WP5
Pilot Sites: adaptation strategies and measures for increasing resilience to climate change

Activity 5.4.1

Adaptation plan / design of interventions / pilot interventions on Nature Park

Vransko Jezero

Deliverable 5.4.1

DECISION PROCESS FINAL REPORT

Summary of the outcomes of the participatory phase

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1. Foreword

This document has been produced in the framework of the INTERREG Italy – Croatia CHANGE WE CARE Project. CHANGE WE CARE fosters concerted and coordinated climate adaptation actions at transboundary level, tested in specific and representative pilot sites, exploring climate risks faced by coastal and transitional areas contributing to a better understanding of the impact of climate variability and change on water regimes, salt intrusion, tourism, biodiversity and agro-ecosystems affecting the cooperation area. The main goal of the Project is to deliver integrated, ecosystem-based and shared planning options for different problems related to climate change (CC), together with adaptation measures for vulnerable areas, to decision makers and coastal communities. Additional information and updates on the CHANGE WE CARE can be found at https://www.italy-croatia.eu/web/changewecare.

2. Aims and content of the document

This document is the final report of the decision process undertaken involving stakeholders in the Vransko lake Nature Park Pilot Area and corresponds to the Deliverable 5.4.1 indicated in the Application Form. It represents the synthesis of participatory process outcomes based on the following WP5 roadmap:

1. **Design of the Participatory Process**, months 09/2019 – 05/2020: design /set up a dedicated participatory process in relation to the issues to be tackled, the nature and characteristics of the stakeholders, main local actors, citizens and associations;
2. **Implementation of the Participatory Process,** months 11/2020 – 06/2021: implementation of the designed process along 6 months, including 3 Participatory Workshops in presence or via online support as Webinar, or other tools as indicated in the following page, and all other means designed/foreseen (as local coordination meetings, public meetings, online virtual squares, blogs, online consultations tools in general, etc.) following the developments of WP3 and WP4 and their specific outcomes for the Pilot Sites;

3. CHANGE WE CARE project and the objectives of WP5

CHANGE WE CARE fosters concerted and coordinated climate adaptation actions both at Pilot Sites and transboundary level. The project explores climate risks faced by coastal and transition areas contributing to a better understanding of the impact of climate variability and change on water regimes, salt intrusion, tourism, biodiversity and agro-ecosystems affecting the cooperation area.

WP5 main objective is the preparation of climate change Adaptation Plans in Pilot Site, containing the assessment of present state and of foreseen scenarios, the indication of measures and intervention priorities, monitoring strategies and jurisdictional references.

The Planning options presented are the result of participated processes involving local authorities and stakeholders. The Adaptation Plans include actions and interventions, where appropriate, indicating the timeline and the financial strategy for the implementation of the envisaged activities and Monitoring Plans (taking stock also of WP4 indications) for observing and ensuring the durability of the project outcomes and of the implementation of the Plan.

4. Description of the participatory process designed for the Vransko lake Nature Park Pilot Area

Climate change and Vransko lake Nature park – adapt and regenerate to change

4.1 Area, themes, sectors of intervention

Vransko lake is a shallow karst lake, separated from the sea by a merely 1 km wide limestone ridge and its area occupy a cryptodepression i.e. its bottom is at 3.5 m b.s.l. Its water levels vary in the range of 0.02 – 2.25 m a.s.l. and its volumes from 50.3 to 120.3 mil. m^3 (average 75 mil m^3). The lake constitutes a complex hydrological system in dynamic balance with the sea and it is a wetland area supporting habitat types that are rare in the Mediterranean and recognized as Natura 2000 habitats.

MAIN PROBLEMS TO BE TACKLED & OBJECTIVES TO ACHIEVE

The area is suffering a number of issues related, at least partially, to climate change such as long-term drought periods, intrusion of the sea water with biodiversity loss, eutrophication processes during drought periods, planned golf courses in the catchment area and plans for further water uptake for irrigation in the catchment. For these reasons, there is an urgent need to activate measures for sea level rise adaption, for reducing irrigation in the catchment area and for stopping water uptake and illegal landfills.

ACTIVITIES TO CARRY OUT & STAKEHOLDER TO BE INVOLVED

The Project intends to activate a participatory decision process aimed at developing an adaptation/management Plan, which will be addressed to the preservation of the environmental waterflow and promoting a sustainable agriculture land use. These activities will be carried out in collaboration with Zadar county, Croatian water management company, Ministry of environment and energetics - water department and nature protection department, Agriculture land companies and private landowners and Municipality Pakoštane.

Interventions in the catchment area affected significantly the ecological character of the Nature Park in the past. The first human interventions were construction of the Prosika canal and other melioration canals starting in the 18th century, which resulted in drainage of a large part of the wetland northeast of the lake in the 1960s. Out of 570 ha of former Vransko Swamp as much as 410 ha has been meliorated, while only 160 ha remained in the natural flooding regime.

Out of 31 karst springs in the catchment, 5 are used for public water supply, 7 for irrigation of agricultural fields, and 4 are used locally (for water supply or individual field irrigation). In addition to this, illegal landfills have been made in the agricultural fields, from which the land owners pump the water out. The total annual pumping estimates amount of 0,25 m^3/s for water supply and about 0,35 m^3/s for melioration. These anthropogenic influences are worsened by the climatic change factor. Recent trends in rise of the sea level for 0.13 mm/year (detected for the period since 1969), combined with the regional decrease in rainfall and increase in water uptake, cause salinization of Vransko Lake and subsequent change in habitats. Potential risk lies in the County's plans for advanced irrigation in the catchment area.

- prolonged drought periods with low water levels
- intrusion of the sea water and salinization up to 18‰
- eutrophication processes during drought periods
- allochthonous fish species without population control (Prussian carp)
- planned golf courses in the catchment
- plans for further water uptake for irrigation in the catchment

4.2 General aim of the operation

Maintain the good environmental status/conditions of the area, preservation of the environmental waterflow and promoting a sustainable agriculture land use.

4.3 Synthesis of the participatory process

1) communication campaign /information actions;
2) organization of local participatory workshops
3) semi structured interviews with local stakeholders and focal groups organization

4.4 Context of the participatory process

Water use conflicts between privately owned agriculture land and Nature park. Flood risk, water management misunderstanding, water use restriction in drought periods. Private sector in agriculture potentially unwilling to cooperate and participate in the process. Traditional agriculture practice is unattractive and local community loses interest in that lifestyle.

4.5 Objectives of the participatory process

QUANTITATIVE 1) to increase the number of stakeholders (5 local farmers and 1 private agriculture company) participating in the definition of the future of the area and of its active management.
QUALITATIVE 2) to stimulate the elaboration of ideas by the stakeholders in the relevant themes and issues of the area, solutions to specific water management and land use problematic, analyzing and overcoming of conflicts.
GENERAL 3) to foster and favor a proactive participation of local stakeholders in design of the future of the area, to be active player and take part in Nature park and Natura 2000 site Jasen management, for maintaining conditions for sustainable economic activities and a good environmental status.

4.6 Expected results of the participatory process

QUANTITATIVE 1) 1 representative of the Ministry of environment and energy, 1 representative of Croatian waters management company, scientific expert interdisciplinary team for Vransko lake water management, 5 local farmers and 1 private agriculture company, Zadar County agriculture department, and Pakoštane municipality, included in the participatory process.
QUALITATIVE 2) to get contributes and ideas relevant for the adaptation plan, for interventions and for the solution of Adaptive water management, for the preservation of the

environmental flow by the main stakeholders relevant for the Vransko lake Nature Park pilot area
GENERAL 3) designing a set of activities and interventions as a part of the adaptation plan that will contribute to a good water management and environmental flow of Vransko lake

4.7 Timing foreseen for the participatory process

Stakeholder mapping: May – July 2019
Designing phase: September 2019 – November 2020
Implementation: November 2020 – June 2021
Finalisation phase: June – October 2021

4.8 Phases of the process

Stakeholder mapping - 42 stakeholders from the Local, regional and national public authorities and related entities, Regional and local development agencies, environmental agencies, regional associations, Universities and research institutes and local community.
Designing phase- 4 individuals from Universities and research institutes and local community.

Implementation phase - 40 people foreseen to be involved in the 3 participatory workshops, and 30 to involve with online tools to favor the continuity of exchange and consultation of stakeholders, 30 people to be involved in public presentations, etc.)
Finalization phase representatives of the local community, municipality of Pakoštane regional agency and university and scientific institutions (10 people).

4.9 Description of the phases (and timing)

Stakeholder mapping: data base containing the list of identified stakeholders in Vransko lake Nature Park / June-July 2019
Designing phase: Including external experts and scientific institutions for the Adaptive water management, for the preservation of the environmental flow; ii) Agriculture land use transfer to polyculture, perennial cultures resistant to salt intrusion, flooding and drought, and grazing; iii) Subsides from the Agri-environmental Scheme in the light of climate change and wetland habitat preservation - September 2019 – November 2020

Implementation phase (organization of workshops, communication with the stakeholders, analysis of the workshops outputs November 2020 – June 2021)
Finalization phase Preparation and writing of the adaptation plan with activities, indicators and budget June – October 2021

5. Elements and context of the participatory process for the Vransko lake Nature park Pilot Area

5.1 Stakeholders involved

The participatory process involved planned stakeholders: 42 stakeholders

Local, regional and national public authorities and related entities: Ministry of Environment and Energy, Croatian National water management company, Ministry of Environment and Energy - Nature protection department, Ministry of Agriculture; Zadar County public institution for Nature protection, Zadar county, Croatian academy of arts and Science Department for ornithology, City of Benkovac; City of Biograd, National forest management company Croatian Forests; Benkovac local office

Regional and local development agencies, environmental agencies, regional associations: NGO Ecologica, FLAG Lostura, Pakoštane Municipality, NGO WWF Adria, Agency for rural development AGRRA, NGO BIOM, Colić trade - private company for agro technical equipment.
Universities and research institutes: Science faculty Zagreb, Geology department, Biology department, Faculty of civil engineering Rijeka, University of Zadar
Local community: 20 local farmers

5.2 Participatory techniques and tools

The participatory methods used:

- Semi structured interviews with 12 local stakeholders (Local, regional and national public authorities and regional and local development agencies). The main goal was to get an overview of the main decision makers in the broader Nature park area connected with nature protection, water management and agriculture sectors.
- Survey of agricultural producers

In the period May-June 2021, 20 agricultural producers who cultivate the land and / or are engaged in livestock production along the Vransko Lake area were surveyed. The questionnaire consisted of twenty-one questions.

- Focus groups, meetings of all three planned focus groups had been held. Two focus groups involved local farmers ang small agriculture producers and the third included NGO-s. A total of 50 participants participated in the focus groups.
- Three stakeholder workshops with introductory presentations and plenary sessions and facilitated discussions with participants. A total of 45 stakeholders participated in the workshops. The workshops were thematic: 1st: Knowledge and results of analysis of the impact of Climate change on Vransko Lake with regard to hydrology, sediments, and biodiversity ; 2nd: Sustainable water management in the light of climate change; 3rd: Agriculture and climate change and measures for adaptation to climate change in agriculture

5.3 Accessibility to the documentation

The documents that have been produced during stakeholder workshops implementation are available in The Public institution Vransko lake server (not available on – line). The contact in Norma Fressel norma.fressel@pp-vransko-jezero.hr

6. Synthesis of the preliminary document to feed the process for the Vransko Lake Nature Park Pilot Area

6.1 What are the conditions now?

Vransko Lake, with all its hydrological, biological, landscape and recreational values, during the recent long dry periods, is directly endangered by reduced freshwater inflows and consequent penetration of sea water into the lake system. The effects are documented and monitored. Climate change is causing biodiversity loss due to lower water quality and eutrophication. Agriculture is one of the most important users of space in the area along and around the Lake and that the use of inputs (mineral fertilizers and pesticides) significantly affect water quality. According to the data at measuring stations (Main channel, middle of the lake and Prosika) on which water quality is monitored, an increase in nitrate concentrations is recorded from which can be concluded that the negative consequences of agricultural production are already visible. The area of Jasen, which is part of the Ecological Network of the Republic of Croatia and the area of the ecological network EU NATURA 2000, is a biologically extremely important area. Along with intensively used agricultural land, there are parts that indicate very variable water regimes during the year, sometimes very wet or even flooded, and sometimes extremely dry. According to the indicator species of the current habitats, it can be concluded that this area, before drying by a series of canals and a regulation dam, was covered with tall moist *Molinio-Holoschoenion* fresh grasslands, which were regularly mowed and grazed. The entire hydrotechnical project on Vransko Lake and its basin is designed and built for the purpose of draining excess water in winter and spring and obtaining new agricultural land, without taking into account the possible negative consequences for the ecosystem. Such planning and management of water resources of the Vransko basin has resulted in a drastic reduction of flood zones and wetland habitats, the disappearance of floodplain meadows and the shortening of the flooding period. During dry periods, extremely low water levels occur in the lake (lower than average sea tide levels).

The result of the current water regime is a reduction in depth, accelerated eutrophication, negative changes in underwater vegetation, negative impact on fish stocks, poorer water quality, faster warming, increased salinity and a gradual transition to the brackish ecosystem of the lake. Zadar county is in the same time planning and implementing the Agriculture land irrigation in the Vransko field with water feeding the lake with freshwater. The National water management company is managing the drainage canals with canal mowing and sediment clearing in order to secure the agriculture land from flooding. The local farmers are aware of the climate change effects and are looking for solution for adaptation to the effect of climate change especially drought and soil erosion.

6.2 Which future we see for this area?

Vision for the Pilot Site giving possible "pictures" of the area in the future, considering the outcomes of the WP4 indications, and leaving open the discussion according with overall planning and functions of the area, protection and valorization policies, local community's needs, etc.;

The irrigation program in the Watershed area was presented at the workshop Vransko field and its state of implementation. Both farmers and Agricultural experts are united in the opinion that a profitable agricultural production, primarily fruits and vegetables, is not possible without irrigation. Total projected area of irrigation system of Vransko field is 4,449 ha, and in the first phase of construction 1,625 ha. Currently for irrigation available water from watercourses, natural and artificial reservoirs and groundwater is being used. The new system envisages construction of two reservoirs, and at the workshop there were different opinions about how these accumulations will affect the salinization of Lake Vransko. The risks that may arise are related to the pumping of excessive amounts water and drainage channels downstream of the water intake, which ultimately can negatively affect the plant and animal species of Vransko Lake in scenarios of Climate change effects. On the other side the Public institution needs to urgently prioritize and launch a series of activities to establish integrated water regime management in order to restore and maintain a stable freshwater wetland ecosystem. The management priority is to prevent further salinization and aging of the lake and to maintain the existing range of diversity of wetlands (open water, wetlands and flood zones), and then to revitalize the destroyed habitats of Jasen by ensuring annual flooding.

6.3 Which objectives and strategies?

Introducing hypothesis of objectives to be discussed according with a vision for the area, vision itself to be shared and discussed, as well, in the Participatory Process;

Nature parks' vision of the area is that Vransko Lake is actively managed by water levels that mimic the natural cycle of water dynamics – the cycles of flooding of natural meadows in the spring support fish spawning and bird nesting, keeping the water level optimal for providing habitats important for migration and bird nesting. Freshwater ecosystem preserved by retaining sufficient fresh water in the lake, which prevents the penetration of sea water and salinization of lake waters. In the Nature Park and Natura 2000, Jasen area has implemented regenerative measures to adapt to climate change on agricultural land, in order to revitalize part of the once drained wetland.

The objectives are restoration and maintenance of a stable freshwater wetland ecosystem and preserve the existing diversity of habitats, landscapes and geological phenomena, as well as the target species of flora and fauna.

6.4 What we suggest doing in this frame?

The development of a conceptual solution for regenerative agriculture is to examine and propose an agricultural system and practices that will make the agro-ecosystem as resistant as possible to climate change, and at the same time support the conservation of habitats. The solution should take into account the entry and retention of flood waters in the area of Jasen, and suggest a way to use which will restore wet grasslands. The solution needs to look at the main pressures and threats affecting habitat and species in the context of agriculture, and how different aspects of agricultural management can contribute to habitat conservation and improvement. Emphasis should be placed on those measures that have a positive effect on conservation, as well as the outflow of atmospheric carbon, and which are both environmentally and economically sustainable.

Proposal of agro-environmental measures for climate change and protection of wetland habitats and communication with relevant institutions regarding the possibility of including the proposed agro-environmental measures in the Rural Development Program of the Republic of Croatia after 2020.

The Nature park will collect data on water quality parameters and water levels in Vransko Lake and its basin, in cooperation with Croatian water management company, analyze and interpret the collected data on water quality and water levels. According to the results of monitoring the trophic condition, if necessary, intervene with mechanical methods that need detailed investigation. The complex food web needs detailed and continuous monitoring on all trophic levels, in order to better understand the impact of climate change on biodiversity. Conduct biological condition monitoring based on all relevant groups simultaneously: phytoplankton, zooplankton, macrozoobenthos, Phyto benthos, periphyton, fish.

7. Synthesis of the participatory process and outcomes

is achieved by sowing cover crops, undercrops and intercrops. Of the other nature-based solutions there were words about the importance of diversification on the farm what includes

Focus group 1

Focus group 1 was held on May 5, 2021, in the premises of the municipality of Pakoštane. The focus group was attended by 14 participants, of which 11 were farmers. Participants discussed the current state and problems of agricultural production, including climate change. They also talked about the perception of farmers about the restrictions that they consider to be imposed on them because they have production in a protected area of nature. They also discussed the perception of the role and work of the Public Institution PP Vransko Lake, as well as previous experiences and possible forms of cooperation between farmers and the Public Institution.

Focus group 2

Focus Group 2 was held on June 17, 2021. The Focus Group was attended by 19 participants, among whom were representatives of nature protection NGOs, agricultural producers, the Croatian Chamber of Agriculture and other stakeholders.

At the meeting of the focus group, the current situation and problems in the area of protected areas of nature Vransko Lake and Jasen were discussed. The participants discussed the issue of agricultural production, the impact of agriculture on the biodiversity of the area along Lake Vransko, previous experiences of cooperation between the non-governmental sector and farmers, especially in the protection of a critically endangered bird species, the European roller.

Focus group 3

Focus Group 3 was held on June 17, 2021. The Focus Group was attended by 16 participants, of which eight farmers are cattle breeders who raise livestock within the boundaries of PP Vransko Lake or in its immediate vicinity. Representatives of the Public institution emphasized that the institution, contrary to the common impression of livestock farmers, is extremely interested in the survival of livestock because only in this way can valuable dry and

wet grasslands be maintained and preserved. During the focus group meeting, issues of land ownership and use, land rental opportunities, legal requirements and obstacles, and ways in which the Nature Park can help farmers, to the mutual benefit, were discussed. It was agreed that talks and finding a solution will continue in the future.

- Workshops

Workshop 1

The first stakeholder workshop was held on 26 th and 27 th November 2020 in Biograd na Moru. A total of 15 participants in live presence and 4 more online, exchanged knowledge and results of analyzes of climate change impacts on Vransko Lake with regard to hydrology, sediments, various aspects of biodiversity from lake bottom organisms, through phytoplankton, zooplankton, all the way to macroscopic algae and fish. On the second day of the meeting on a field visit To Vransko lake Nature park was organized for all participants together with the final round table and a discussion, the first proposals of measures for adaptation to climate change were formalized, which have been further elaborated and presented at two following stakeholder workshops.

Workshop 2

The second workshop was held on May 5, 2021. The topic of the workshop was sustainable water management in the light of climate change, with special emphasis on the issue of irrigation and enabling natural seasonal flooding of areas on Jasen. The workshop was attended by 18 participants including representatives of the Ministry of Economy and Sustainable Development (Director of the Institute for Environmental Protection and Nature and Director of the Climate Activities Directorate), representatives of the Ministry of Agriculture-Advisory Service, Zadar County, Croatian Waters, academic institutions, farmers and other stakeholders.

The aim of the workshop was to deepen the understanding of sustainable water management in the area of Vransko Lake Nature Park and its peripheral parts - with special reference to the needs and justification of irrigation and flooding of existing agricultural land. Presentations and discussions included hydrological water regime and water management in the Vransko Lake area, quantity and quality of water, with special reference to agriculture as a user and potential water pollutant, irrigation plans for agricultural areas along Vransko Lake, obligations of the Republic of Croatia in relation to ecological network areas. Natura 2000. It was concluded that if irrigation is applied without knowing the basic properties of soil, water and the right irrigation systems, weak and even negative results usually occur, both in the expected yield of the cultivated crop and possible deterioration of soil properties. The participants of the workshop also commented on the property and legal relations on state-owned agricultural land and on the role and competencies of interested stakeholders.

For wet grasslands it is important that there are favorable hydrological conditions that are now disturbed due to Climate change impact as well as poor water management in the Vransko lake catchment area.

Among the most important conclusions of the workshop is that they are unresolved property rights relations as well as spatial planning situations on state-owned agricultural land that are the biggest challenges in the introduction of climate change adaptation measures.

Workshop 3

The third stakeholder workshop was held on June 17, 2021. The workshop was attended by 19 participants. The aim of the workshop was to deepen knowledge about the contribution of agriculture to climate change and the impact of climate change on agriculture. Measures for adaptation to climate change in agriculture were presented, namely technical and technological solutions and those based on nature. The workshop also discussed regenerative agriculture in the context of the conceptual design of the Jasen area.

The workshop presented the different types of adaptation measures that are divided into:

1. Measures based on technical solutions;

2. Nature based solutions

3. Social innovation

Technical and technological solutions include the introduction of precision agriculture (precision agriculture), input optimization and irrigation. When it comes to irrigation, the emphasis must be on "Smart irrigation" based on more precise weather forecasts and early warning systems. An important role in this have agricultural meteorological stations that are automatic integrated with platforms for timely monitoring of key real-time microclimatic conditions and measuring sensors parameters in soil, air and on the plant itself. It was pointed out at the workshop that in Zadar County is already implementing a project to monitor weather conditions with early warning system for farmers. From other technical solutions was to grow indoors (greenhouses and greenhouses), machinery for conservation tillage, collection and water storage (micro accumulation) and providing shade and enough water for the cattle. From the solutions based on nature, the cultivation of species and varieties is presented resilient to climate change and measures aimed at construction organic matter in the soil (increase in humus content in the soil significantly decreases the negative effects of the drought that farmers pointed out as the biggest problem and consequence of climate change). It was also pointed out that the ground must not be left "naked" which mixed plant and animal production, wider crop rotation, agroforestry and planting hedges and windbreaks. Some social innovations such as founding groups were also presented farmers with the aim of implementing adaptation measures, concept "Carbon farmers" who may receive additional payments in the case implementing measures to retain carbon in the soil, and some marketing initiatives by which farmers brand their products as "Climate friendly".

The workshop concluded that farmers are most interested in technical and technological solutions (eg. irrigation, greenhouse cultivation). Although nature-based measures have the largest potential for adaptation to climate change and are not associated with large investments, farmers use them insufficiently. The principles of regenerative agriculture were also discussed at the workshop (e.g. reducing or omitting aggressive and frequent tillage, gradually reducing dependence on external inputs, covering the soil with biomass or plant mulch, keeping the roots of plants in the soil through all year round, etc.) Examples of good practice of regenerative agriculture are also presented, of which the most interesting to the participants was the Slovenian example of a restored barrel the Škocjan Bay wetland area, natural and ornithological reserve area of 115 ha. It was concluded that in the case of Jasen, although solutions would be presented could be interesting and applicable, the biggest

problem disposition agricultural land including unclear strategy on state and local level around the future management of that land.

8. Inclusion of the process outcomes in the Adaptation Plan for the Vransko Lake Nature Park Pilot Area

The outcomes of the participatory process are:

1) increased number of stakeholders participating in defining the future of the area and its active management

2) encouraged elaboration of ideas by stakeholders on relevant topics and problems in the area, and offered solutions to specific problems of water management and land use and conflict resolution

3) encouraged participation of local stakeholders in designing the future of the area, participation in the management of the Nature Park and Natura 2000 area Jasen in order to ensure conditions for sustainable economic activities and good environmental conditions.

Agriculture is extremely important for the preservation of nature in the area of Vransko lake. Guidelines for conservation measures of an internationally important area for birds, and an important area for wild taxa and habitat types, which directly or indirectly relate to agriculture concluded during the participatory process are:

- the need of reduction of pumping excessive amounts of water from lake tributaries
- Providing incentives for traditional agriculture and livestock
- Prevent lawn overgrowth
- Purposeful and justified land conversion
- Providing incentives for biodiversity conservation
- Preservation of water and wetland habitats in the most natural condition, and their eventual revitalization
- Ensuring a favorable amount of water in aquatic and wetland habitats that is necessary for the survival of habitats and their significant species
- Preservation / improvement of favorable physical-chemical properties of water
- Maintaining a favorable water regime for the preservation of wetland habitats
- Conservation of biological species important for habitat type
- Prevention of the introduction of foreign (non-native) species and genetically modified organisms;
- Avoid regulation of watercourses and changes in the water regime of water and wetland habitats if it is not necessary to protect the lives of people and settlements
- Preservation of a favorable ratio between lawns and thickets, including prevention of the succession process (prevention of overgrowing of lawns and bogs, etc.)

• Preservation of a favorable low level of mineral values in soils of dry and wet grasslands

The most important topics discusses that will be also developed in the adaptation plan are measures of cultivating resistant plant species and varieties, building organic matter in the soil or increasing the carbon content of the soil; conservation soil treatment that are all a part of the regenerative agriculture conceptual design plan that will be a part of the adaptation plan. Since the Public Institution is not directly responsible for the implementation of adaptation measures to climate change in agriculture, especially on privately owned agriculture land, the planned activities can only be informing, raising awareness of farmers and other responsible institutions, implementing projects in cooperation with farmers and associations, coordination and facilitation with relevant institutions (Croatian forest company, Croatian Waters company, municipalities, and counties), organization of fairs, sales stands, production of leaflets and brochures. Records of meetings, workshops and education with local farmers (number of meetings, number of attendees, topics, etc.), number and type of publications intended for farmers, records of joint activities and projects (number, topics, etc.), etc. can be kept. Vransko Lake public institution does not have all the necessary powers, nor the necessary resources, to implement all necessary measures and interventions, especially on water resources, so the implementation of concrete practical actions requires cooperation with Croatian Waters with the unequivocal support of relevant ministries, especially the Ministry of Economy and sustainable development, but also the Ministry of Physical Planning, Construction and State Property. Also, future EU projects are planned as pilot scheme for carbon sequestration and water quality preservations as a measure of adaptation to climate change.

9. *Closing remarks on the experience, future implementation and transferability*

The stakeholder participatory process was a fruitful process that included a lot of interested parties during different events. The communication on the topic is of most importance as well as the interaction between the scientific community with local decision makers and local community that resulted in education stakeholder awareness raising. The process opened a lot of opportunities for interaction between stakeholder and started a process that is crucial for the Nature park to be continued during the Plan implementation. The adaptation plan will be presented on the final workshop planned for the second half of October 2021 with the objective of achieving better transferability of the Action plan and the Participatory process. In the action plan many transferability activities like future meetings, cooperation plans among institutions and workshops are planned.