PROLINE-CE

WORKPACKAGE T2, ACTIVITY T2.3

IMPLEMENTATION OF BEST PRACTICES FOR WATER PROTECTION IN PILOT ACTIONS

D.T2.3.1 EVALUATION REPORTS FOR EACH PILOT ACTION

PILOT ACTION: PA1.1 - Vienna Water

Lead Institution	PP2 - Vienna Water
Contributor/s	See next page
Lead Author/s	Roland Koeck
Date last release	November 28, 2018

Contributors, name and surname	Institution
Roland Koeck	PP3, LP/PP1 - University of Natural Resources and Life Sciences, Department of Forest- and Soil Sciences, Institute of Silviculture
Gerhard Kuschnig	PP2 – Vienna Water
Christian Reszler	JR-AquaConSol

TABLE OF CONTENTS

1. Introduction

Best management practices (hereinafter BMPs) for drinking water protection and management derived from T1 were reviewed and relevant BMPs were selected for the particular pilot action. Implementation status of BMPs was verified in Pilot Actions (T2). In case of lacks identified, possibilities of improvement and implementation were also assessed. Drinking water protection and management and best practices are strategically implemented in the pilot actions, in order to achieve a function-oriented land-use based spatial management for water protection at the operational level. Measures and actions were analysed and proposed concerning mitigation of extremes and achieving a sustainable drinking water level. PROLINE-CE pilot actions reflect the broad range of possible conflicts regarding drinking water protection, such as: forest ecosystem services functionality; land-use planning conflicts; flooding issues; impact of climate change and land-use changes; demonstration of effectiveness of measures including ecosystem services and economic efficiency.

Review of main land use conflicts and BMPs on Pilot Action level has already been done in Pilot Action BMPs reports, which were a basis for *D.T2.1.2 Transnational case review of best management practices in pilot actions*. Description of natural characteristics of Pilot Site is presented in *D.T.1.4 Descriptive documentation of pilot actions and related issues*.

Activities within Pilot Action are described in *D.T2.2.2 Partner-specific Pilot Action documentation report*.

The Deliverable *D.T2.3.1 Evaluation reports for each pilot action* presents an evaluation of actual implementation and thematic interpretation of tested management practices as well as their acceptance among stakeholders and experts and is carried out for pilot action PA1.1 Vienna Water situated in the area of Zeller Staritzen and central Hochschwab.

2. Evaluation of BMPs in Pilot Action 1.1

2.1. Implementation of BMPs

The implementation of BMP's in PA1.1 Vienna Water on the mountain areas of Zeller Staritzen and Central Hochschwab was strategically planned through the selection of the most crucial BMPs within this area.

The implementation of the **BMP "Surface flow - spring dynamic modelling for the region Zeller Staritzen"** will take place during the scheduled project time. It will be finalized soon, and the results will be provided to Vienna Water who can implement the resulting management adaptation strategies.

All **BMP's for alpine pasture areas** need time for implementation, as the communication process with alpine pasture staff, local and regional authorities and other related people can be seen as rather tricky. Periods with persuasive efforts have to be accepted in order to bring the implementation of all three most important BMP's on track.

The BMP with the highest chance for rapid implementation is **"fencing of dolines and sinkholes in order to keep cattle in distance from those karstic features"**, as it does not involve high investment costs and its value for all involved stakeholders is rather easy to argue.

More difficult will be the implementation of the **BMP "placing of water troughs for cattle more frequently, avoiding concentrations of cattle / Concrete basements for the troughs and their surroundings"**. This management measure involves higher investment costs and also requires detailed knowledge about potential water sources for those troughs.

The most difficult **BMP** with regard to its implementation is **"grazing management for cattle on alpine pastures"**. This BMP involves a strategic planning process for each alpine pasture area, which has to be based on sound knowledge about the quality of the sites in terms of their productivity and also on the actual status of the alpine grassland. If it is actually over-grazed, the grazing intensity has to be reduced. If it is under-grazed, there have to be applied specific adaptation strategies.

The application of those most essential BMP's within PA1.1 can be regarded as important contribution to drinking water supply security.

2.2. Acceptance of BMPs among stakeholders

The acceptance of BMP's among stakeholders has to be seen nuanced.

The BMP regarding modelling is widely accepted among the most crucial stakeholder, the staff of Vienna Water. The results will be available soon and the application of those in terms of adapted management decisions will take some time, but it will occur.

All BMP's in the field of alpine pastures have to be seen differently. The acceptance of those depends on the understanding and willingness to cooperation of the alpine pasture staff. This is a rather tough challenge as alpine pasture staff tends to hold on to business-as-usual forms of management. The tradition of alpine pasture management is strong, and many old-established habits are ruling the daily work. Hence the acceptance of new insights, like some of the BMP's represent, could be difficult to achieve.

Due to this situation, persuasive efforts on various levels of communication and expertise as well as motivating activities have to be carried out. The integration of all levels of national, regional and local authorities will also be of relevance. Only if alpine pasture staff can perceive that changes are good for all involved people, above all also for them, they will accept the BMP's.

Strategies to achieve acceptance and implementation of BMP's in the field of alpine pastures will have to be elaborated and also will have to be adapted. Only the long-lasting efforts for BMP implementation will yield the intended outcome.

Various information days and workshops for alpine pasture staff within the PA1.1 carried out during the last year can be regarded as first step into this direction.

2.3. Overview table about implementation of BMPs in Pilot Action and their acceptance among stakeholders

The implementation of BMP's within PA1.1 is a continuous process, which has been started already in the course of the KATER and KATER II projects and especially was intensified in the CC-WaterS project (set up of monitoring and modelling within the water protection zone). Monitoring of hydrological parameters and modelling needs long-term engagement especially as basic data sets had to be gathered for the modelling process. Those data were gathered in previous projects.

Table 1: Evaluation of BMP's in PA1.1.

Actual management practice (GAP)		Infiltration and surface flow affecting spring quality are not known	Erosion processes around water troughs for cattle due to open soils without vegetation cover, as well as washing out faeces.
Proposed BMP		Surface flow – spring dynamic Zeller Staritzen	Placing of water troughs for cattle more frequently, avoiding concentrations of cattle / Concrete basements for the troughs and their surroundings.
Proposed solutions and recommendations	adaptation of existing land use management practices	Land use management practices do not have to be adapted.	The actual practices of alpine pastures within PA1.1 have to be adapted in most of the cases
	Adaptation of existing flood/drought management practices	Flood/drought processes can be estimated with this modelling task.	The BMP is not relevant for flood/drought management practices.
	Adaptation of policy guidelines	For this modelling procedure policy guidelines do not have to be adapted. It is a mere decision of the water supplier to apply this modelling task.	Policy guidelines do not have to be adapted for this BMP.
IMPLEMENTATION		Yes	No
In case of NO:	• possibility of implementation	---	The implementation of this BMP will be facilitated through persuasive efforts covering the alpine pasture managers (farmers, pasture masters, etc.).

	• proposal of procedure for implementation	---	In the course of information meetings, the alpine pasture staff can be convinced from the importance of this BMP.
	• other (please, specify)	---	The implementation of the BMP could be facilitated through supporting the construction works for the water troughs.
ACCEPTANCE AMONG STAKEHOLDERS AND EXPERTS			
	• possibility of implementation	The stakeholders (Vienna Water) see the implementation of modelling of surface runoff as essential contribution to water supply security.	The staff of the alpine pastures has to be informed about and convinced from the dimension of this BMP.
	• proposal of procedure for implementation	The modelling process is on the way as planned and will be finalised during project timeline, hence its implementation will be visible.	Supporting the construction of new and consolidated water troughs will support the BMP implementation.
	• other (please, specify)	---	---

Table 2: Evaluation of BMP's in PA1.1.

Actual management practice (GAP)		Grazing of cattle in or close to dolines and sinkholes	Unwanted grazing patterns of cattle
Proposed BMP		Fencing of dolines and sinkholes in order to keep cattle in distance from those karstic features	Grazing management for cattle on alpine pastures
Proposed solutions and recommendations	adaptation of existing land use management practices	Dolines and sinkholes have to be fenced within all alpine pasture areas hence this means a consequent implementation of this BMP over the space of the water protection zone.	Most of the alpine pasture areas within PA1.1 do not have a strategic grazing management system at the moment. Its implementation can be regarded as major land use management adaptation.
	Adaptation of existing flood/drought management practices	This measure does not have implications for flood mitigation or drought management.	This BMP is also in line with flood/drought issues as it helps to avoid erosion processes which could increase flood dynamics.
	Adaptation of policy guidelines	It is recommendable that this BMP becomes part of the alpine pasture policy in Austria. It is relevant for the karstic groundwater resources of Austria.	The federal and provincial policy for alpine pasture areas should be adapted so that grazing management strategies are being facilitated in the future.
IMPLEMENTATION		Partly (Yes and No)	No
In case of NO:	• possibility of implementation	Communication and persuasive efforts with the alpine pasture staff will be necessary for the implementation of this BMP.	Its implementation can be facilitated through persuasive efforts during workshops, meetings or visits with alpine pasture managers.
	• proposal of procedure for implementation	Information meetings and workshops for alpine pasture related people (alpine pasture staff, representatives of the local/regional/national authorities)	Persuasive efforts in combination with fitting policy guidelines would support the implementation of this BMP.
	• other (please, specify)	Communication of already existing fenced dolines and	---

		sinkholes via diverse media (pictures from those applications would support the efforts).	
ACCEPTANCE AMONG STAKEHOLDERS AND EXPERTS			
	• possibility of implementation	The stakeholders related to alpine pastures where this BMP is already implemented are convinced from its meaningfulness. Hence also other people from alpine pastures should be convinced from this BMP.	At the moment staff of alpine pastures tends to organize grazing in the mountains as they used to do this in the past, hence without strategic grazing management. They will have to be convinced from the usefulness of this BMP.
	• proposal of procedure for implementation	Information flow from alpine pastures where this BMP has already been implemented towards other regions where implementation is still pending.	Cooperation between local regional and national authorities with alpine pasture staff, land owners and water suppliers.
	• other (please, specify)	Persuasive efforts with alpine pasture staff who still did not implement this BMP.	---

3. Conclusions

The implementation of BMP's in PA1.1 Vienna Water, Zeller Staritzen and Central Hochschwab mountain ranges covers both modelling and alpine pasture management issues. It was strategically planned through the selection of the most crucial BMPs within this area.

The implementation of the BMP "Surface flow – spring dynamic modelling for the region Zeller Staritzen" will take place during the scheduled project time. It will be finalized soon, and the results will be provided to Vienna Water who can implement the resulting management adaptation strategies.

All BMP's for alpine pasture areas need time for implementation, as the communication process with alpine pasture staff, local and regional authorities and other related people can be seen as rather tricky. Periods with persuasive efforts have to be accepted in order to bring the implementation of all three most important BMP's in the field of alpine pastures on track.

The acceptance of those BMP's depends on the understanding and willingness to cooperation of the alpine pasture staff. This is a rather tough challenge as alpine pasture staff tends to hold on to business-as-usual forms of management. The tradition of alpine pasture management is strong, and many old-established habits are ruling the daily work. Hence the acceptance of new insights, like some of the BMP's represent, could be difficult to achieve.

Due to this situation, persuasive efforts on various levels of communication and expertise as well as motivating activities have to be carried out. The integration of all levels of national, regional and local authorities will also be of relevance.

Various information days and workshops for alpine pasture staff within the PA1.1 carried out during the last year can be regarded as first step into this direction.

The relevance of BMP application in alpine pasture regions of the DWPZ in PA1.1 is given as potential negative impacts from this land use type could arise on the level of water quality issues. Hence it of high relevance to move forward in terms of BMP application for this land use type.

4. References

PROLINE-CE WORKPACKAGE T2, ACTIVITY T2.2 REPORTS:

- D.T2.2.2 Partner-specific pilot action documentations: PILOT ACTION: PA1.1 City of Vienna – Vienna Water