

### Overview of water management vs. land use

The majority of the project partners stressed out the difficulties between water and flood protection and land-use management, the disproportion in the implemented measures and issues with drinking water protection zones. Some countries, such as Austria and Hungary, offered innovative ideas in the topic of forest management, promoting forest hydrotope models and agro-forestry. Germany and Poland were more flood oriented and discussed numerical models of flood protection zones and the need for stricter flood management regulations. Slovenia and Italy considered their pilot action areas extensively, focusing on implementation of best management practices on a local level to develop their strategies for a nationwide initiative. Croatia, Hungary and Slovenia have issues with excessive and unmonitored pesticide and fertilizer use in agriculture that pose a great risk to the water quality. Stricter regulations are needed to stop this trend. Overall, the presentations covered national strengths and difficulties that are waiting to be dealt with.

## 3.2. Flood risk management

The recent climate change is continuously shaping the landscapes, affecting human lives and economy through hazards such as floods. Adequate strategies, legislation and measures must be implemented, as well as public awareness needs to be raised in order to deal with this natural phenomenon.



Only few project partners covered this issue with expert lectures. It is interesting to note that the countries that included flood risk management were the ones that had problems with the said issue as of late.

#### Croatia

Mr. Kušan (OIKON Ltd.) spoke of the torrent flood problem in urban areas and how bad land use practices influence this hazard in particular, he mentioned a successful UK project that deals with the importance of permeable surfaces in cities and a great example of good rainwater management legislative in Germany as positive practices.

#### Italy

Ms. Claudia Vezzani (Po River Hydrographic District Authority) focused the attention on the Water Balance Plan, included in the District Management Plan, and on two relevant tools developed within the Water Balance Plan itself: Drought Management Plan and Drought Impact Monitoring System. Regarding the former, first of all the perspective change has been emphasized, moving from a reactive (crisis management) to a proactive (risk management) attitude in attempting to make the entire system regulating water resources in the River Basin more resilient. Then the different alerting levels corresponding to different operational phases have been introduced in the Drought management Plan. Finally the Drought Impact Monitoring System has been discussed, a tool to survey and represent in a systematic way, at the district scale, impacts associated with the different severity levels connected with river flow values. River flow values and induced impacts along the river course are assessed recurring to expert elicitation and strong involvement of stakeholders. In particular, the approach proposed by Nebraska Western Drought Coordination Council consisting of six phases (identification of the main actors, consequences evaluation, impacts prioritization, retrieving causes, assessing and ranking protection measurements) has been considered. Of course, impacts/values and counter measurements are strongly related to local geomorphological ecological and socio-economical context.

#### Slovenia

Flood hazard and measures in Slovenia were presented by Mr. Primož Banovec from the Faculty of Civil Engineering and Geodesy in Ljubljana. Some flood protection measures might induce dramatical changes in groundwater level and flow including infiltration capacity. With the development of flood protection measures the groundwater interactions should be addressed thoroughly. In case of drinking water use during flood events, special safety levels of electrical installations are of critical importance. Quite regularly it could be observed that, especially small water courses are covered and narrowed on the benefits of other uses (traffic, houses etc.).

#### Overview of flood risk management



---

Due to the PROLINE-CE project goals, protection against floods is a key issue and should be addressed and discussed with relevant stakeholders on project specific events, especially those related to the pilot areas that are prone to flood hazard. In regards to present-day climate change, flooding events may occur in areas that weren't previously vulnerable, therefore the need for evaluation of non-structural measures with important decision makers and general public is imperative. This subject is vital for further strategies development and improved implementation of management practices related to flood mitigation, so it should be included in future project workshops.





## 4. Summary of issues explored during stakeholder discussions

The second objective of the workshops was to obtain feedback from the participating stakeholders addressing the issues which are relevant on a national level which demonstrate their experience and professional background.

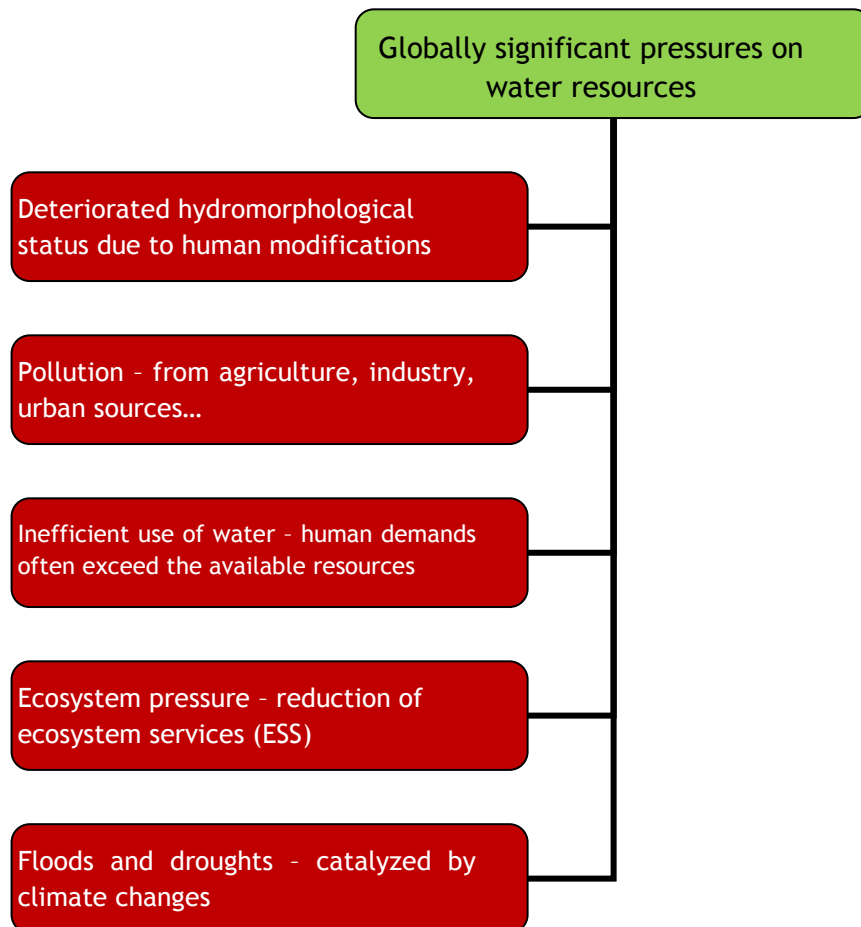
This chapter summarizes problems regarding (a) general management topics, (b) water management, (c) land use and (d) flood mitigation that have been recognized by stakeholders.

(a) Problems regarding **general management** topics are mostly administrative in nature and although the overall situation cannot be described as bad (mainly due to legal acquis of the EU), further efforts must be directed in order to:

- Increase public awareness about importance of drinking water resources protection.
- Increase communication efforts and stimulate two-way communication between public authorities and general public.
- Improve legislation, policies and laws in accordance with present day and future challenges.
- Address the climate changes and their impact on water resources.
- Stimulate good management practices and penalize bad management practices.
- Apply international best management practices and use existing knowledge or methodology.
- Enhance adaptation potential and incorporate more flexible practices.
- Promote education on environmental and ecological topics, focusing on long term sustainability and protection of natural resources.
- Enforce stricter controls and sanctions (e.g. agriculture, industry, forestry).

Many stakeholders have concluded that in order to achieve positive progress in case of the above mentioned issues, systematic and long term approach must be fostered. Furthermore, it is common that due to the lack of strong political determination, engagement of community and clear development strategies, progress is substantially impaired.

(b) When considering the most significant problems in scope of **water management**, stakeholders have identified numerous issues - some are country-specific while some are recognized as a global threat to water resources, such as pressures depicted in **Fig. 12**.



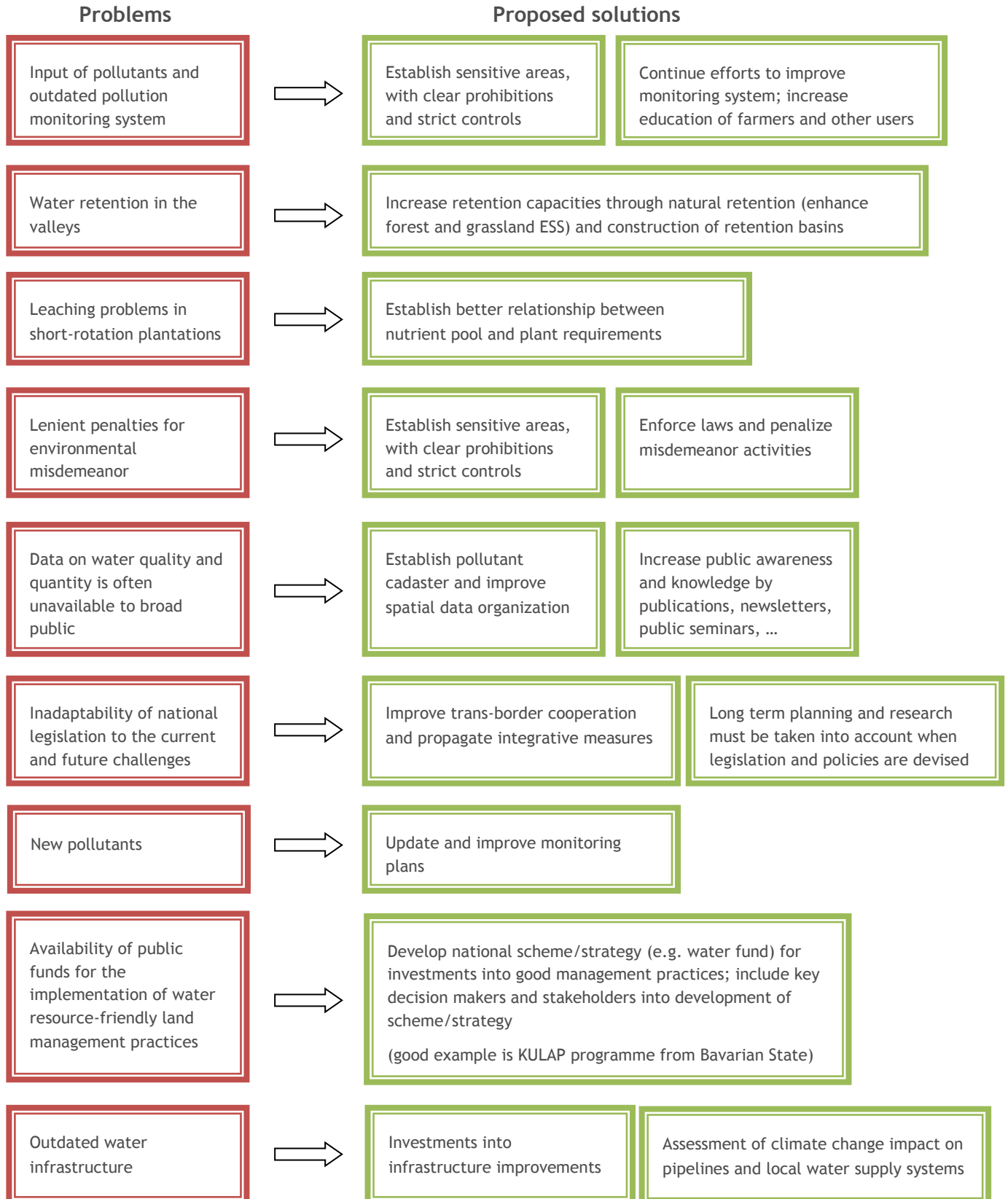
**Figure 12.** Globally recognized pressures on water resources

During the national stakeholder workshops, country-specific problems and issues have been presented and discussed. It is necessary to point out that some of the country-specific problems and responses may apply to other countries as well, regardless of not being reported or articulated during workshops. Therefore, a general overview is given for all PROLINE-CE partner countries.

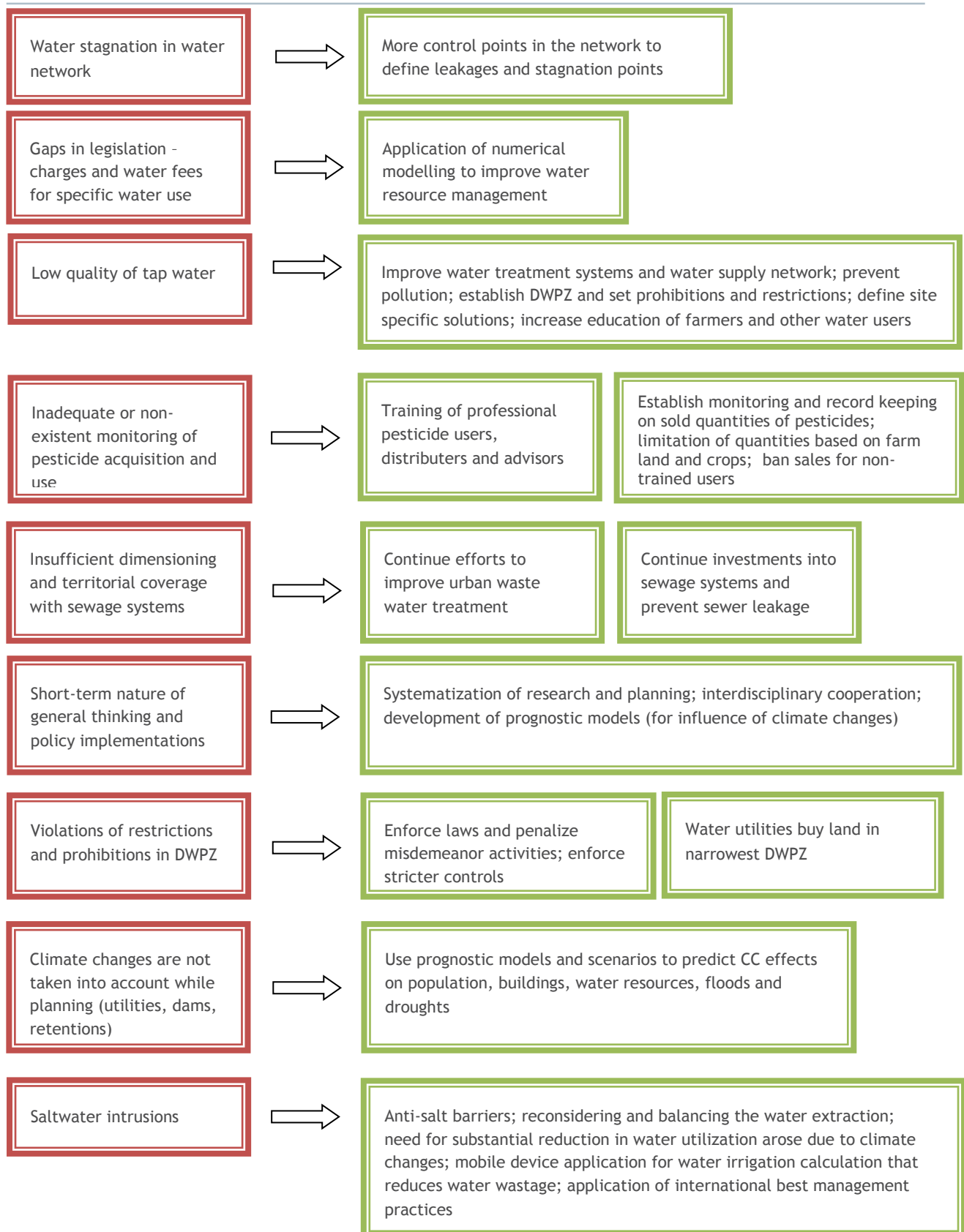
Figure 13 summarizes problems in water management and proposed solutions, as identified by stakeholders during national workshops. In order to effectively improve water management, it is necessary to combine proposed solutions (**Fig. 13**) with best management practices - using efficient and good examples of problem-specific solutions that have strong scientific basis and have been tested and proven in real scenarios.



**Figure 13.** Scheme of problems in water management (red) and proposed solutions (green), as identified by stakeholders during national workshops









Since PROLINE-CE project partner countries have many common problems related to water management, transnational dissemination of experiences and best management practices is a good way to address many sectoral problems. Interesting point was made during Slovenian workshop - despite new knowledges and technologies, stakeholders gave priority to conservative protection of water resources in a way that it protects the area and does not involve new activities, which could affect drinking water sources. Furthermore, balanced approach related to balanced protection and use of water resources should be applied. Overprotection might impede development, while under protection might affect sustainable development and deplete resources.

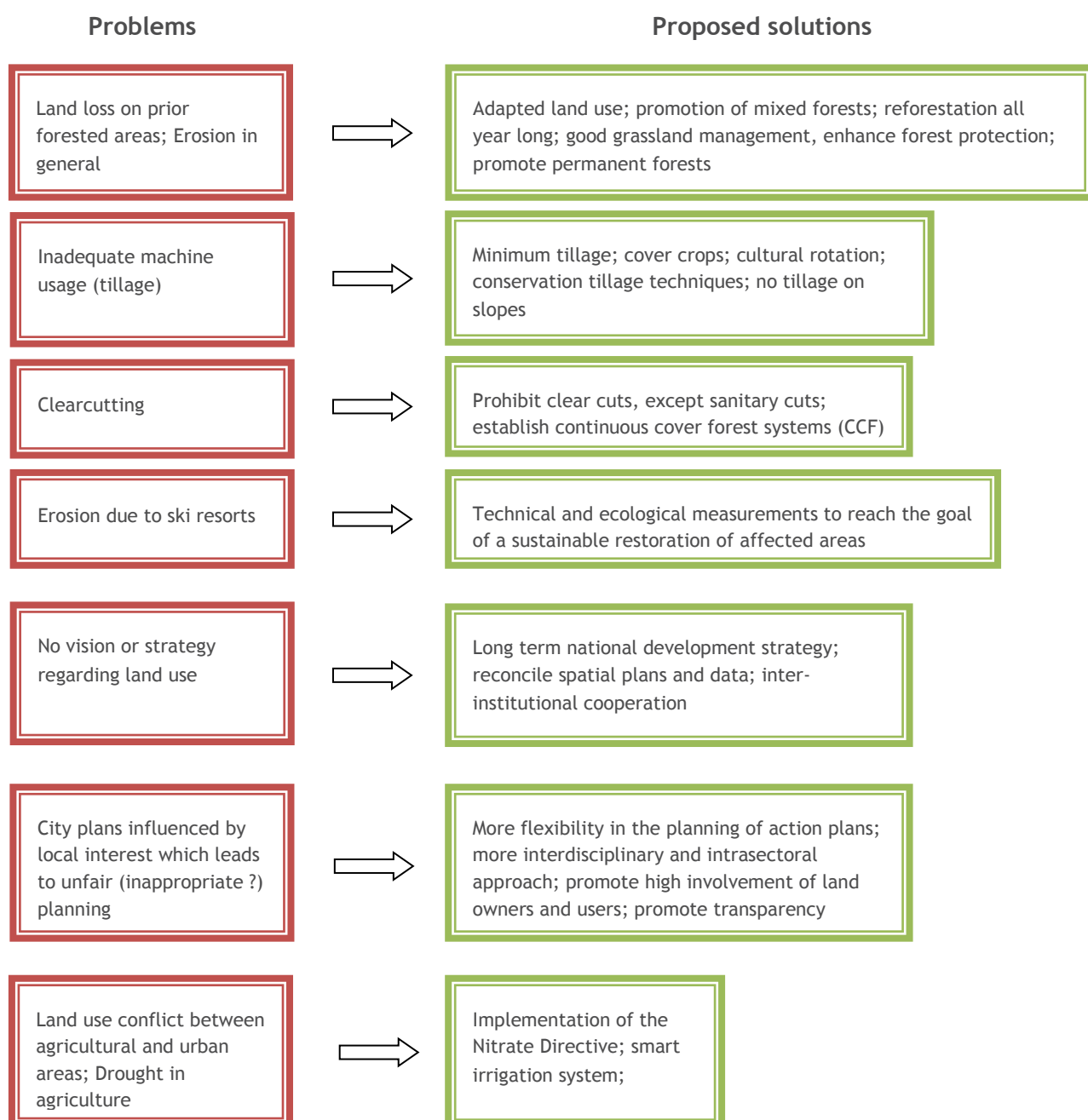


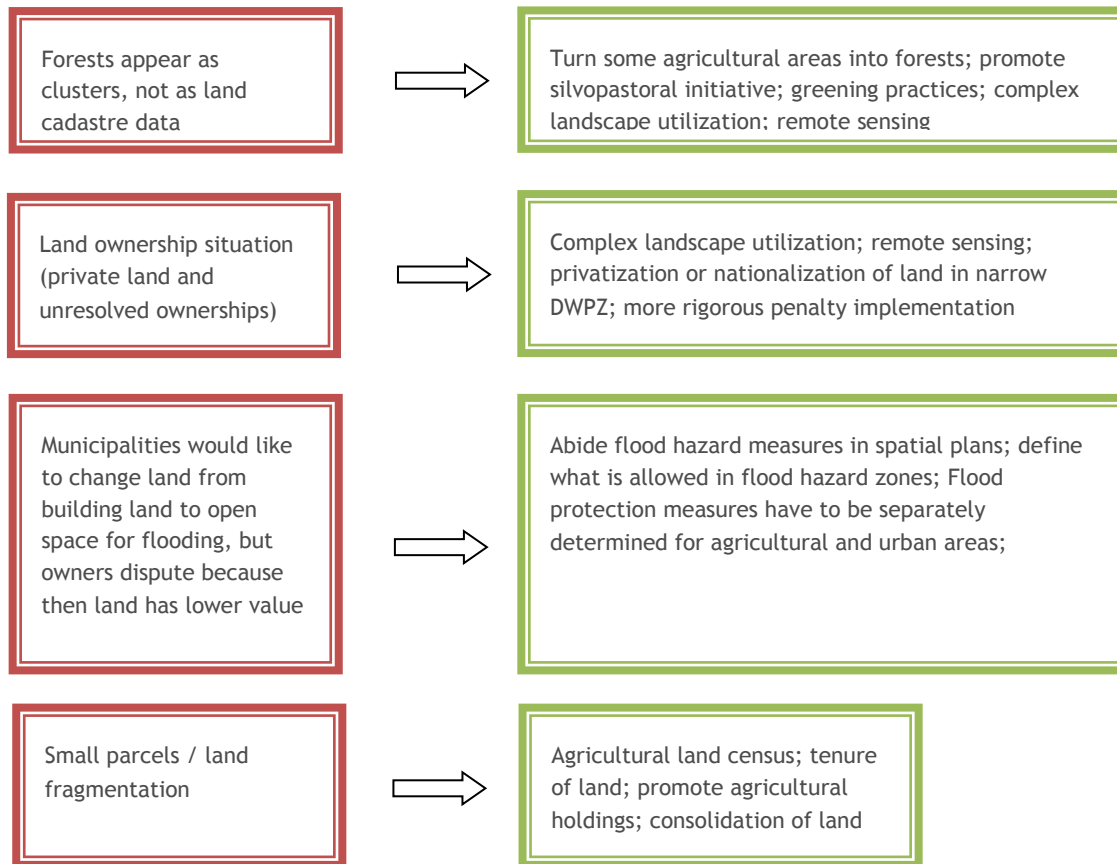
**Figure 14.** Ploče harbour and Neretva river delta in Croatia - interesting water management and land-use site (photo J. Patekar)



(c) Another important topic during stakeholders' workshops was **land use**, especially conflicts between particular land use and protection of drinking water resources. Land use practices can influence quality and quantity of drinking water, as well as severity of damages caused by flood events (e.g. building in flood prone areas). During workshops a wide variety of problems and proposed solutions were formulated, as shown in a scheme in Figure 15.

**Figure 15.** Scheme of problems concerning land use (red) and proposed solutions (green), as identified by stakeholders during national workshops





Interesting point was made during Bavarian workshops - in relation to urban land use and defined flood plains/inundation, it is necessary to use decentralized, site-specific protection measures. This initially requires more time and effort, and depends on how much money can the community afford.

Important conclusion was that local communities are not adequately involved in development of protection plans - plans are presented to the community as a finished work and little discussion is allowed to find more appropriate site specific solutions. In addition to this, public funds for the implementation of water-friendly land management practices are usually inadequate - in case of all PROLINE-CE partner countries. This is particularly conspicuous outside DWPZ. Additionally, a problem that might be hardest to solve is controlling the environment and groundwater by irregular and harmful behaviour of individuals, especially in DWPZ (waste dumping, illegal gravel excavations, etc.) - even if one or two offenders are penalised, others will not be - as pointed out during Slovenian workshops. The aim is to increase culture of people and their behaviour towards the environment by education and awareness rising - processes that are slow and take significant amount of time. Lastly, it was concluded that adapting measures in the DWPZ should be a more dynamic process.

(d) One of the focal points during stakeholder workshops was **flood management and mitigation**. Due to acceleration of climate changes, we are witnessing progressively extreme events on the European territory such as floods and droughts. It is important to obtain historical





knowledge on the flood management, and protection of water resources should be upgraded with actual developments and disseminated to general public, which presents a challenge. Awareness rising and continuous education should provide a general framework for all countries. Furthermore, one of key problems defined during stakeholder workshops was flood-induced groundwater pollution, which is hard to identify and model, and therefore, requires improvements (which should also be included in RBMPs). Another important aspect in flood management is that flood risk and hazard maps are regularly updated and maintained, based upon the modelling and changes occurring in the dynamic environment. Lastly, it is important to address the decision makers “old” way of thinking, which must be improved through adaptation, education and acceptance of new ideas and approaches. Summary of identified problems and issues from all workshops can be seen on **Figure 17**.



**Figure 16.** Flood event on Pelješac peninsula in Croatia - photo courtesy of Mr. Kušan (OIKON Ltd.)



Figure 17. Identified problems and proposed solutions in flood management

### Problems in flood management and mitigation

- Flood induced groundwater pollution (floods trigger migration of pollutants)
- Flood protection measures on private land are not accepted
- Deposition of material in flood zones / flooding of illegal waste dumps
- Retention management
- Excessive embankment and channel building
- Upper parts of the basin have no implemented measures of protection
- Centralized flood protection
- Flood-induced erosion
- No deepening of river beds
- Poor transborder cooperation
- No regulation compliances in construction building
- Expansion of concrete surfaces / surface run-off
- Non-structural measures are poorly developed
- Sewerage systems (drainage, mixed) could transfer floods to the zones which are generally not exposed to floods. From this point of view they are a pollution source as well as transport mechanism

### Proposed solutions

- Investments into natural retention to give "room" to the water
- Spatial planning and urbanisation must be in line with flood risk and hazard maps
- Regular inspection of "grey" infrastructure - dykes, dams, reservoirs, channels, ...
- Decentralized flood protection measures
- Improvements of groundwater research in order to reduce uncertainty and develop better models in case of pollution
- Government compensations - e.g. to farmers due to floods
- Better definition of water use permits in flood hazard zones is a necessity
- Improve RBMPs to include flood-groundwater interaction
- Develop estimative models of drinking water vulnerability on flood and drought
- Delineation of DWPZ closest to the well in regard to extreme events
- Separate flood protection measures in urban and agricultural areas
- Invest into non-structural measures (prevention, modelling, forecasting, early warning system, planning)



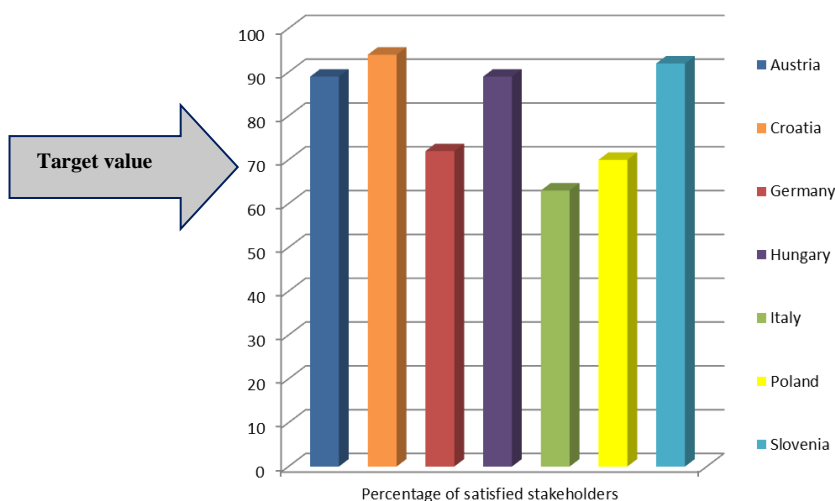
## 5. Feedback on the workshop from the stakeholders

In order to improve the PROLINE-CE stakeholder workshops and to get feedback from participants about the event, participants were asked to answer several questions about the workshop in the feedback questionnaire, which yielded very positive results of stakeholder satisfaction. The target satisfaction percentage was 70% and as it is visible from the Fig. 18 graph, it was generally surpassed. Austria, Croatia, Hungary and Slovenia received above 80% of satisfaction, while Germany, Italy and Poland did not achieve the anticipated score (Table 3.).

**Table 3.** Stakeholder satisfaction statistics

PP Country	Number of filled questionnaires	Percentage of satisfied stakeholders
Austria	19	89
Croatia	21	94
Germany	19	72
Hungary	23	89
Italy	22	63
Poland	46	70
Slovenia	22	92
<b>Total</b>	<b>172</b>	<b>81.3</b>

Number of filled questionnaires was 172 which included parts of the organizational team per project partner country, hence the difference between total number of the stakeholders and filled questionnaires. Stakeholders that were present on workshops in Croatia and Slovenia expressed the highest satisfaction rate. Due to lower satisfaction percentage, some partner countries should consider these results as encouragement for improvement in future project events.



**Figure 18.** Questionnaire feedback of stakeholder satisfaction in partner countries



---

Certain constructive comments were received such as inviting more water suppliers, legislation creators, planners and decision makers, farmers, builders and urbanists. There was a lack of a variety of land use planning topics. Additional topics were pointed out as not being covered enough during the workshops: legislation, spatial planning and interaction with professionals, integrated water protection, climate change and topics that lead to concrete solutions.

Stakeholders' feedback is a key input of information that shapes the workshops to come, offering insight into the actual problems and improving the overall communication between the organizers and participants.





## 6. Conclusions and issues for possible consideration

Since all the project partners pointed out the need for constructive dialogue between the various involved sectors, it is important to continue the communication and offer opportunities for the exchange of information and management practices. Use of specific technical terminology for the explanation of some of the complex topics within the PROLINE-CE turned out to be one of the challenges that the workshop organizers had to deal with. To overcome the gaps between broader public (e.g. farmer and land owners) and intricate relations of water resources protection and management and land use, more simple and illustrative approach should be implemented (Fig. 19).



Figure 19. The benefits of stakeholder involvement<sup>2</sup>

Furthermore, many have stated diverse issues with inconclusive legislation and poor implementation of the existing ones. Even though it should be dealt with on a national level, the first step is bringing and syncing the regulations on the EU plane in order to have a uniform base on which to build upon. Another matter that was mentioned was the low awareness and insufficient education of the population regarding water and flood protection measures that should be handled with media releases and promotional campaigns. The first step in the right direction was the involvement of stakeholders (respective land users and land owners) and their input in relevant topics which creates an avalanche of actions.



---

## 7. References

- D.T1.3.2. Start-up stakeholder workshop implemented plus related documentation from Austria
- D.T1.3.2. Start-up stakeholder workshop implemented plus related documentation from Croatia
- D.T1.3.2. Start-up stakeholder workshop implemented plus related documentation from Germany
- D.T1.3.2. Start-up stakeholder workshop implemented plus related documentation from Hungary
- D.T1.3.2. Start-up stakeholder workshop implemented plus related documentation from Italy
- D.T1.3.2. Start-up stakeholder workshop implemented plus related documentation from Poland
- D.T1.3.2. Start-up stakeholder workshop implemented plus related documentation from Slovenia
- <sup>1</sup><http://www.interreg-central.eu/Content.Node/PROLINE-CE.html>
- <sup>2</sup><https://www.unicef.org/csr/engagement.htm>