

# Working Group “INN”

## Science cafés for a sustainable future

### Transdisciplinary communication to understand the impacts of climate change on cultural heritage in the Danube River Basin

#### ABSTRACT

The project addresses lack of transdisciplinary research in dealing with impacts of climate change on cultural heritage in the Danube River Basin, which are not sufficiently understood by science and inadequately treated by routine. Fostering mutual learning between lay public, policy-makers and scientists will lead to an improved state of the art in science, to more effective policies and to a raised lay public's awareness of this real world problem. We aim to address these issues through 5 scientific cafés and the accompanying events in 5 cities in the DRB, each of them hosting one transdisciplinary team. The main activities to promote transdisciplinary research will include plenary discussions, facilitated by experts in communication, following screenings of films or panel discussions. Excursions will also foster understanding of discussed problems by representatives of all three involved groups. Transdisciplinary results will be disseminated e.g. through scientific papers, publications for politicians, a film and permanent exhibitions for lay public.

#### KEYWORDS

Science cafés  
Climate change  
Cultural heritage  
Transdisciplinary research  
Danube River Basin

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## WHAT IS THE BACKGROUND OF THE PROBLEM?

There are numerous examples of *gaps between scientists, stakeholders and decision-makers*, giving ground for various anti-scientific views. Many politicians to the benefit of their careers claim to be sure about uncertain issues and are strongly oriented towards the present, they pay little attention to the future (Fischer et al. 2008). Numerous traditionally oriented scientists either do not want to cooperate with politicians because they are afraid of political abuses of their results (Elzinga 2008), or they only play the traditional role of academics advising politicians by providing expertise (Pohl 2008; Russell et al. 2008) and they look down on lay public (Elzinga 2008). The importance of civic mission of universities, with special focus on enabling individuals to engage in active and democratic participation, is emphasized by European Parliament and the Council (European Commission 2006). Stakeholders often think more of their needs than of requirements based on ethics or concepts (Kiteme, Wiesmann 2008), additionally, they frequently 'fail to discriminate between scientific facts, value judgements and intention' (Hindenlang et al. 2008, p. 317). The complex language of science on the one hand, and combination of conservative religious influence and conspiracy theories on the other, also contribute to the mentioned gap. Our *project promotes integrated research involving scientists, stakeholders and decision-makers in an innovative way*. We intend to address it by focusing on *the impacts of CC on CH in the DRB*.

### PREDICTED CC IN THE DRB IN THE 21<sup>ST</sup> CENTURY:

Projected trends of changes in temperature in the DRB in the 21<sup>st</sup> century are highly reliable. Models agree that the *average yearly, summer and winter temperature* will increase; more intensively at the end of the century. The rate of growth will in general rise from NW to SE (ICPDR 2013).

*Mean annual precipitation* in N Europe will rise, in its S, it will fall. The DRB lies in-between. Changes in various parts of the DRB will be opposite, they will be more intensive in the late 21<sup>st</sup> century. However, simplifications of models affect the quality of estimated changes. In the W DRB an increase in projected *average yearly precipitation* in the last three decades of the century is expected, whereas it is projected to decrease in the E DRB at the same time. The *average summer precipitation* in the period 2021-2050 will fall in the E DRB. The majority of the DRB is expected to face a decrease in summer precipitation between 2071 and 2100, especially in the E (ICPDR 2013).

Many practices and arrangements that can be characterized as (in)tangible CH will be affected by *extreme weather events*, closely related to changed climate and weather patterns. They will have increased in the whole DRB by

the end of the century. Not only the rate of certainty attributed to occurrence of various kinds of extreme weather events in different studies but also the rate of agreement between these projections prove that CH in the DRB will be affected by a rise in temperature and changed winds' characteristics. Drought hazard will rise in the majority of the DRB except for its alpine parts. The Upper DRB is predicted to face an increased risk of storm-related heavy precipitation and high wind speed. In the Middle DRB, there will possibly be fewer frost days, more extreme-precipitation-posed risks in winters and less of them during summers. Variations of flood hazard in the DRB are uncertain, especially at a local level which is important for the CH, and the level of agreement between various studies is low (ICPDR 2013).

*Transdisciplinary research* connects interdisciplinary science and non-scientific partners, e.g. stakeholders and decision-makers. It serves to solve those highly relevant complex problems of real world that are insufficiently understood by science and inadequately treated by routine, e.g. the CC-caused challenges connecting social and environmental components. Transdisciplinary research yields practical science-based outcomes (Angelstam et al. 2013c; Carew, Wickson 2010; Funtowicz, Ravetz 2008; Hindenlang et al. 2008; Hirsch Hadorn et al. 2008; Wickson et al. 2006; Wiesmann et al. 2008). It enables participatory deliberation and decision-making involving lay public, public institutions and private sector (Hirsch Hadorn et al. 2008).

#### ADDRESSED PROBLEMS:

1. *General public and politicians are unaware of the importance of the results of CC studies, and the impact CC can have on our everyday life, as well as on CH.*

Research conducted in 2013 points out that citizens of many countries from the DRB do not perceive CC as a very important issue: only 57% of people in Slovenia, 46% in Hungary and 38% in Romania think that CC is one of the serious problems the world is facing (compared with 81% in Sweden or 73% in Denmark) (NASA: Global Climate Change 2015). Furthermore, lay public and the majority of politicians perceive the impacts of CC more as a topic of distant future than as an issue of their lifetime (Toth, Hizsnyik 2008).

2. *There is a gap in communication between lay public, policy makers and scientists that causes democratic deficits (lack of input from public and experts in public policies), negatively affects the state of the art in science and the adequacy of policies.*

There are two main reasons why CC represents a good platform for promoting transdisciplinary research in an innovative way.

1. CC is a topic affecting various stakeholders and it will have a significant impact on European CH.
2. The lack of policies addressing the effects of CC on CH as well as the state of the art in respective sciences is a direct consequence of communication problem between scientists, policy-makers and lay public.

## **WHAT ARE THE LINKS TO EUSDR AND HORIZON 2020 (OR OTHER TARGETED FUNDING SCHEME) CHALLENGES AND PRIORITIES?**

Connecting people, ideas and needs, the *EUSDR* represents a new opportunity to address the challenges and potentials of the DRB from the perspective of an integrated approach contributing to sustainable development. This document addresses a wide range of issues divided into 4 pillars and 11 priority areas (PAs). Engaging citizens in science through the cafés and rising public awareness about CC-related problems will contribute not only to development of knowledge society (PA 07), investment in people and skills (PA 09), but also to management of environmental risks (PA 05). This way of promotion of impacts of CC effects on CH will promote institutional capacity and cooperation (PA 10) (EUSDR).

The chapter 36 of *Agenda 21* draws attention to the importance of formal education, public awareness and training for promotion of sustainable development (Agenda 21). *EU Directive 2003/04 EC* seeks to strengthen existing rules on public accession to environmental information in the line with *Aarhus Convention* (European Parliament 2003; UNECE 1998). Through the *Convention Concerning the Protection of the World Cultural and Natural Heritage* the nations of the world have agreed to recognize and protect unique and irreplaceable properties of universal value (UNESCO 1972).

*Horizon 2020* (Work programme 2014-2015) calls for strengthened disaster-resilience: *Safeguarding and securing society*, including adaptations to CC (Work programs part 12 and 14). There are also funded activities that support the relations between science and society (Work Program part 16 *Science with and for society*) (Horizon 2020).

## **WHAT IS THE STATUS QUO?**

Literature often stresses the importance of *transdisciplinary, multi-stakeholder cooperation in environmental research* (Angelstam et al. 2013a; Hage et al. 2010) and there are examples of successful transdisciplinary projects (e.g. El-

zinga 2008; Hunecke 2011; Toth, Hizsnyik 2008). However, the claims of transdisciplinarity are in many cases only theoretical. Recently, a couple of projects have been developed to foster cooperation between science, politics and lay public, discussing environmental problems like CC. On the one hand they have emphasized the importance of science for solving critical societal issues, on the other hand they have promoted the role of non-scientific expertise. The example of the Neatherlands Environmental Assessment Agency deeply involved in such cooperation proves that this kind of approach leads to encouraging results. However, according to their experience communication between science and stakeholders often turned to *consultations* instead of *interactions* (Hage et al. 2010), scientists tend to 'regard stakeholder participation as a useful tool for gathering new knowledge, but they prefer to *study them*, rather than *learn from them*' (Hage et al. 2010, p. 259).

## WHAT YOU CAN DO FOR SOLVING THE PROBLEM?

None of the three *phases of transdisciplinary research* – identification and structuring of problem, its investigation and obtaining successful results in the real world – is evident in advance, they *are part of the recurrent research process*, in all the three phases scientists and non-scientific partners actively collaborate. Their joint effort is based on mutual learning causing also returns to the phases that were interpreted as concluded which in many cases results in major restructuring of further project development (Hirsch Hadorn et al. 2008; Wiesmann et al. 2008). Universities do not provide the optimal environment for transdisciplinary research since 'there needs to be a shift towards the intrinsic valuing of collaboration and teamwork, a culture of reward sharing, a spirit of mutual responsibility and learning and more idealism and outcome (not output) focus in the generation and use of knowledge' (Russell et al. 2008, p. 470). Therefore, there is a need for structures facilitating transdisciplinarity promoting formal and informal interaction but at the same time not trying to illusively institutionalize transdisciplinarity. There is *a need for 'flexible, research-driven groupings'* (Russell et al. 2008, esp. p. 469) *which our science cafés, the accompanying excursions, (preparations of) exhibitions and workshops will enable*. The provided *active project management* will crucially contribute to the success of transdisciplinary reaserch teams (cf. Hollaender et al. 2008).

Since improvement of communication and exchange of knowledge plays the key role in management of transdisciplinary projects (Hollaender et al. 2008), *our science cafés and the mentioned accompanying events, will ensure effective and well-structured communication between scientists, involved*

*representatives of lay public and politicians.* Skilled facilitators will provide enough opportunity for sharing reflections and opinions based on equality of all participants leading to at least temporarily shared culture needed for solving problems of real world. Sequences of science cafés will ensure regular progress of transdisciplinary research (cf. Hindenlang et al. 2008). All participants will be encouraged to find and use a common language, we will stress the importance of avoidance of scientific terms, that will not be clear to the rest of participants, but at the same time of preservation of exactness of meanings (Fischer et al. 2008). External observation will help solving problems of knowledge integration. External coordination saves the problem of transdisciplinary researchers preoccupied by organizational obligations (Hunecke 2011); our science cafés will provide it.

Due to social and environmental uniqueness of each and every case, results of the project *will crucially contribute to adaptations of CH to CC at a local level*; this kind of transdisciplinary research is equally important to the one that produces models (Krohn 2008).

It is a challenge to find funding opportunities for transdisciplinary projects (Carew, Wickson 2010), many proposals are rejected by unqualified disciplinary peers not recognizing the added value of results (cf. Pohl et al. 2008). Our project will give the *opportunity for five teams to work in a transdisciplinary manner*. The teams will be selected according to the degree of novelty, complexity and relevance of investigated real world problems and previous experience of involved scientists in teamwork, interdisciplinary and transdisciplinary research. Selection of relevant representatives of lay society will be carried out according to pre-interviews revealing that the very example of impacts of CC on CH which will prior to it be selected by the corresponding interdisciplinary research team, represents a problem for them, and with regard to communication skills. We will in particular try to get involved locally respected people who will help us to raise the interest of other relevant representatives of lay society in participation (cf. Carew, Wickson 2010; Toth, Hizsnyik 2008).

## **HOW CAN THIS IMPROVE THE ROLE OF CULTURAL HERITAGE AND SUSTAINABLE DEVELOPMENT OF THE DANUBE REGION**

In order to promote sustainable development of the DRB, we will upgrade the harmony between its environmental, economic and societal pillars. A transdisciplinary approach that mutually connects science to non-scientific stakeholders is necessary in order to foster sustainability by mutual learning and by commitment of stakeholders to it (Angelstam et al. 2013a; Hage et al. 2010).

The predicted CC in the DRB in the 21<sup>st</sup> century will severely affect the CH. E.g., traditional agricultural practices are due to the history of economic development best preserved in its SE. This is exactly the area where drought hazard will rise the most thus a transdisciplinary cooperation is substantial to preserve this kind of CH. The CC-caused changes in agricultural production can affect also local cuisine. Lower volumetric flow rates of streams there will reduce the possibility of traditional use of water power in average summers. Due to the increase in winter temperatures the intangible CH related to ice (e.g. traditional practices of fishing below the ice) will be more and more threatened without transdisciplinary cooperation. This applies also to many other traditions related to seasons. Due to uncertainty of predictions, scientific cafés will not deal with connection between CH and floods. Relationship between CC and CH does not raise only questions of preservation of existent CH, it is also the issue of new opportunities the CC will offer. Lower discharges of rivers during summer droughts will e.g. help recognize unknown archaeological sites on riverbeds or at least enable their excavation with lower ecological footprint and at a lower price.

The relationship between CC and CH does not address only environmental and economic pillars of development of the DRB. The CC-adapted management of CH will e.g. prevent depopulation of underdeveloped areas by preserving and creating possibilities of CH-related tourism development that can contribute to a lower rate of emigration of working force (Angelstam et al. 2013b). Since lay public is often misinformed about issues of CC (Hage et al. 2010), one of the events in each scientific café organised in each involved country will address mistakes in reports on impacts of CC on CH that will address the societal challenge of knowledge society.

Transdisciplinary interpretation of tangible and intangible CH in the context of information from archival sources and natural archives will provide an insight in possibilities to create sustainable landscapes. Landscapes are complex systems. If we change the ways or magnitudes of artificial interventions into them, not all the changes can be predicted. Historical information is thus crucially needed as it provides evidence-based knowledge of CH that is required for restoration of historical cultural landscapes or their elements, as well as the formation and evolution of cultural landscapes in time. This will through transdisciplinary cooperation foster the creation of more sustainable landscapes (Angelstam et al. 2013a; Angelstam et al. 2013b; Winiwarter, 2014).

## WHICH IS THE ADEQUATE METHODOLOGICAL APPROACH?

### WHICH SCIENTIFIC DISCIPLINES MUST BE INVOLVED IN THE PROJECT?

Specialists in *Andragogy, Pedagogy and Didactics* will elaborate guidelines for experts in humanities, natural, technical and social sciences. The mentioned specialists in knowledge transfer will test the experts' communication skills before they will deliver lectures in scientific cafés. This education in communication will start at the very beginning of the project time and will continue throughout the whole duration of the project.

In order to present the impacts of CC on CH in a complex way required to reach our main transdisciplinary objective, lectures in scientific cafés will be interdisciplinary or multidisciplinary, the same applies to the accompanying events. They will combine results obtained by methods of *Climatology, Meteorology, Hydroengineering, Landscape Ecology, (Environmental) Psychology, Ethnology, Anthropology, Sociology, Law, (Historical) Geography, (Environmental, Economic) History, Art History, (Landscape) Architecture, Archaeology, Palinology, Forestry, Agronomy and Economy* (cf. Angelstam et al. 2013b; Hunecke 2011; Winiwarter, 2014).

*Experts in communication* will be engaged in moderation of discussions during science cafés, but will also facilitate our work during other activities. Furthermore, PR experts will be consulted regarding the project's public campaign and its visibility in the local and national media. It is very important that all press releases and reports will be made in a way that stresses the key role of this project – demistification of science or politics and invitation for an open dialogue and collaborative research.

Particular emphasis is to be placed on the role of *sociologists and political scientists focusing on citizens' participation* at the local level, as well as on the role of experts in democratic decision-making. Their task will be to facilitate communication of ideas and proposals directed towards improving public policies and political decisions at the local level.

### WHICH DATA AND METHODS ARE NEEDED?

In order to *bridge the gap between science, politics and society* transdisciplinary methodological approach will connect science, politics and civil society (Hage et al. 2010). Four kinds of data will be needed. In the first stage of the project, *data on public awareness of impacts of CC on CH* in the regions where



our science cafés will be organized, as well as on the *existent cooperation between science, political decision-makers and civil society* will have to be collected. In the second stage, data from *existing scientific studies on impacts of CC on CH* in the DRB forming a solid base for selection of interdisciplinary teams of scientists who will form one third of our transdisciplinary teams will be needed. In the third stage, data on *existing successful transdisciplinary communication practices* will be required in order to enable the beginning of our science cafés. In the fourth stage, *data on impacts of CC on CH from lay public and politicians* will be needed; their confrontation with existing scientific knowledge, new common solutions based on *evolution of integrated methodologies* will provide the added value (cf. Wickson et al. 2006). Awareness of existence, respect and exploration of different perspectives of the problem will represent the basis for integration (Pohl et al. 2008). Characteristic for transdisciplinarity, *specific methodologies will be developed* for each case study separately during the recursive research process (cf. Russell et al. 2008; Wickson et al. 2006) because impacts of various components of CC on diverse elements of CH in the DRB differ and are placed in various social and environmental contexts.

For *internal reflection of quality* of the project, we will for each science café and the accompanying events use the following questions: 1. 'How was the research problem formulated?', 2. 'What is the relationship between methodology and problem context? How have competing epistemologies been reconciled?', 3. 'How has collaboration featured in the project', 4. 'How well have knots of communication between different bodies of knowledge been created? Is the weave informative, useful, compelling?', 5. 'Does the research acknowledge, resolve and/or accommodate paradox?', 6. 'How ha[ve] the researcher[s] reflected on, recognised or accounted for the limitations and subjectivities of their approach and project outcomes?' (Wickson et al. 2006, esp. pp. 1055-1056).

## **WHO IS YOUR PROJECT CONSORTIUM?**

### **INSTITUTIONS WHICH WILL BE INVOLVED IN THE PROJECT? EXPERTISE THEY BRING TO TACKLE THE CHOSEN PROJECT PROBLEM?**

The complex structure of this project requires a careful division of tasks between partners and other collaborators. Namely, in order to facilitate commu-

nication between various stakeholders, partners coming from different areas of expertise but also from different social groups have to be included.

*We will focus on scientific centers in the DRB* in this project as bases for debating and communicating emerging scientific, technological and societal issues related to CC. *Attaching the program to existing research bases* (like regional universities) enables us to use the facilities and knowledge background of these research centers. We plan to create a scientific-public cluster by connecting local science actors and public authorities, increasing public awareness of Responsible Research and Innovation which will also make possible the impact and continuation of activities even after the end of the project.

We plan to start the project based on *5 universities in the DRB, based in medium sized cities* (40.000-400.000 inhabitants), which enables a *more direct connection to the lay public* reaching also remoter areas around not covered by similar local projects. Each university will be responsible for activities planned in its surroundings. By making the project a structural example for similar projects, it will be possible to continue with it throughout the region in cooperation with other universities and research centers either during, or after the project timeframe of 5 years.

We selected the starter institutions (project partners) according to their *distribution in the DRB* and their *proximity to remote areas*, as well as to *ethnically pluralist regions*. A part of activities related to each science café will be organized in minority languages of the respective areas.

Lead partner university will run the PROJECT MANAGEMENT (WP1), all the involved partners will handle DATA COLLECTION, PLANNED ACTIVITIES and respective COMMUNICATION and SURVEYS.

UNIVERSITY-TOWN	INHABITANTS	RESPONSIBLE FOR WORK PACKAGES				
Maribor	95171	WP1	WP2 (WP2.D1 and D2)	WP3	WP4	WP5
Pecs	157701		WP2	WP3	WP4	WP5
Novi Sad	388500		WP2	WP3	WP4	WP5
Miercurea Ciuc/ Târgu Mureș	41971/143939		WP2	WP3	WP4	WP5
Chernivtsi	250085		WP2	WP3	WP4	WP5

## PROJECT PARTNERS WITH EXPERTISE HIGHLIGHTED



1.  
SLOVENIA  
UNIVERSITY OF MARIBOR (LEAD PARTNER)

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The program will be attached to the existing Research and Development Strategy of the University of Maribor 2013-2018 (University of Maribor 2012), which has an umbrella project IOT@UM – Innovative Open Technologies. IOT@UM is a regional development project aimed at fostering a symbiotic relationship between the University, economy and local communities through open innovations and technologies. The existing project is in accordance with the smart specialization strategy, it focuses on the priority of Horizon 2020 “Societal challenges – Health, demographic change and wellbeing” with the possibility to function as a KIC (Knowledge and Innovation Community) in the field “Innovation for a healthy life and active ageing”. The University of Maribor with expertise in implementing Horizon 2020 program on regional level can play the role of a lead partner in the multinational program of Pan-European public outreach.

Cooperation with *Anton Melik Geographical Institute at the Research Centre of the Slovenian Academy of Sciences and Arts* in Ljubljana and with the *Slovenian Environment Agency* of the Ministry of the Environment and Spatial Planning of Slovenia enables the future lead partner to tackle the well researched national and international problems of CC.

Languages of science cafés and the accompanying events: mainly SLOVENIAN in Maribor and HUNGARIAN in an outreach event in Lendava for the Hungarian minority in Slovenia.



2.  
HUNGARY  
UNIVERSITY OF PÉCS

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The University of Pécs’s Doctoral School of Regional Science in cooperation with *Centre for Economic and Regional Studies of the Hungarian Academy of Sciences* based in Pécs has high level of expertise in giving global problems a regional focus. In cooperation with local research centers like “EUROPÉ” (Re-

search Centre for the Study of the Mediterranean Region and the Carpathian basin) and the Geography Faculty, this partner will be responsible for elaboration or critical evaluation of plans how global problems addressed in our project will be addressed at a regional and local level within the DRB.

Languages of the science cafés and the accompanying events: HUNGARIAN and CROATIAN in an outreach event for the Croatian minority in Hungary that will also take place in Pécs.



3.  
SERBIA  
UNIVERSITY OF NOVI SAD

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*Centre for Meteorology and Environmental Predictions of the Department of Physics at the Faculty of Science* has several years of experience in studying the CC and its impacts, the respective adaptation, and mitigation through national programs. Its contribution as project partner will provide a comparative perspective of solutions of the DRB-problems at a national level from a country which is not yet a part of the European Union.

Languages of the Science Cafés and the accompanying events: SERBIAN and HUNGARIAN in an outreach event for the Hungarian minority in Serbia organized in Novi Sad in cooperation with the Economic Faculty of the University of Subotica.



4.  
ROMANIA  
SAPIENTIA HUNGARIAN SCIENCE UNIVERSITY  
OF TRANSYLVANIA IN MIERCUREA CIUC

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Working in a multi-ethnic environment the Department of Social Sciences has already participated in several international programs, like the KNOWledge & POLicy program of the European Union aiming to connect science to policy making. The main idea behind the program is information and expertise in Europe (Knowledge & Policy 2011). This expertise has an additional value to see the addressed problems in an interethnic view.

Languages of the science cafés and the accompanying events: ROMANIAN and HUNGARIAN on locations in Miercurea Ciuc and Târgu Mureş (in cooperation with the local faculty of the Sapiientia University).

## 5. UKRAINE YURIY FEDKOVICH CHERNIVTSI NATIONAL UNIVERSITY

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Participation of a historical and well established Ukrainian university on the edge of the DRB on the Prut river will help to promote European ideas in the areas of the DRB which formerly belonged to Soviet Union like the Chernivtsi, Zakarpatska and Odesa Oblasts of Ukraine and the entire territory of the Republic of Moldova. The Chernivtsi University located in easternmost city of the former Austro-Hungarian Empire, still keeping Central European CH and the imprint of former multiculturalism, will be a good starting point to spread trans-disciplinary research perspective over remoter regions. The existing coffee house culture of the city and preserved German, Romanian, Ukrainian, Jewish and Polish CH in one urban settlement will help to bring the “Danube idea” even to people, who do not even regard themselves as “Europeans”.

Languages of the science cafés and the accompanying events: UKRAINIAN and ROMANIAN in an outreach event for the Romanian minority in Chernivtsi region of Ukraine that will also take place in Chernivtsi.

### ADDITIONAL PROJECT ASSOCIATES

Partner universities as *Project Partners* will be in charge of organization of project activities in their cities and their surroundings, as well as of expanding the collaborative network involving further stakeholders. This includes (but is not limited to):

- LOCAL AND REGIONAL NGO’s, with special emphasis on youth associations and associations devoted to ecological issues, as well as NGOs that focus on improving the citizen’s participation in local government and self-government. The collaboration with civil sector is of great importance to our project. First, it enables us to reach greater number of people and engage with them in a more direct way, and second, it enables various local NGOs to establish closer cooperation with universities and academic community. We intend to establish preliminary collaboration with the following NGOs: *Green Initiative of Vojvodina (SERBIA)*, *Association for Protection of Living Environment RIO from Novi Sad (SERBIA)*, *Horticultural Association Maribor (Hortikulturno društvo Maribor) (SLOVENIA)*, *Menedék Pécs (HUNGARY)*, *Hungarian Students’ Association in Târgu Mureş (ROMANIA)*, *The Academic Society of Târgu Mureş (ROMANIA)*.

- LOCAL GOVERNMENT, INCLUDING LOCAL POLITICIANS AND PUBLIC SERVANTS. Since our project aims to foster communication between scientists, lay society and policy-makers, the inclusion of policy-makers is one of our priorities. Public servants and representatives of local administration, as well as members of city councils, advisory boards and supervisory committees will be members of transdisciplinary research teams.
- INSTITUTIONS FOCUSED ON PROMOTING CULTURE AND KNOWLEDGE, INCLUDING MUSEUMS, GALLERIES AND LIBRARIES. In order to reach the people in innovative and engaging ways, various institutions will be included in the project activities.
- SMALL AND MEDIUM ENTERPRISES (SMEs) OF THE PRIVATE SECTOR, with emphasis on coffee houses, hotels, private galleries and media houses, in accordance with project activities.

## **WHAT ARE THE SOLUTIONS / OBJECTIVES (LOGICAL FRAMEWORK MATRIX OPTIONAL)**

### **WHAT ARE THE GENERAL OBJECTIVES?**

1. To increase lay public's awareness of a critical scientific issue in the DRB: CC and its consequences for specific elements of tangible and intangible CH.
2. To develop successful transdisciplinary cooperation between scientists and stakeholders from civil society and politicians for sustainable solutions of real world issues of impacts of CC on CH in the DRB.

### **WHAT ARE THE SPECIFIC OBJECTIVES?**

1. To raise public awareness and knowledge of CC and its impacts on CH in order to foster sustainability.
2. To change lifestyle and daily habits of participants from civil society represented in transdisciplinary research teams.
3. To raise awareness of policy makers of the importance of transdisciplinary approach to create successful long-term policies.
4. To improve the state of the art in science through transdisciplinary research.

## WHICH RESULTS ARE EXPECTED/ENVISAGED?

1. 1 REPORT BOOK ON PREVIOUS RESEARCHES conducted by partner universities and other collaborators (see WP chapter D 2.1).
2. 1 LIST OF the most useful available COMMUNICATION PROTOCOLS (D 2.2).
3. 5 PUBLICATIONS WITH POLICY-RECOMMENDATIONS REGARDING IMPACTS OF CC ON CH AS RESULT OF TRANSDISCIPLINARY COOPERATION including politicians, scientists and lay society: one referring to the case of each of the 5 science cafés and accompanying activities (D 4.2, D 5.2).
4. 1 FILM promoting transdisciplinary research among lay public, especially in the DRB: a combination of examples and messages from all 5 science cafés and accompanying events presented in an attractive way (D 5.2).
5. 6 SCIENTIFIC PAPERS published in scientific journals explaining to scientific community the opportunities (e.g. improved state of the art) and pitfalls of transdisciplinarity experienced in teams involved in this project: one on each of the science cafés, the 6<sup>th</sup> one will be the synthesis (D 4.2, D 5.2).
6. 5 PERMANENT EXHIBITIONS organized (1 in each city) (D 5.2). They will present:
  - Digital and innovative devices to explain visitors transdisciplinary results on impacts of CC on CH in the DRB obtained in our project.
  - A section devoted to opportunities and pitfalls of cases of transdisciplinary research experienced in our project.
  - The best artistic works collected during our calls (movies, videos and/or pictures; visual artworks (paintings, sculptures, drawings, etc.), novels, dramas and poems) presenting impacts of CC on CH in the DRB.
  - Items (artefacts, including artworks) borrowed from local museums.
  - A reading corner to get more details about the project and the main topics.Interactive guided tours through these exhibitions will be available. One day per month *public performances of music* (concerts, jam sessions...) and *arts* (street art exhibits, collective art projects) will be organized accompanying each exhibition to attract more people.

## WHICH ACTIVITIES ARE NECESSARY?

1. Analysis of EXISTING SCIENTIFIC LITERATURE on impacts of CC on CH in the DRB and of available potentially useful COMMUNICATION PROTOCOLS. Writing of the already mentioned report book and list of communication protocols (D 2.1, D 2.2).
2. Organization of 5 SCIENCE CAFÉS on cases of impacts of CC on CH (one in each city), each of them for one transdisciplinary team of 60 members: 20 local

and foreign prominent scientists, 20 policy-makers, and 20 NGO representatives and other representatives of lay society: selection of teams, improving the communication skills of participants and booking of places (D 2.3, D 3.1, D 3.2., D 3.3).

3. **Organization of 160 PANEL DISCUSSIONS OPENING THE FLOOR FOR PLENARY TRANSDISCIPLINARY COMMUNICATION** facilitated by communication experts in science cafés (8 per year in each city, 4 years) (D 3.3).
4. **Organization of screening of 80 FILMS OR CYCLES OF MOVIES** within science cafés FOLLOWED BY FACILITATED DISCUSSIONS. Films will in these cases replace panel discussions. Movies will be selected according to the topics of transdisciplinary teams and the stage of their transdisciplinary cooperation. Among others, suggestions of International Center for Climate Governance (ICCG 2015; Liotto 2013) will be taken into account (4 per year in each city, 4 years) (D 3.3).
5. **240 EVENTS FOR CHILDREN** organized during the panel discussions or screening of movies & plenary transdisciplinary communication: a kindergarten for children from 3 to 6 years old, WITH SUSTAINABILITY ORIENTED WORKSHOPS, will be organised in order to let the parents attend the opening presentations and cooperate in transdisciplinary discussions. This strategy in particular wishes to encourage participation of women in science cafés (12 per year in each city, 4 years) (D 3.3, D 4.1).
6. **60 TRANSDISCIPLINARY EXCURSIONS** to locations discussed in science cafés. Representatives of an equal number of scientists, policy-makers and lay society will act as guides during each excursion. Plenary discussions will be organized during each excursion, also they will be facilitated by experts in communication (3 per year in each city, 4 years) (D 3.3).
7. **20 OPEN CALLS FOR ARTISTIC WORKS** on impacts of CC on CH (1 per year in each city, 4 years) (D 3.3).
8. **20 SURVEYS ON THE PROGRESS OF TRANSDISCIPLINARY COMMUNICATION** among involved scientists, policy-makers and representatives of lay society (1 per year in each city, 4 years) (D 1.1, D 4.1). Data gathered by these surveys will be analyzed by organizers, but also by experts in communication sciences. Having placed the results in a broader context and analyzed the data, suggestions will be made regarding the possibility of improvement of methods and activities conducted during the project duration (4.2).



9. DEVELOPMENT OF COMMUNICATION STRATEGY that can be due to the nature of transdisciplinary work only partly predicted at the beginning of the project but will definitely include a web page, extensive use of social networks, press releases etc. (D 5.1).
10. FINAL ANALYSIS of work progress and results of each of 5 science cafés and the accompanying events, WRITING OF menioned PUBLICATIONS FOR POLICY MAKERS, AND SCIENTISTS as well as RECORDING AND COMPOSITION OF THE FILM AND PREPARATION OF PERMANENT EXHIBITIONS TARGETING LAY PUBLIC (D 4.2, D 5.2).
11. 8 COORDINATION MEETINGS (2 per year, 4 years) to ensure equal treatment of all 5 scientific cafés within the project and to reach a financial consensus in case of difficulties (D 1.2, D 1.3).

## ORGANIZATION OF THE PROJECT WORK

Activities that will be conducted in the following WPs are described in previous chapter. Division of work is presented in the chapter on project consortium.

### WORK PACKAGE AND TASK STRUCTURE

1	PROJECT MANAGEMENT (done by the leading partner)	T1 – Monitor the programs D1 – Yearly reports on the status of the project
		T2 – Coordinate activities of all involved partners D2– Coordination meetings
		T3 – Deal with the funding scheme D3 – Four yearly reports about project finances
2	DATA COLLECTION ON COMMUNICATION PRACTICES BETWEEN STAKEHOLDERS IN THE DRB (done by all the involved partners)	T1 – Collection of previous researches conducted by partner universities D1 – Report on previous research undertaken (report book)
		T2 – Selection of the most useful available protocols D2 – List of protocols that will be taken into account
		T3 – Selection of relevant stakeholders that will be included in the process (NGOs, administrations...) D3 – List of selected stakeholders

3	ACTIVITIES TO SET UP THE FRAMEWORK STRUCTURE FOR TRANSDISCIPLINARY COMMUNICATION	T1 – Selection of the best available tools needed D1 – Decision on the tools that will be implemented
		T2 – Education in Adragogy and Didactics for selected participants, e.g. experts who will give lectures in science cafés D2 – Selected participants educated in Adragogy and Didactics
		T3 – Organization of the activities needed for improving communication between stakeholders D3 – Organizational framework established for all the tools selected
4	EVALUATION & SURVEY	T1 – Creation of the survey and defining targeted audience D1 – Survey developed
		T2 – Data analysis, policy-recommendations and suggestions for improvement of the project D2 – Evaluation document of the framework structure, policy-recommendations and list of suggestions
5	COMMUNICATION	T1 – Development of a communication strategy D1 – Communication strategy
		T2 – Creation of communication and dissemination materials D2 – Communication and dissemination materials

## ABBREVIATIONS AND ACRONYMS:

CC – Climate Change

CH – Cultural Heritage

DRB – Danube River Basin

EUSDR – EU Strategy for the Danube Region

ICPDR – International Commission for the Protection of the Danube River

WP – Work Package

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