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DIAnet international school proceedings 2015

The role of cultural heritage
for the sustainable development
of the Danube Region

Gorizia 14th-23rd March 2015

edited by
Stefano Brumat

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This book collects the contributions from the leaders and the results of the 2015 DIAnet International School (DIS), held at the University of Trieste in Gorizia on 14th-23rd March 2015. Its aim is to reach people from a wide range of backgrounds of expertise from the Danube Region and to disseminate the good practices.

The book follows the structure of the School.

The 2015DIS opened on March 14th with the welcome addresses by the Rector of the University of Trieste, prof. Maurizio Fermeglia, the Deputy Mayor of Gorizia, Mr Roberto Sartori, and Mr Federico Portelli from the Province of Gorizia. Several presentations on the EU strategy of the Danube Region and Danube:Future introduced participants to the School and its context. Two short lectures were presented on the same day and are enclosed in these Proceedings, i.e. "War, colonization and trade in the Danube basin in the modern era: some sustainability-related issues" by the School Director, Prof. Marco Dogo; "The role of cultural heritage for the sustainable development of the Danube Region" by the Danube:Future Project Coordinator, Prof. Verena Winiwarter.

The second half of the edition was devoted to group work: participants were divided in 6 Working Groups. The process and the results of these activities are illustrated in these Proceedings. At the end of the School, groups presented their projects with immediate feedback from the Evaluation Committee. The two facilitators (Dr Mladen Radišić and Ms Helena Hiršenberger) from the University of Novi Sad guided the Group work: a short explanation of their work is also available.

A final evaluation of the event by Prof. Manuela Montagnari, the School Deputy-Director, can be found at the end of this book as well as some final considerations concerning the results and achievements of the three-year project by the Project Administrator of Danube:Future, Mr Stefano Brumat.

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Foreword

Prof. Maurizio Fermeglia

Rector of the University of Trieste

Good afternoon, ladies and gentlemen, and welcome to the third edition of the DIAnet International School in Gorizia. While the first two editions in 2013 and 2014 focused on interdisciplinary methods and on the role of natural heritage in the framework of the sustainable development of the Danube region, the 2015 edition will be dedicated to cultural heritage.

I am particularly glad to welcome you all here in Gorizia for this event that stresses the international vocation of Gorizia in a European environment. When we talk about cultural heritage and sustainable development, we touch a crucial issue, which is related to several very important topics in today's world. In other words, the topic is multidisciplinary. The fact that in this School biologists work together with social scientists, physicists and chemists is extremely positive, which is one of the main features of the University of Trieste.

I think that for too many years, in Europe, we have developed our higher education by focusing on single disciplines while the big world's emergencies should be tackled by interdisciplinarity and multidisciplinarity.

I discussed this matter with some other Rectors at the European University Association (EUA) and we all agreed that the right place to tackle multidisciplinarity is in the third level of higher education, i.e. the PhD level. Multidisciplinarity would then be able to permeate from the PhD level into the Master and Bachelor levels.

Another positive aspect of the DIAnet International School is that it involves a lot of interaction among students and participants. I know from last year's experience that you will be clustered into small groups and will work on specific projects, an aspect that I find extremely interesting and very challenging.

All this work is strongly related with the new EU programme Horizon 2020 and we may say that this edition – just like the previous two – is paving the way

to our participation to Horizon 2020 by enhancing collaborations between the universities involved in this project. As soon as you get back to your countries and to your universities, you will promote the connections you'll have established here, enhance our collaboration and prepare solid projects to be sent to the European Commission.

I am particularly glad to be here on behalf of the University of Trieste because I really want to share with you our willingness to become more and more international, as we have already stated several times in different occasions. My collaborators and I have personally worked in setting up some good relationships with all the universities of our neighbour countries: Austria, Slovenia, Croatia, and many others. We have made a series of official visits and I am sure that – at the end – all this work will produce results in terms of concrete projects that we will be able to submit to the European Union.

Thank you very much and keep up the good work.

Mr. Roberto Sartori

Deputy Mayor of Gorizia

This is the third edition of the DIAnet International School, a very important project designed by the University of Trieste in collaboration with other Universities, in particular the University of Novi Sad. Thanks to this project, Gorizia will host for 10 days 40 researchers from the overall Danube Region. They will meet and discuss with important international peers and prominent academics.

Participants are welcome in Gorizia, a little town on the open border between Italy and Slovenia, where the Germanic, Latin and Balkanic cultures live together. The result of this combination are its beautiful gardens, squares and boulevards.

Gorizia is looking towards the EU Policies. In 2011 a legal entity was founded in partnership with the towns of Gorizia, Nova Gorica and Šempeter -Vrtojba: the ECGT GO[1]. The European Grouping of Territorial Cooperation is a tool designed to overcome the difficulties encountered in implementing and managing projects in the field of territorial cooperation, which are subject to different legislation and procedures, and to facilitate the implementation of common tasks (not only economic). By joining the EGTC, the participating municipalities are legally organized in an independent cross-border body and, given their legal personality, they can directly interact with European institutions and third parties. Therefore, the EGTC is a useful tool for the development of territorial cross-border cooperation between local authorities. The future of the EGTC is closely connected with the new European 2014-2020 programming period, because it will play a central role in terms of strategic development, program implementation and disbursement of funds. The EGTC purpose is to

1 Link to http://www.euro-go.eu/en

provide a legal instrument that can simplify the management of cross-border funds and initiatives. Since its constitution, EGTC GO aimed at creating a "programming laboratory" in which the representatives of the three municipalities could discuss and draw up proposals to jointly solve the issues of the cross-border area.

The DIAnet School aims at capacity building and at providing networking to aid in the development of common research projects for a sustainable future of the Danube Region, through discussing and designing trans- and interdisciplinary projects. The EGTC Standing Committees play an essential role in creating content for the activities pursued by EGTC. Their task is to draw up concrete proposals for the benefit of the territory in the selected fields, both by applying to EU tenders and by including the proposals in the 2014-2020 operational programs. In this way, our projects are very similar.

Finally, I would like to thank the University of Trieste for choosing Gorizia as the host city of the DIAnet International School. The Town of Gorizia wishes all success to the organizers in building new editions of this project.

Introduction

Prof. Pavle Sekeruš
Vice-rector for international relations
University of Novi Sad
School Leader

The Dianet School, finished successfully its 2015 edition in Gorizia, is a result of initiatives within the European strategy for Danube region, product of new European model for cooperation across Europe called "macro regional strategies". It would be interesting to remind some basics of these new policies. As the Commission is working on a proposal for the fourth such Strategy – for the Alpine Region, let's see what have those new proposals, which are changing the way regions work together across EU, achieved so far.

Since the start of the EU Strategy for the Baltic Sea Region in 2009, Europe has seen a growing interest in cooperation in greater European regions. Macro-regional strategies represent a new opportunity for comprehensive development of a larger region, addressing common challenges and potential. They represent a clear EU added value and existing EU horizontal policies are reinforced. They should provide the platform for common actions and facilitate an exchange of information, best practices and experiences, allow participating countries to learn from each other and to focus on a few key priorities that will bring real results and benefits to the everyday lives of the macro-regions' citizens.

After the Strategy for Baltic Sea region in 2009, for Danube region in 2011, for Ionian-Adriatic region in 2014, EU Commission works now on a strategy for Alpine region.

A strategy to boost the development of the Danube Region was proposed by the European Commission on 8 December 2010 (Member States endorsed the EU Strategy for the Danube Region at the General Affairs Council on 13 April 2011).

Two years later, from 2013-2015, the University of Trieste, in cooperation with Alpen-Adria-Universität Klagenfurt, University of Natural Resources and Life Sciences of Vienna (BOKU) and University of Novi Sad offered an *opportunity for young researchers to familiarize themselves with issues related to the sustainable development of the Danube River Basin in the frame of* DIANET International Schools held in the town of Gorizia in Italy. The school covers a wide range of subjects. Students receive training in methods for the virtual representation of natural resources, as well as historical evidence. The covered methods include architecture and urban development, as well as methods of integration such as environmental history and deal with the preservation of cultural heritage, history and archaeology together with natural science methods.

In 2013, the core teaching offer was *Introduction to interdisciplinary Studies*. In 2014, it was related to the *Role of natural heritage of the Danube River Basin* for sustainable development, while in 2015 the *Role of cultural heritage for sustainable development* was the focus.

The place of the Dianet international school within the frame of the Danube: Future project and its 2013 and particularly 2014 edition were described in details in a *Preface* made by Stefano Brumat, project administrator of Danube: Future from the University of Trieste and Ms Claudia Macchia, Dianet coordinator for 2014 edition from the University of Trieste, we shall give here some basic information concerning the 2015 edition.

As the two previous ones, this one was held in Gorizia from March 14th to 23rd. The Organizing Committee of this 2015 edition was represented by Prof. Marco Dogo, Prof. Pavle Sekerus, Prof. Manuela Montagnari, Prof. Verena Winiwarter and Dr. Gertrud Haidvogl. Thirty-nine participants from 10 countries (Albania, Austria, Bulgaria, Croatia, Hungary, Italy, Romania, Serbia, Slovenia, Slovakia) and 16 universities (Corvinus and Eötvös Loránd universities from Budapest, Ca' Foscari University of Venice, Luigj Gurakuqi from Shkodrës, Babes-Bolyai from Cluj-Napoca, Alpen Adria Universität Klagenfurt, Universities of Ferrara, Novi Sad, Trieste, Zagreb, Rijeka, Rousse, Primorska, Pécs, Ljubljana and Nitra) followed the courses.

During the two days` lectures students received training in Conservation, Preservation and Valorization of cultural heritage. Two full day excursions were organized in the area of Torviscosa and villa Manin and *Grotta Gigante, biggest touristic cave* in the world, which are supposed to offer to the student's practical insight into the sustainability and preservation problems in the region. Researchers from the Universities of Novi Sad (Pavle Sekeruš, Aleksej Kišjuhas, Helena Hiršenberger, Mirjana Kranjc, Mladen Radišić, Jonjaua Ranogajac, Marko Škorić, Vesna Stojaković, Anica Tufegdzic and Nemanja Davidovic), Babes Bolay (Radu Christian Barna, Lucrina Şrefănescu), Trieste (Marco Dogo, Marija Mitrovic, Emanuela Montagnari, Igor Jelen, Pier Luigi Nimis, Franco Cucchi, Stefanoi Furlani, Diana Barillari), BOKU Vienna (Gertrud Haidvogl), Primorska (Irena Lazar, Zrinka Mileusnić, Katharina Zanier), Klagenfurt (Verena Winiwarter), Apor Vilmos Katolikus Főiskola (Tamàska Màté), Belgrade (Jelena Todorovic) participated in teaching activities on cultural heritage.

Second half of the school was dedicated to the students` group work. They were divided in 6 working groups, each composed of multinational, multilingual and multidisciplinary oriented participants. Groups prepared propositions having in mind the societal challenges of Horizon 2020 and took into account the challenges of the DRB H2020 calls. Draft project proposals developed in working groups should be a part of a hypothetical application to a funding authority. Group presentations evaluated by the committee ended the school.

One cycle in a life of a Dianet school is finished and it would be of a great importance if the school could continue its functioning because it contributes greatly to the improvement of teaching and research of higher education in the Danube region. By establishing and facilitating bilateral and multilateral contacts between the universities and researchers, by promotion of cooperation on issues of common interest thereby it contributes to the stability and the development of an open and democratic region in Europe.

War, colonization and trade in the Danube basin in the modern era: some sustainability-related issues

Prof. Marco Dogo
University of Trieste
School Director

Rector, respected colleagues and participants,

I would like to entertain you for a few minutes on the historical dimension of certain big issues which were generated in the Danube basin and which have profoundly marked its human and cultural background, not to mention its economic structure. My point is that sustainability constraints have substantially moulded these dynamics through the centuries.

Well then, after the arrival of the Magyar tribes in the Pannonian plain at the end of the C9th, the next event – even more laden with long-lasting consequences for the Danube basin – is the Ottoman conquest of Central Hungary by the mid-C16th. Before then the Kingdom of Hungary had been a great European power, wealthy and densely populated, with a Renaissance court, three universities, a royal library in which Greek and Latin manuscripts were gathered, and a printing works opened just a few years after that of Gutenberg. Hungary had been suffering the military pressure of the Ottomans from the south for about 75 years, when in 1526 its king was defeated and killed in battle and the Ottomans established themselves in Hungarian territory to the north of the Sava and the Danube. Some historians attribute the defeat to a structural fact, namely the enfeeblement of the monarchy brought about by

the enserfment of the peasantry and the feudal fragmentation of political power (Szelenyi, 371-2). Nevertheless, what intrigues and puzzles the historians even more is what happened *after* the Battle of Mohács: that is, the fact that the Ottomans hesitated, and the conquest of Central Hungary was postponed for some fifteen years (Kann, 52). Sultan Süleyman engaged in inconclusive military actions: he captured and plundered Buda, unsuccessfully besieged Vienna, tried to turn Hungary into a buffer vassal state, before deciding to occupy Buda permanently and make it the capital of a province under direct Ottoman rule. Temesvár would follow after a few years.

The so-called "Mohács debate" among the historians, very elegantly summarized by Pál Fodor in 1991, has two salient issues. The first concerns the question: why did Süleyman either want or need to conquer Hungary? The answers (Sugar, 65) cover a vast range of possible reasons: to plunder; to acquire land to distribute as a military fief; to keep the army occupied; to enlarge the *dar-ul islam*; even to realise a farfetched notion of preemptive defence against a growing Habsburg threat. The other issue of the debate concerns the reasons for the hesitation, which turn out to be all based on preoccupation with sustainability: that is, the military costs of the buffer vassal state, the insufficient demographic resources to replicate the model of the Turkish settlement in the Balkans (Sugar, 16-17, 70), the range of the military *action radius* in relation to the condition of the communication roads and the problems of provisioning, and finally the admission of Süleyman himself: "Hungary was *very far* from the Muslim Empire and thus it would have been hard to govern it" (Fodor 1991, 274). In the end Süleyman resolved to conquer and annex the central lands of Hungary. The *action radius* constraint could in theory be overcome by shifting the gathering point for Ottoman campaigns from Adrianopolis to Belgrade (Fodor 1991, 301-302); but this could not easily be done as long as the Ottomans were in a state of latent or actual war on their eastern frontier with Persia.

Thus about halfway through the C16th Hungary became, and remained for the next century and a half, a permanent battlefield between the Ottomans and the Habsburgs (Ágoston 2010, 118), who in the meantime had acquired the crown of the Kingdom. The frontier between the two empires was not a line but a broad belt of territory, dotted with major fortresses and minor fortifications. The opposing sides maintained garrisons amounting to 20-30,000 soldiers each (David and Fodor, 2000, XVII; Ágoston 2010, 119), and these were engaged in constant skirmishing mainly aimed at carrying out raids, taxing the enemy territory, and wresting scant resources from the enemy (Pálffy 2001, 114; Pálffy 2008, 187). Very soon the two large Ottoman provinces of Buda and Temesvár, as also those smaller ones subsequently formed towards the west, turned out

not to be economically self-sufficient. Far from conveying revenue to Istanbul, they had to be supported by subsidies: up to 70% of their exorbitant military expenditure was covered by remittances from the centre, by the transferring of revenue sources from the Balkans or Wallachia, and by the fiscal aggregation of districts to the south of the Sava to the Ottoman frontier provinces (David 1999, 119; Ágoston 2000, 197, 211, 224; Fodor 2001, 432-3; Hegyi 2008, 77-84; Ágoston 2010, 120-121). In no way better was the situation of Habsburg Hungary. With a truncated territory and a shrunken contributory capacity, Hungary could barely sustain 30% of the anti-Ottoman defence system; the remaining 70% was covered by the Habsburg hereditary lands, by Bohemia, and by the Holy Roman Empire (Ágoston 1998, 135; Pálffy 2000, 43; Pálffy 2001, 116). In a sense, the whole of Central Europe and South-East Europe were confronting each other in the middle Danube basin. And when the friction war exploded into the so-called "long war" at the turn of the C16th into the C17th, the financial stress sustained left the two powers so exhausted that for more than half a century there were no further military campaigns on their common frontier (Hegyi 2000, 170).

The costs of the Hungarian frontier

for the Habsburgs		for the Ottomans	
30%	from the truncated Kingdom	30%	from the Hungarian vilayets
70%	from the Hereditary Lands, Bohemia, the Holy Roman Empire	70%	from the Treasury, Walachia, the Balkans

But suffering still more than the two imperial treasuries was the territory of Hungary. An eighth of its population disappeared while the rest of Europe increased by 50% (Haselsteiner, 142). The cities also disappeared, making way for large villages or "prairie towns" (Sugar, 88-91; Szelenyi, 381). Tillable soil deteriorated as a result of floods, in their turn caused by lack of control over the rivers. Entire districts became deserted and unproductive (Macartney, 46). Agriculture reverted to minimum subsistence functions, while animal husbandry became the principal economic activity (Hollander 1960, 82). The soldiers and the civilians were assailed by a variety of diseases connected with stagnant

marshy waters, among which was a typhoid fever which the foreigners called *morbus Hungaricus* (Sugar, 108; Pálffy 2001, 118).

Despite the high costs of the defensive system, the Habsburgs were in a position to adopt certain aspects of the military revolution then underway in Europe: fortification techniques, hand firearms (Kelenik, 156), a more efficient fiscal system; for the Ottomans, on the other hand, there began to arise problems of supply and gunpowder transportation and shortage (Ágoston 1998, 139), and of fiscal erosion by province administrators. For the third time, towards the end of the C17th, the Ottomans targeted Vienna, seeking to resolve in a single blow the confrontation that had lasted for a century and a half. But the military campaign had to be organised from afar, since the theatre of war was barren and provisionless (Murphey, 101). And so the *action-radius* constraints made themselves felt (Perjés, 1-52), transforming the Ottoman advance into a gigantic, ponderous operation of civil engineering in order to cross the rivers and marshes, subject to unforeseen weather changes, and compressed into the 6-month span representing the "dry season" (Murphey, 20-25; Wheatcroft, Chapter 4, "Taking the Road to War"). The conquest of Vienna failed, and the Austrians counter-attacked. In its turn the Habsburg army overstretched its action radius by taking the war deep into the Balkans. In the end the military and political balance was stabilized on the line of the Sava and the Danube, which would remain, with minor adjustments, the border between the two empires for a hundred and fifty years. Having won the war, the Habsburgs also wanted to win the peace and imposed upon the Ottomans a commercial treaty (Passarowitz, 1718) by which they thought to invade the internal Ottoman market; ironically, Austria was invaded by Greek-Ottoman merchants and its commercial balance remained in the red for half a century.

The demographic and economic recovery of Hungary, after it had ceased to be a permanent battlefield, is an interesting chapter of history involving sustainability issues. The colonisation of southern Hungary was above all the work of the Habsburg government, particularly in those lands that were not restored to the Hungarian nobles, descendants of the ancient owners, but were instead included in the property of the *Hofkammer* (Wessely, 70; Bérenger, 44). Recruiting agents were sent to Germany, and westwards as far as French Lorraine (Wessely, 88-89; Bérenger, 134). The aspiring colonists, for the most part German, poured into southern Hungary and there, lacking everything needful, they died like flies during the first winters. The second wave of colonisation involved Wallachians, Serbs, Slovaks and Bulgarians, in addition to Germans, and was successful because state support helped them to settle in. The ethnographic structure of southern Hungary was thereby radically modified (Bérenger, 80; Macartney, 87-88). This can not have constituted a problem at that

time, in an imperial context, but it was destined to become a political problem in the following century, with the spread of the ideology and practices of the nation state. In the meantime the new settlers, free and semi-free peasants, reclaimed swamplands and put the land to cultivation with grain, tobacco, maize and potatoes (Macartney, 47; Haselsteiner, 152). But this return of southern Hungary to market-oriented agricultural production was doomed to turn into a curse for the peasants, who in the course of two generations suffered the pressure of the landowners and so slid into a condition of serfdom (Király, 275-6) .

The driving force of such a process was the growing demand for grain in Europe. When the price of grain was sufficiently high in Italy as to offset the expenses of transport, the Hungarian grain was able to reach the Upper Adriatic by going down the Danube, going up the Sava again, and then the Kupa river as far as Karlovac, there to continue on wagons by land as far as the port of Fiume/Rijeka. The problem of Hungarian exportation was that the entire river convoy moved against the current, drawn from tow-paths along the river banks by horses, and more often by human beings such as wage-earners, corvée-bound peasants, and even by those condemned to hard labour (East, 340; Bérenger, 164). Of these last, about 1,200 hauled barges in the time of Joseph II, and only one third of them came out alive (Dogo, 302-304).

Speaking more generally, the trouble with the Danube was that it flowed in the wrong direction, at least for trade with Central Europe. During the century and a half in which the Ottomans were masters of the river from Komárom to the Black Sea, the Danube's use was almost exclusively military. The river was crowded with oared barges for the transport upstream of small contingents of troops, victuals and ammunition. Besides the rowing boats, the riverside districts had to provide oarsmen and haulers: so the navigation of the Danube brought more servitude than benefit to the peoples along its course (Gradeva, 163-8). After the Habsburg conquest of the middle Danube, there was not much that could be transported downstream, apart from those European diplomats that might prefer the river to the land route in order to reach Istanbul (East, 339; Gradeva, 168).

In the C19th the Austro-Turkish rivalry was a faded memory of the past, but the possible integrated commercial use of the middle and lower course of the Danube was obstructed: 1. by the gorges at the Iron Gates, which demanded the transhipment of travellers and goods; and 2. by the problem of transport upstream. The first problem began to be tackled in the early Thirties with the regulation of the gorges and later with the digging of by-passing canals (East, 341); the second problem was overcome, at the same time, by steam navigation (East, 340; Hollander 1961, 160). But the big development was that the grain

of Wallachia was no longer under the Ottoman monopoly, and at least in theory could reach the European markets via the Black Sea and the Mediterranean (Ardeleanu, 44-45).

The new obstacle was the Danube delta, with its channels subject to silting up, which again called for the transhipment of cargo. It was precisely in order to bypass the delta, with the aim of making huge profits, that certain British speculators and engineers constructed two railway lines, the very first in the Ottoman Empire, between the Danube and the ports of the Black Sea. Both undertakings turned out to be unprofitable (Jensen and Rosegger, 111-124), but their inadvertent effect was to spur on the work of their rival, the European Danube Commission in charge of the upkeep of the delta channels. Open sea ships entered the Danube, and this marked the beginning of globalization for its basin.

We can measure the distance that separates us from these different moments in the historical development in the Danube basin if we consider that the Bibliotheca Corvina, sacked by Süleyman five centuries ago, is today being restored in digital form; that the remains of the Turkish and Islamic cultural heritage in Hungary today are the object of preservation and study, and are included in tourist tours; that the multinational society of southern Hungary could have been a liability a century ago, but is certainly an asset for a dynamic university like that of Novi Sad today; and finally, that a great part of the Danube Delta is a World Heritage Site and a biosphere reserve under UNESCO protection.

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The role of cultural heritage for the sustainable development of the Danube Region

Prof. Verena Winiwarter
Alpen-Adria-Universität, Klagenfurt
Project Coordinator of Danube:Future

INTRODUCTION

This paper elucidates the role of the rich and variegated cultural heritage of the Danube countries for the sustainable development of the region. After briefly introducing the history and meaning of the notion of cultural heritage and a critical discussion of the concept of sustainable development, the link between sustainability and culture is explored. The Danube region presents a special case due to its unique history and the legacies this history has left. The final part of the paper is dedicated to sketching the potential of cultural heritage for the sustainable development of the region.

CULTURAL HERITAGE: THE CAREER OF A CONCEPT

In a recent publication, Marilena Vecco traced the expansion of the meaning of the notion of cultural heritage. The earliest use of the French notion 'patrimoine' for the artistic heritage is documented for 1931, when Euripide Foundoukidis (1894-1968), a Greek lawyer and art historian active in interna-

tional exchange on cultural matters used it at a conference in Athens. From then on, it was commonly used in the documents of international organisations (Vecco, 2010: 321). The adoption of the expression of patrimoine culturel (cultural heritage) by André Malraux in a legal document in 1959 marked a turning point. From this period on, the term patrimoine became increasingly common in political and administrative circles. Figure 1 gives an overview of this process. Vecco draws attention to an important change in the late 20th century. "Starting in the mid 1970s, international documents were drawn up in an attempt to define the general criteria, with the aim of codifying in all the documents, tangible or intangible expressions of human action which, having acquired a value, need to be protected." (Vecco, 2010: 323). The Burra Charter (ICOMOS, 1979ff) is an important document in this process of acknowledging the cultural heritage also of those peoples whose cultural expressions are not of a durable material nature. "It proposes to protect the conservation of the cultural significance of a site, due to its aesthetic, historic, scientific or social value. According to this approach, tangible and intangible heritage that stimulate the recognition of certain values in man are to be protected." (Vecco, 2010: 324). According to UNESCO the notion "includes traditions or

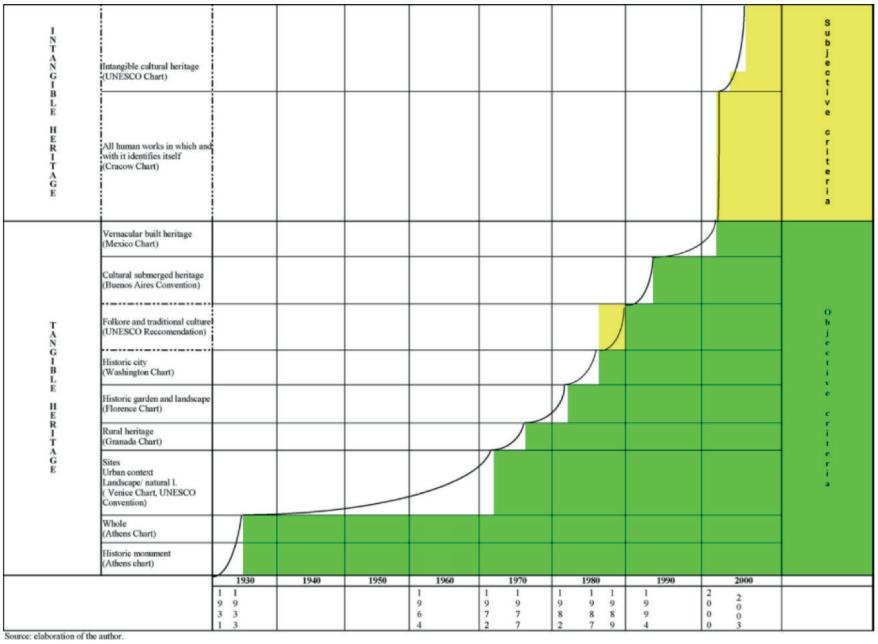

Figure 1 – The growing reach of the notion of cultural heritage since the 1930s (from Vecco, 2010, 323)

living expressions inherited from our ancestors and passed on to our descendants, such as oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts."

Intangible cultural heritage is lost during societal upheavals, when traditional lifestyles disintegrate in conflict-caused migration or due to pollution and environmental degradation making them impossible. This has surely happened in the Danube River Basin, although there are no comprehensive multinational, comparative studies. A major reason for this loss is the character of intangible cultural heritage, especially in dealing with nature, as it is based on tacit knowledge, a notion which has been coined by Karl Polanyi, and recently been much advanced by Harry Collins (Collins, 2010). Yet, tacit knowledge plays a major role in sustainable tourism, one of the many ways that heritage is involved in sustainable development. Tacit knowledge transfer in tourism has recently been discussed by Buckley and Oldenbourg (2013). It is also important to realize that cultural heritage is lost with the loss of language, even particular dialects, and of course, with the assimilation of minorities into a majority culture.

WHAT IS (CULTURAL) HERITAGE?

To start the exploration of the combined notion with the multi-faceted meaning of culture, let me suggest to base it on a broad definition of culture which links it to action, as suggested by Soini and Dessin: "Culture in a broader sense is a condition and premise for action, meaning and communication. The notion refers to the symbolic patterns norms, and rules of human communities." (Soini & Dessein, 1) It is important to realize that heritage is not a fixed thing, but rather a process, so its preservation has to be based on preserving the conditions of the possibility to engage in these processes rather than fixing something. "Heritage is a common, dynamic and socially contextualised cultural process involving the use of the past in the present" (Smith, 2006, quoted after Giblin, 2014: 402).

The concept of heritage does also have a political dimension. "Heritage can be explored as a common human undertaking with a deeper history." (Giblin 2014: 502). It is this deeper history of heritage, which makes it attractive for groups to identify their heritage in claims of legitimacy and even in territorial claims. The discussion of heritage in the Danube River Basin should therefore always include a reflexive, critical element, asking for whose benefit and against whose interests a particular claim is advanced.

WORLD HERITAGE AS UNIVERSAL CULTURAL ORDER

World heritage designation is based on the UNESCO Convention concerning the protection of the world cultural and natural heritage adopted by the General conference at its seventeenth session, Paris, 16 November 1972 (Unesco 1972). It is important to understand the selection criteria, as they are by now the most universally acknowledged basis for designations also on a national or regional level. Among the selection criteria, the following seem of prime importance to me: World Cultural Heritage must (i) represent a masterpiece of human creative genius; (ii) exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design; (iii) bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared; (iv) be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history; *(v) be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;* (vi) be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance.

With regard to criterion (iv), the committee considers that this criterion should preferably be used in conjunction with other criteria. Further criteria include more requirements. World cultural heritage needs to (vii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance; (viii) be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features; (ix) be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals; (x) contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation.

Lists of the cultural heritage are maintained on national and international levels, with UNESCO's list being the most prominent, universal such collection. The critics of such universal lists hold that a universal cultural order is created by such listings, and a difference in significance is created by the exclusion

or inclusion into such lists. World heritage designation has been criticized as it is used as a means of self-promotion by nation states, and also because the „heritage industry" that co-evolved with the definition and the need to manage the heritage, has ideological and commercial interests. The designation of World Cultural Heritage rests on the claim of outstanding universal value. Therefore, it leads to universalization of the particular based on the key criteria of cultural authenticity and distinctiveness. While world cultural heritage on the surface is a promotion of diversity, it inevitably leads to a weakening of ontological primacy of particularized identities, because it inevitably is an act of decontextualizing (Elliott & Schmutz, 2010).

The fifth criterion, highlighted above, offers a concrete and direct link to issues of sustainable development, therefore the World Heritage Definition, the critique notwithstanding, is an important tool for promoting sustainability. The frustrating fact this list has in common with list of endangered species is the simple fact that heritage becomes more valuable as it becomes increasingly rare and threatened. Heritage designation after article (v) is a last-resort-strategy that might better be replaced by more foresight-driven reasoning.

CHALLENGES FOR MANAGING CULTURAL HERITAGE: HERITAGE CHAIN MANAGEMENT

When it comes to the practical requirements of managing cultural heritage, several important issues need attention. Among them, the first is that management of heritage means to bridge different organizational rationalities. For instance, most of archaeological excavations take place in form of projects, while museums connected to excavations are permanent organizations with mostly permanent displays ill-fitted with the transitory character of excavation projects. Heritage is more often than not immobile or at least very expensive and rather dangerous and therefore costly to move. It represents a complex of materials (collections, buildings, sites) and knowledge and meanings that have to stay in place in order to be meaningful. This is obvious for buildings and sites (the Coliseum is unthinkable outside Rome). However, it is also true in softer terms. All over the world, at least in recent years, laws that tend to limit export of movable heritage have been issued. The protection from illegal export is now in itself an important element of the first macro-activities in the heritage management chain (Zan & Bonini Baraldi, 2013: 213).

What is considered as heritage tends to differ from country to country for many reasons: One is the specific role played by the individual country in the past in various periods. Periods of glory are more important than those of

doom in the presentation of a country's history, as they lead to different rates and types of constructions in the past and different attitudes in preserving it, but also to differences in destruction. Even a preliminary characterization of the heritage chain of an individual country in the Danube Region, even in mere "objective" ways would help in addressing major issues and main characterization of that specific set of remains and associated knowledge (Zan & Bonini Baraldi, 2013: 217). Such a characterization would be an important research topic in itself.

SUSTAINING CULTURAL HERITAGE AS AN IMPORTANT CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

As this essay is dedicated to exploring the connection between cultural heritage and sustainable development, it needs an effort to clarify both central notions of the conjunction. Hence, the next step in the argument is a discussion of sustainability or sustainable development.

The most popular definition is that of the Brundtland report, so called after Gro Harlem Brundtland, Chairperson of the Commission that issued it: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Brundtland Commission 1987: 8). In this definition, sustainable development is about international (intra-generational) and intergenerational justice, assuming that such justice can be reached by 'development', so basically, by processes of change. In the almost 30 years that have passed since this definition was published, entire forests have been cut and processed into paper printed with discussions of the meaning, the role and function and the measurement of sustainable development. This paper makes no attempt to review this discussion. Readers are referred to Jeffrey D. Sachs' comprehensive treatment in his recent publication on the subject. (Sachs, 2015).

For the link to cultural heritage, it is important to recognize that sustainable development is conceptualized both in *normative and empirical terms*. Sustainability can be understood as a goal to achieve, a norm, an ethical imperative of intergenerational equity, basically asking us to emphatically relate not only to neighbours, but to strangers in space and time. It can likewise be understood as a testable hypothesis about the exchange between society and nature. In the latter case, one needs indicators to measure the interaction.

Figure 2 shows a conceptualization of the main requirements for ecological sustainability. The concept suggests that resource extraction should not be higher than availability, that emissions and wastes should not overtax the

biosphere's ability to absorb them and that the way we manage ecosystems for production should not degrade their ability to produce (Fischer-Kowalski et al, 1997: 24). Two important issues should be highlighted here: One is the primacy of ecological sustainability over social and economic. Overtaxing the biosphere cannot be sustainable, even if social and economic sustainability are reached. As the Vienna Social Ecology group and many Industrial Ecologists see the three facets of sustainability more as a magic triangle than as a set of three pillars, we would argue that the three are inextricably linked, but political primacy should be given to the ecological side (Von Hauff & Wilderer, 2008).

The second important issue is the recognition that sustainability can only be a dynamic equilibrium, as the biosphere and human society are evolving. This brings up the next important issue, the question of evolution and its role in the sustainability-oriented management of cultural heritage.

Let us, for the moment, recall a few basic facts from secondary-school-level-biology. Life exists far from thermodynamic equilibrium, because an inflow of energy necessary to maintain itself. Death marks the end of energy consumption. Therefore, any system involving humans will not be in thermodynamic equilibrium. Living organisms are autopoetic, they are centred on re-creating (reproducing) themselves, which means that they extract useful material (in-

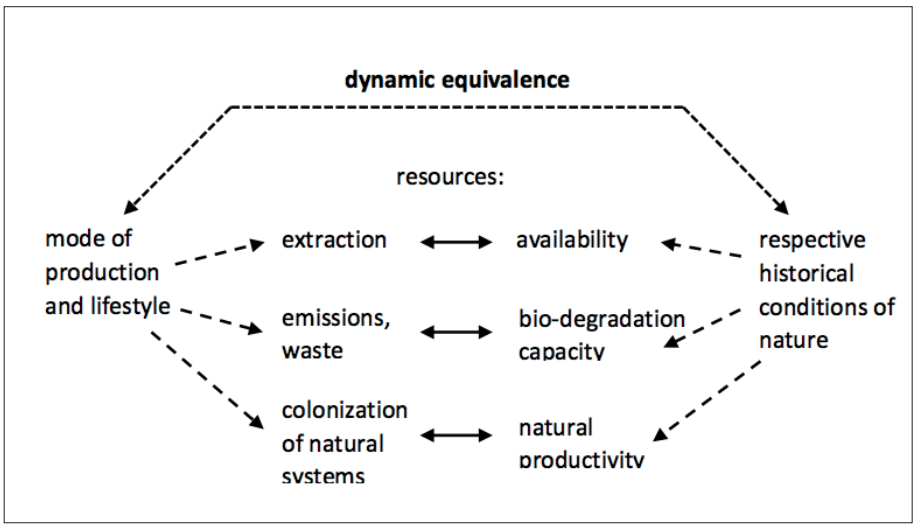

Figure 2 – Adapted from Fischer-Kowalski et al, 1997

cluding energy carriers) from their environs and can overtax availability. The universe, by contrast, shows a long-term trend towards equilibrium, meaning a situation with an equal distribution of matter and energy. To rephrase this in terms more compatible with physical laws, we should acknowledge that energy in the universe cannot get lost, it is constant and that it is more precise to talk about exergy. We need energy differences to harvest energy, and harvestable energy is called exergy (Winiwarter et al, 2013).

While most sustainability researchers would probably nod knowingly when it comes to describing evolution and evoke Darwinian images, it is important to call attention to its most basic feature. Evolution is the heteronomic result of two unrelated and initially independent processes. A process to create changes (mutation) and a process to discriminate between the results of change (selection) combine as basis for a multitude of living organisms with a tendency to greater complexity. It is important that the process of evolution has no direction. Bacteria, archeae, fungi, plants, animals, viruses, all are in permanent evolution, some faster, some slower. Lewis Carroll in his children's novel 'Behind the Looking Glass', relates a story which has subsequently been picked up by evolutionary biologists, the story of the Red Queen. After meeting the Red queen, Alice has to run with her to be able to conduct a conversation, as the Queen is running. After some running, to Alice's exhaustion, they stop and the girl notices that they are still in the same spot. She voices her bewilderment: "Well, in our country," said Alice, still panting a little, "you'd generally get to somewhere else — if you run very fast for a long time, as we've been doing." The Queen responds: "A slow sort of country! Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!" (Caroll, 1871: 16) This story has inspired evolutionary biologists, which are following Van Valen's 1973 proposition, that for an evolutionary system, continuing development is needed just in order to maintain its fitness relative to the systems it is co-evolving with (Van Valen, 1973).

While this is by no means the only interpretation of evolutionary principles, it holds a powerful lesson for all concerned with preservation of heritage. A group of environmental historians has suggested to view the world as a series of nested nexuses of arrangements and practices, called socio-natural sites. These socio-natural sites are subject to evolutionary and thermodynamic principles (Winiwarter et al, 2013). To sum the argument up: Human beings create, via their practices, arrangements from the material world to harvest exergy. These arrangements deteriorate due to wear and tear. All arrangements are part of the evolutionary setting of humankind, either because of (evolving) humans taking part in them, or because of other living beings which evolve

and are part of them. Autopoetic change in arrangements is the norm, not the exception. We exist as islands of thermodynamic anomaly in a universe governed by both directional and stochastic change. If one now connects these insights with the prior discussion on sustainability, the point of sustainability as a dynamic equilibrium becomes even more prominent. Seeking sustainability means to seek a dynamic equilibrium with our surroundings because we need to maintain a flow of energy and material to withstand the trend of the universe to level all differences and also because we need to keep up with co-evolutionary demands. In a changing universe, with evolving life, sustainability means to counter change with change in order to maintain relative stability. Material Heritage therefore must be conceptualized in a processual way, its maintenance requirements have to be taken into account.

We shall turn to the geographer Marc Antrop to analyse what the maintenance of heritage requires. As he points out, landscapes evolve continuously in a more or less chaotic way and reflect social and economic needs of a particular society at a given moment (Antrop, 2006: 187). This is an important framework condition for cultural heritage, which is often landscape bound. As Antrop points out, the preservation of inherent landscape qualities and values is one important issue. Natural resources, such as biodiversity, habitats and water, and cultural heritage consisting of material objects in their landscape context and immaterial values such as the sense of place, the genius loci are connected and in their interaction form this inherent quality. Antrop emphasizes the connection to human practices: "A sustainable preservation of these qualities demands maintaining traditional practices and functions, and keeping the necessary knowledge to do so." In order to achieve this goal, one also needs to think about sustaining rural economies by using ad hoc combinations of natural and human capital, as he points out (Antrop, 2006: 193). To preserve cultural and natural heritage, a key to what Antrop (following Ecotrust) calls "A Conservation Economy", social capital, natural capital and economic capital are needed. Equity is a requirement, but also a good ecological endowment is necessary. Economic success, be it growth-oriented or not, is also a precondition. This brings the issue of valorization of heritage centre stage. Valorization of cultural heritage means to create the conditions for its preservation by sustaining rural communities.

THE BROADER CONTEXT: THE SUSTAINABILITY PARADIGM AND HUMAN NEEDS

Cultural heritage, cultural landscapes of specific value are part of a larger question, that of sustainable society. While it is important to notice that Italy is currently pioneering the preservation of cultural landscapes, (Agnoletti, 2012) the broader context of sustainability needs to be understood, too. Sustainability concerns all spheres of human life. While the field of consumption is evident, one might see the issue of livelihoods more broadly as important. Soini and Dessein list these two as well as landscape, artistic and other practices, recreation, aesthetic preferences and heritage as issues with a bearing on sustainability (Soini & Dessein, 3).

The issue of well-being of humans has been put into the context of community sustainability, with environmental social, economic and cultural issues intersecting to create well-being.[1]

Well-being has long been conceptualized as an issue of fulfilled needs. The pyramid of needs as first suggested by Maslow in 1943 and subsequently detailed, refined and discussed, contains security, adventure, freedom, exchange, power, expansion, acceptance, community, and expression. It is important to notice that these needs are to some extent contradictory, such as security and adventure, but this means only that a balance has to be sought by each individual. Most often, a hierarchical approach is used to visualize the needs. Such a depiction is presented in Figure 3.

Sustainability comes into play when we reflect upon the fact that these needs can be fulfilled very differently, with more or less environmental impact. One can also think of cultural heritage as a precipitate of the ways and means a society has found to fulfil its needs, connecting the notions directly.

How the needs are fulfilled in more or less sustainable ways can be exemplified by using acceptance, a person's desire to gain esteem in the eyes of others. Consumer society functions on the basis of 'conspicuous consumption', a notion coined by sociologist Thorstein Veblen in 1899. Patterns of economic consumption (of goods and services) are motivated by the desire for prestige, the public display of social status, rather than by the intrinsic, practical utility of the goods and the services proper. A sustainability transition will involve finding other options for creating acceptance and fulfilling our needs differently.

1 see for an image at http://computingforsustainability.com/2009/03/15/visualising-sustainability=

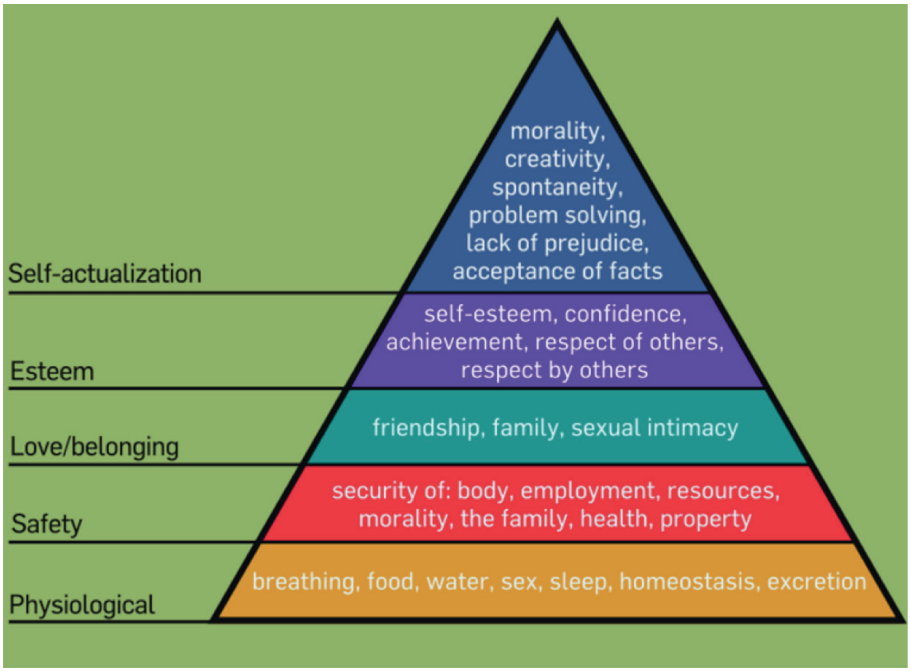

Figure 3 – Maslow's pyramid of needs in an expanded version

SUSTAINABILITY AND HERITAGE

While we have now explored some important social issues in the context of sustainable development, an understanding of the role of cultural heritage for sustainable development has to combine the ecological issues raised in Figure 2 with the social and psychological questions raised above and depicted in Figure 3. Figure 4 is the depiction of a Chinese proverb. I will use it to disentangle the elements of both natural and intangible as well as material cultural heritage, which link nature and culture in many ways. The proverb is translated as: "When the wind blows, barrel makers get rich". The explanation of the proverb in the Wikipedia version details the chain of events: "When the wind blows, dust will be blown into people's eyes. If dust is blown into people's eyes, some people will go blind. The traditional employment for blind people in Japan was itinerant shamisen-playing story-tellers. The blind people would therefore be predicted to purchase shamisen. The skin of the shamisen is made of dog or more often cat. So if the number of blind people increase, then cats will be killed for their skin. If cats are killed then there will be more

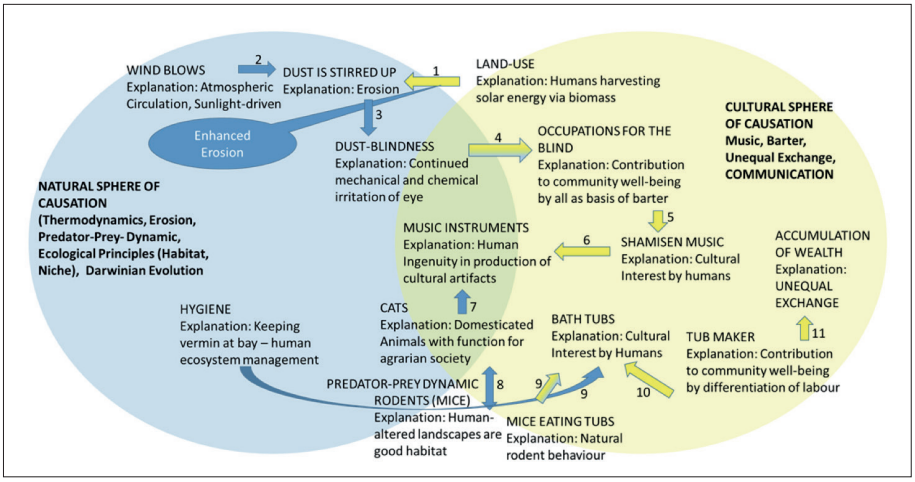

Figure 4 – A Chinese proverb as a means to illustrate the entangled cultural and natural issues resulting in an economic effect ultimately caused by blowing wind. Yellow arrows depict cultural causation; blue arrows depict natural causation. Mixed arrows denote combined causation

mice. And if there are more mice, people will need to make sure that their rice is kept in barrels. So they will order barrels. And barrel makers will get rich."[2]

The proverb can be read as having an even closer connection to environmental issues than the story contains at first glance, if we include the question of why the dust is blowing into the story. The dust-blowing wind might be the result of changes in land-use resulting in enhanced erosion. And the chain could be constructed further back, including more and more elements: The enhanced erosion might be due to wood-cutting as a result of natural forces impacting on cultural heritage – an earthquake destroying wooden buildings, perhaps even temples. The enhanced erosion might be due to wood-cutting for building war ships or a merchant fleet, it might be due to a new crop sown that provides less ground cover than traditional crops, which might be given up due to changes in taste or due to climate change calling for diversification or change in crops. Wherever one stops, the entanglement of cultural and natural spheres of causation is doubtlessly clear.

Sustainable development is intimately tied to the choices made in the cultural sphere. Its preservation and valorization is only a part of the story. The Chinese proverb allows us to see that all our choices will have impacts on

2 http://commons.wikimedia.org/wiki/File:Shamisen.jpg

the biosphere, often indirect results over many steps back and forth between the spheres, including the economic and social sphere. Hence, to evaluate cultural choices for their potential for doing good or harm in our relation to nature (ecological sustainability) becomes central to sustainable development, calling for a much more prominent role for the humanities than they have hitherto had.

HERITAGE IN THE DANUBE REGION – A STORY OF CONFLICT AND DESTRUCTION

Having established the causal relationship chains that involve culture and nature alike, the final section of this paper explores one more entanglement between sustainability and heritage. This entanglement is of particular importance for the Danube region. I refer to the role of the wilful destruction of cultural heritage as a means of destroying the identity of peoples in conflict and war.

The city of Dubrovnik has put a series of maps on display in its centre to inform visitors of the amount and exact place of destruction wrought by the Yugoslav army, the Serbs and Montenegrinians in the years 1991 and 1992, as the caption says.[3]

The maps detail directly damaged roofs, buildings destroyed by fire, and indirect destruction. The discussion brings us back to the beginning of this article. As Vecco rightly points out, the Hague Convention of 1954, reacting to the damage of WWII, was an important stepping stone in the societal embrace of cultural property or heritage. "The Convention states that it is necessary to protect the cultural heritage of all humanity" (Vecco, 2010, 322), It is discussed in detail by Kevin Chamberlain (Chamberlain, 2004).

A recent edited collection of the same title, but with a different subtitle, is the result of an international comparative project focussing on restoration (Sørensen & Rose, 2015). It is accompanied by YouTube Videos.[4] The book explores "how cultural heritage is both affected and generated by conflict, and how such heritage is subsequently interpreted, responded to, and used." (Sørensen & Rose, 2015: 1) The project on which the book is based explored the uses of cultural heritage in post-conflict reconstruction processes in five countries: Bosnia and Herzegovina, Cyprus, France, Germany, and Spain. Case studies from Denmark and Serbia were added. The book has a strong focus on

3 http://en.wikipedia.org/wiki/Siege_of_Dubrovnik#/media/File:Dubrovnik_shelling.jpg
4 http://www.youtube.com/user/CRICResearchProject

place, as the authors wish to show that place itself, just like people and institutions can exercise agency, a dimension of post-conflict heritage construction they claim has been little explored. For a material-oriented environmental history place can be seen as analogue to the socio-natural sites we wish to explore. The book ties nature and culture together and thus is useful for the study of the role of cultural heritage in sustainability.

The Istanbul-based research institute for Islamic history and Culture, founded in 1976 and opened in 1982 as a part of the Organisation of Islamic Cooperation, has a program devoted to the History and Culture of Bosnia-Hercegovina.[5] A series of publications has been produced, among them one on the restoration of mosques, which were restored after the Yugoslav war with the help of foreign donations (Eren et al, 2013). The destruction of mosques was an integral part of the war and can be seen as a strategy of identity erasure. Such action has been called 'identicide' and is defined as the intentional killing of the relatedness between people and place that eliminates the bond, which underpins individual, community, and national identity (Meharg, 1999).

The hostile attitude towards cultural representations of other cultures has not ended with the end of the war. As late as November 2012, the global heritage fund reported that the Kosovo Government was planning to set up an (ethnically) Serbian police unit to protect some of the most important Serbian heritage in the country, such as four Serbian Orthodox Christian churches and monasteries that comprise the Medieval Monuments in Kosovo, a UNESCO World Heritage Site.[6] War legacies in the form of destroyed or damaged cultural heritage sites have an important effect on the options and priorities for sustainable development (Winiwarter, 2015) and hence, need to be considered as an important topic linking sustainability and heritage.

WHAT ROLE(S) COULD CULTURAL HERITAGE PLAY FOR THE SUSTAINABLE DEVELOPMENT OF THE REGION?

But war has a bearing on sustainability not only with regard to destruction; it can also be explored for its potential to foster peace after or even instead of conflict. The Council of Europe has spelled this possibility out in a 2011 resolution (Council of Europe, 2011). The council argues that heritage provides a channel for knowledge and the mutual recognition of diversity and can thus stimulate dialogue between people and communities (Council of Europe, 2011: 5). This echoes a UNESCO report on the issue in which UNESCO emphasizes

5 http://www.ircica.org/the-history-and-culture-of-bosnia-and-hercegovina/irc441.aspx
6 http://globalheritagefund.org/onthewire/blog/serbian_religious_and_cultural_sites

"the preservation of cultural heritage and its effects on development, social cohesion and peace integrated into national and local policies" (UNESCO 2008: 29). In this report, UNESCO also declares its own role to develop a culture of peace. "UNESCO will continue to monitor […] highlighting the role that can be played by culture in situations of conflict or post-conflict as a 'vehicle' for reconciliation through cultural heritage" (UNESCO 2008: 27).

Cultural heritage should not be seen naively as a cure for conflict, but rather as multi-faceted and ambiguous, which allows for communication about it between different groups: "[…] post-conflict healing from psychological and cultural perspectives should not be assessed based on simplistic linear and universal values. Instead, it is better understood as an intensified, but ambiguous, form of renewal based on the use of emotive symbols, as part of a larger anthropological undertaking of continuous individual or cultural (re)production." (Giblin, 2014, 514)

Several principles should be followed when dealing with cultural heritage. A group from the Netherlands has summarized their experiences calling for participatory planning (Vervloet et al, 2005: 156f). The authors suggest to involve agencies, inhabitants and enterprises in a process of negotiation. Experts need to be prepared to find locally accepted compromises rather than coming with a one-size-fits-all approach. When participatory planning is involved in the creation or re-creation of cultural heritage, developing heritage can trigger processes of empowerment and is therefore a field of experimental democracy, which in itself is a prerequisite for sustainability. Vervloet and colleagues also point out that radical imagined futures can open a space for negotiation about more mundane and practical solutions by widening the vision of the people involved.

Developing heritage can be a laboratory for negotiation and help develop democracy at the same time as promoting a sense of belonging and identity.

CONCLUSION

The Danube Declaration of April, 25th, 2010 was signed by Austria, Bulgaria, the Czech Republic, Germany, Hungary, Romania, Slovakia and Slovenia. It emphasizes "that the Danube Region Strategy will serve the goal of increasing prosperity, security and peace for the peoples living there, especially through enhancing cross-border, trans-regional and trans-national cooperation and coordination" and considers "the strategic policy areas of energy, environmental and nature protection, transport and infrastructure, professional training and innovation, arts and cultural activities, as well as sustainable eco-

nomic activity and tourism, food security/safety, economy, SME cooperation, R+D, migration, governance, sport, education and culture, labour, health and social affairs as key elements of the future EU Strategy for the Danube region." (Ministry for Foreign Affairs of the Republic of Hungary, 2010)

The evidence presented in this paper has shown how central the development, preservation and valorisation of cultural heritage are for the goals of the Danube Strategy. The contested creation of identities via cultural heritage is ongoing in the region, as the debate about the resolution of the Balkan conflicts has not reached closure. The area of former Yugoslavia is in a post-conflict state, and will take decades to recover from a history of genozide and wilful destruction. The politics of memory are played out on the fields of natural and cultural heritage. Researchers must be aware that linking sustainability and heritage in such a region is not without dangers. Arguments of sustainability might be used as camouflage for political interests.

In such a contested terrain, all research has to make norms and values of the researchers explicit. All research needs to make its ethical ramifications transparent and justify them and all research must be aware that it is embedded in a political and economic context and needs to watch out for misuse. But while these caveats should be taken seriously, the potential of creating a sustainable Danube River Basin by dealing successfully with the cultural and natural heritage of the basin is great and merits exploration particularly in the form of long-term socio-ecological case studies as a basis for comparative approaches. Only through long-term studies can the multiple layers of meaning often present at one site be made visible. Many sites have a multi-ethnic or multi-national history and could become focal points of a joint effort to preserve and develop them into nodes of sustainable development.

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Building project ideas during the DIAnet International School

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School Facilitators

The sustainability challenges addressed by Horizon 2020 require international and interdisciplinary approaches. Each of these challenges will play out differently in different areas of Europe and will require both localized knowledge (as reflected, e.g. in knowledge of local languages and historical legacies influencing the available paths for development) and an overarching approach. By linking a specific area, i.e. the Danube River Basin, a target area of a macro-regional strategy of the EU, with the Grand Challenges of Horizon 2020 and building an interdisciplinary network of young scholars, DIAnet schools contribute to the preparation and workability of Horizon 2020. By offering experience in interdisciplinary group work, DIAnet schools engage in capacity building in a crucial area and at a crucial moment. By mapping the EUSDR challenges onto Horizon 2020, DIAnet schools pave the way for successful participation in Horizon 2020.

During the 2015 edition, as well as the previous, the second half of the school was dedicated to group work by students. Participants were divided in six working groups, each of them representing a variety of disciplines and countries as well as PhD-students and young post-doc researchers. Working groups identify a common idea for a future project, which addresses one of the

societal challenges of Horizon 2020 and takes into account the challenges of the DRB. Draft project proposals developed in Working groups should ideally represent a part of an application to a funding authority. Group presentations with direct feedback by an evaluation committee will end the experience.

THE GROUP WORK PROCESS

Each Working Group developed a draft of a project proposal. It was up to the group to identify the topic of the proposal, which had to be related to cultural heritage and the sustainable development of the Danube Region. The protection, conservation and exploitation of cultural heritage are interdisciplinary, multidisciplinary and transdisciplinary field by their very nature, therefore the project proposals need to involve several research areas and reflect the synergy of interests and expertise available in the Working Groups. They also had to take up the EU Strategy for the Danube Region, the Societal Challenges of Horizon 2020, as well as the Strategy EUROPE 2020 and other reference documents and strategies participants found relevant for the project idea.

The organizers did not expect that participants would be able to develop a full project proposal in such a short time. They had to focus in particular on some important parts.

The first and most important one was a clear definition of the problem groups wished to address and the resulting objectives of their project proposal. The participants had to describe how the project was connected to the sustainable development of the Danube Region in general, and more specifically to the EU Strategy of the Danube Region, Societal Challenges and other relevant documents (which problem it takes into account, how it contributes to an improvement of social, economic and/or ecological problems, etc). Then they had to break down the overall objective to clear research questions and tasks and define the scientific disciplines which have to be involved, possible data and methods needed. Eventually, the groups had to select a specific Danube Region area where to work and describe the particular state-of-the-art of the selected cultural heritage (tangible: movable or immovable objects; intangible; digital etc.) and the environmental and/or socio-economic situation.

We strongly encouraged participants to prepare the proposal as if they were applying to one of the calls listed below which were open under Horizon 2020. Helping participants to apply for a real funding will be one of the best rewards for the entire DIAnet school team.

SOCIETAL CHALLENGES

REFLECTIVE SOCIETIES: CULTURAL HERITAGE AND EUROPEAN IDENTITIES
- Topic *Innovation ecosystems of digital cultural assets*
- Topic *Emergence and transmission of European cultural heritage and Europeanisation*
- Topic *Cultural opposition in the former socialist countries*
- Topic *Communication and dissemination platform*

SCIENCE WITH AND FOR SOCIETY

CALL FOR MAKING SCIENCE EDUCATION AND CAREERS ATTRACTIVE TO YOUNG PEOPLE
- Topic *Innovative ways to make science education and scientific careers attractive to young people*

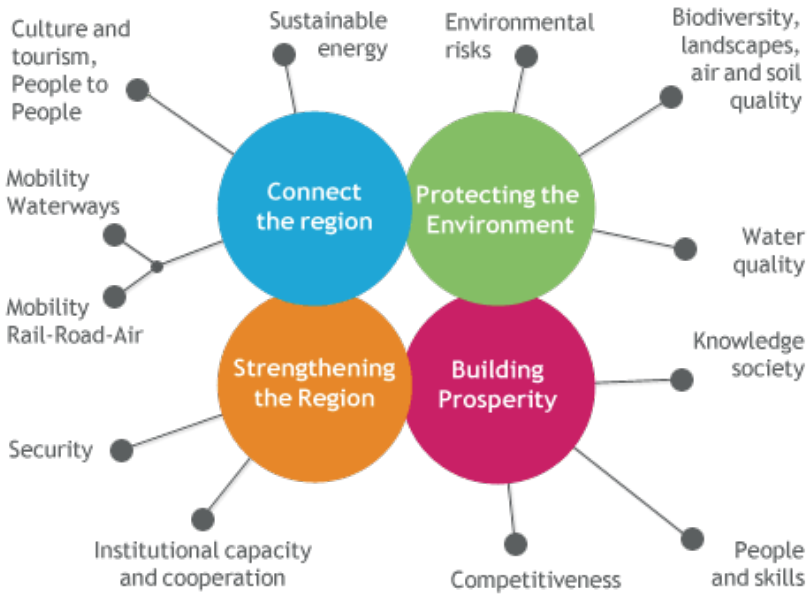
CALL FOR INTEGRATING SOCIETY IN SCIENCE AND INNOVATION
- Topic *Pan-European public outreach: exhibitions and science cafés engaging citizens in science*

HOW PROJECT IDEAS WERE DEVELOPED

Instructions given to participants on how to develop a project idea:

1) **Select the Social Challenge you would most like to work on**:
   Listed all six challenges but please keep in mind that your topic should be related to cultural heritage.
   i. Health, Demographic Change and Wellbeing
   ii. Food security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and Bioeconomy
   iii. Secure, Clean and Efficient Energy
   iv. Smart, green and Integrated Transport
   v. Climate action, Environmental, Resource Efficiency and Raw Materials
   vi. Europe in a Changing World – Inclusive, Innovative and Reflective Societies
   vii. Secure Societies – Protecting Freedom and Security of Europe and its Citizens

2) **Connect them to one or more pillars and priorities of the Danube Strategy**:



3) **Select a thematic focus**.

4) **Focus on a specific area of the Danube Region, if your research is place-based**.

5) **Select the call you would like to apply with your project proposal**.

Please take into account the following items:

- How and why is your theme relevant from the point of view of cultural heritage and how it is linked with sustainability on the Danube Region?
- How does your topic relate to a Societal Challenge and EUSDR priorities?
- What are the main research questions and hypotheses?
- Which research/scholars are needed to tackle it and for what are they needed?

- Which methods do you envisage necessary for solving the problem and why?
- How is your theme connected with other sustainability issues of the Danube Region?

We encourage you to start thinking about your project ideas and relevant calls and to use the time prior to the school to get to know about other group members. Please make the best of the time during the 2015 DIAnet International School to learn from each other and to foster your innovative ideas and original project proposals from this specific multidisciplinary environment.

What do we expect from you?

The groups have to deliver a Concept Note of WG project idea consisting of the following parts:
- Call to apply for
- Project work title
- Short summary of the project idea
- Short description of the project background and problem(s) targeted

By the deadline, the groups have to deliver a paper consisting of the following parts:
- Front page, indicating: title, abstract, keywords and authors
- Project proposal of max 12 pages
- References

On the last day of the School, the groups have to give a short presentation of the work.

PARTICIPANTS INCLUSION

The general impression we – as facilitators – had is that participants found 2015 DIAnet School very useful for their future professional development. Most of them had no previous experience regarding the international (EU-funded) project implementation. Therefore, it was very important for them to cooperate in quite a shuffled team and to experience so many aspects of cooperation during one of the most critical phases of international project management: the proposal preparation. On the other hand, we also learned a lot, since the

expertise participants brought from their fields was spanning along many scientific areas.

During the first half of the school they were mostly attending lectures and making field trips with a very busy schedule. Nevertheless, they did find time to interact and set up initial project ideas they developed towards the end of the 2015 DIAnet School. This was very useful for them since they realized that their professors and more experienced colleagues were facing the same issues – deciding on the exact project idea that will be pursued with their international colleagues from various different institutions. During the second half of the School they experienced full hands-on approach (every day, from dawn 'til dusk) in the development of a project proposal for very specific Horizon 2020 Open Calls of their interest (aligned with the overall topic of the school: THE ROLE OF CULTURAL HERITAGE FOR THE SUSTAINABLE DEVELOPMENT OF THE DANUBE REGION). Besides learning techniques of project proposal preparation, the participants also experienced all the benefits of multidisciplinary international teams.

It was crucial for them to understand the importance of appropriate planning for a successful project implementation (and, at first, evaluation). By learning about structuring their brainstorming processes, the participants provided us, as facilitators, with a very important feedback - this particular facilitation was supposed to be combined with a training approach. It was accepted both by facilitators and participants, once again proving that interaction is of crucial importance. They learned about preparation of the following aspects: general and specific objectives, context (with background and problem statement), methodology, consortium creation, work package structure and budget needed for the action.

It was very interesting to see that practically all of them actively contribute within their teams to the development of a proposal that could be sustainable. As for the general results of the school, what is even more encouraging is the fact that several groups expressed the interest to pass the information to their university supervisors, in order to further develop their proposals.

Project Proposals

The participants in the 2015 DIAnet International School were divided into 6 Working Groups. Each Working Group conceived and drew up a project proposal based on interdisciplinary methods.

Working Group "ISAR"
TITAN – Tisza, Transmission and Innovation: An Innovative Bottom-up Model for Transmission and Promotion of Tisza Cultural Heritage

ABSTRACT

The project aims to promote and preserve both tangible and intangible cultural heritage in a particular region of the Danube river basin, Tisza Region (TR). The TR cultural heritage is less-well-known in the rest of Europe and is at risk of being lost or forgotten if not preserved and supported. In this project is presented an innovative and strategic bottom-up model which allows local people to manage how their heritage is disseminated through transmission and promotion of their own culture by video and interactive performances. Anthropological and historical research is required in order to show traditions, cultures and art history, and to create a database of cultural heritage of TR which will be enriched also by the videos that the local people will produce. The expected impact of this proposal is not only limited to the transmission of a self-constructed cultural identity, but also materializes into significant economic benefits for the preservation of the cultural heritage and for the sustainable development of this region.

KEYWORDS

Tisza region
Cultural heritage
Bottom-up approach
Promotion
Video-media

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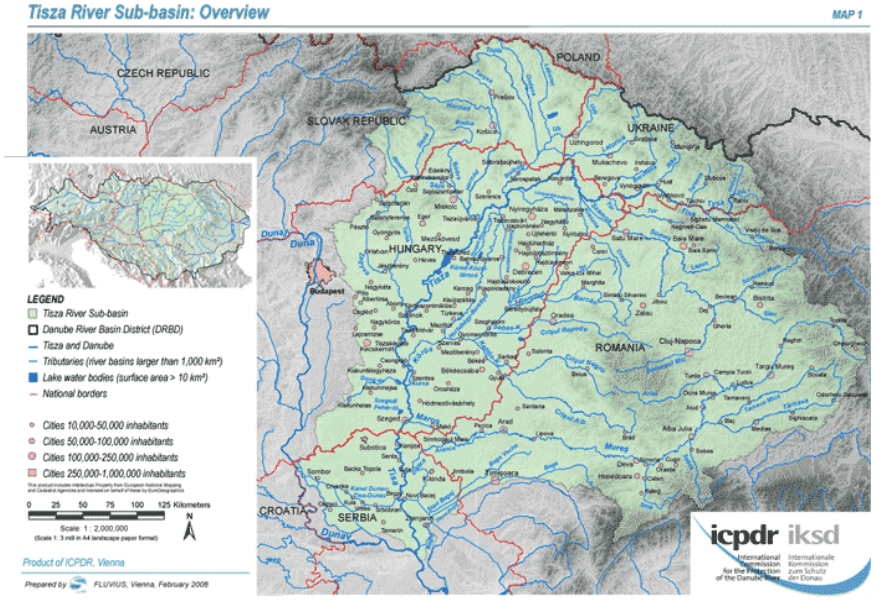
PROBLEM STATEMENT AND BACKGROUND

European cultural heritage, as a rich mosaic of different cultures, history and traditions, enriches the individual lives of citizens and plays a key role in improving the social capital. It is part of our past, our present and our future, and has to be supported, safeguarded and promoted. In this respect, preservation of tangible and intangible cultural heritage is needed, otherwise it will disappear. Promotion and valorisation of cultural heritage can be also considered as an important resource for economic growth, employment and social cohesion, offering the potential to revitalize European areas non-well-known and to improve sustainable tourism.

The Danube Region as a part of Europe, not only has a rich natural heritage (for which it is famous), but also a cultural one, and not all of its areas are equally known. In this respect, Tisza River Basin could be mentioned as a specific case, as it has been mostly studied in the context of its environmental resources and problems, lacking the cultural aspects that also give to the region an identity and are necessary to develop a sustainable future.

The *Tisza River Basin or Tisza Region (TR*), shown in Fig.1*,* is one of the most picturesque regions in Europe, including: unique cultures, rare flora and

Figure 1 – Map of Tisza River Basin



Source: ICPDR (2011). UNDP/GEF Tisza Project. Integrated Tisza River Basin Management Plan

fauna, a rich supply of natural resources and the waters of the Tisza River itself. This river is the longest tributary of the Danube River, which flows through five countries: Ukraine, Romania, Slovakia, Hungary and Serbia. The drainage area of the TRB is 157,186 km^2, it is the largest sub-basin of the Danube River Basin (801,463 km^2) and it is the home of approximately 14 million people (IP-CDR, 2011).

Even though this particular region is full of art monuments and history, local customs and traditions, very little of its cultural heritage is well-known among local people and the rest of European citizens. Citing some significant examples of the most famous cultural heritage in this area, several examples can be mentioned: the wooden churches of Maramureş "which are outstanding examples of vernacular religious wooden architecture" (http://whc.unesco.org/en/list/904); the Merry Cemetery of Săpânța, with its lively colours and amusing rhymes on headstones; the Hortobágy National Park – the *Puszta* "where specific land-use practices adapted to the natural conditions of alkaline pastures, steppes, meadows and wetlands" (http://whc.unesco.org/en/list/474).

On the other hand, there is plenty of cultural heritage in this region which is less-well-known in the rest of Europe and at risk of being lost or forgotten if it is not preserved and not supported. For instance, folk songs (e.g. "Multe rele m-o mâncat", "Du-te supărare-n codru"), legends (e.g. the tomb of the Attila the Hun is allegedly somewhere in the Tisza riverbed near the confluence of the Tisza into the Danube), history (the famous Battle of Senta between austro-hungarian and turkish armies), poems (e.g. Sándor Petőfi: The Tisza), archaeological sites, castles, summer and manor houses (e.g. the manor-house known as Fantast, i.e. Dundjerski Castle).

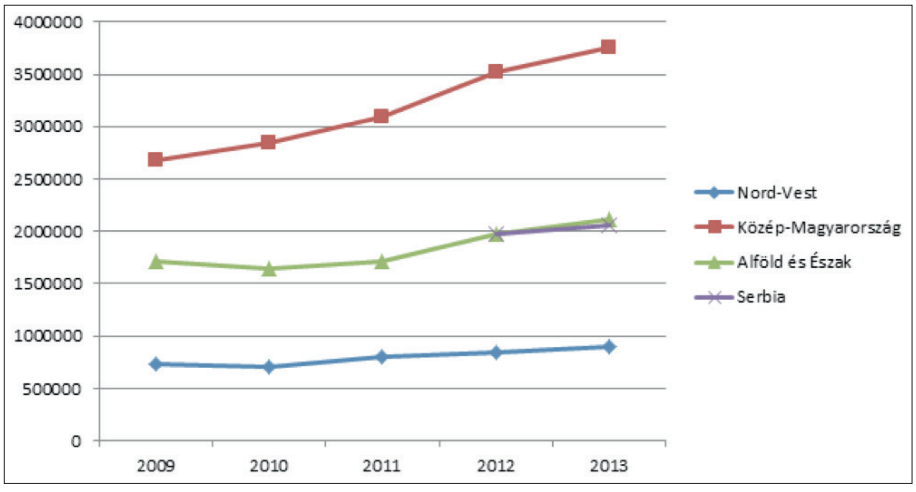
Given these examples, it becomes obvious that, should this heritage mentioned above and many others continue to be ignored, an essential part of not only regional, but also European identity will fade into the historical background, with more well-known symbols of the continent becoming the sole, incomplete image of Europe. On the other hand, by bringing the value of the Tisza region and other similar regions into focus, it becomes possible and even likely to create a more inclusive identity that every European citizen can relate to.

In what concerns the issue of sustainability, one industry that can ensure this type of development by involving cultural heritage from the Tisza river region is tourism, which has mostly shown a tentative growth in three of the four regions (Fig. 2) which together encompass the largest part of the basin. Moreover, according to The United Nations World Tourism Organization (UNWTO) *Tourism Towards 2030*, international tourist arrivals in the emerging economy destinations including Central and Eastern Europe will grow at double the rate (+4.4% a year) of that in advanced economy destinations. As a result, arrivals

in emerging economies are expected to exceed those in advanced economies before 2020 (UNWTO, 2014). For this reason, one key impact of the successful implementation of the current project is ensuring a more consistent growth for this particular industry by making the region more visible, as well as better integrated.

The aim of this project in the Tisza region as a pilot area is to create an innovative and strategic bottom-up model which allows local people to manage how their heritage is disseminated through transmission and promotion of their own culture by video and interactive performances. For this purpose, connections between academic and research institutions, authorities and local communities will also be encouraged. Through the establishment of such communication channels, the cultural "messages" that the people wish to convey will be transmitted much more efficiently and will therefore have a much better chance of reaching the regional, national and also European level. The expected impact of this proposal is not only the transmission of a self-constructed cultural identity, but also materializes into significant economic benefits. The new influx of tourists and researchers interested in the area will provide an increase of its revenue, which will be useful for the preservation of the cultural heritage and for the sustainable development of this region.

Figure 2 – Arrivals at tourist accommodation establishments by NUTS 2 regions



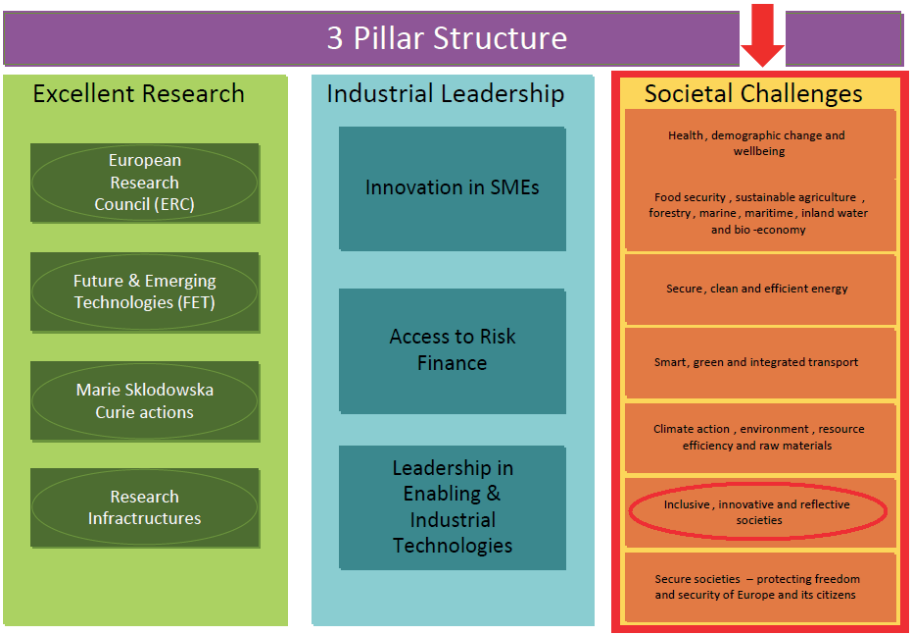
Source: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=tour_occ_arn2&lang=en

LINKS TO EUSDR AND HORIZON 2020 CHALLENGES AND PRIORITIES

The Societal Challenge pillar of the Horizon 2020 programme targets fostering a greater understanding of Europe, by providing solutions and supporting inclusive, innovative and reflective European societies. This consideration is supported by strong multidisciplinary approaches, which include social sciences and humanities, information and communication technologies. We would like to initiate innovative links between different parties from the Tisza river basin in order to enhance protection of its tangible and intangible heritage. (http://ec.europa.eu/programmes/horizon2020/en/h2020-section/europe-

Key future research and innovation actions for 2015 within Horizon 2020 (Fig. 3) that the overall goal of our project for the Tisza region particularly focuses on and complies with are: *transmission of European cultural heritage, uses of the past, EU eastern partnership and other third countries and new forms of innovation in the public sector*. (http://ec.europa.eu/programmes/horizon2020/en/h2020-section/europe-changing-world-inclusive-innovative-and-reflective-societies#Article).

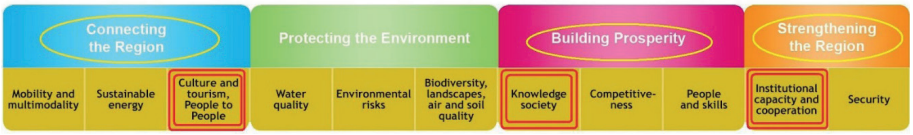
Figure 3 – Horizon 2020 Pillar Structure



Source: http://www.unive.it/media/allegato/CFInternational/Pillar.png

Furthermore, according to EU Strategy for the Danube Region (EUSDR) it is emphasized that the heterogeneous Danube macro-region can develop its potential, especially through strengthening the cooperation within it. From four Pillars of EUSDR (Fig. 3) which address the major issues, our project proposal which explores the feasibility for the implementation of new means for transfrontier heritage protection corresponds to three of them: *Connecting the Danube Region (1), Building Prosperity in the Danube Region (3) and Strengthening the Danube Region (4).* Each comprises Priority Areas and distinct fields of action (EUSDR, 2010), with our own focus highlighted in the figure below (Fig. 4).

Figure 4 – Main Pillars of the Danube strategy



Source: http://wbc-inco.net/object/link/10305/attach/4-pillars_graph_reduced.jpg

METHODOLOGICAL APPROACH

For this project, a transdisciplinary approach which consists of several techniques coming from the social sciences and technological knowledge will be used. On the one hand, a bottom-up model which allows local people to manage their heritage for dissemination will be developed; this model can be used at first in this pilot region, and then applied to other particular regions that need to encourage the valorisation of their assets. In order to promote and to preserve both tangible and intangible cultural heritage, the transmission of artistic and historical events, customs and traditions of the Tisza basin region through video and interactive performances is proposed.

In both the preparatory study and the innovative bottom-up model, different expertises like art-historical and historical, sociological, anthropological and archaeological, as well as artistic, architectural and ICT scientific knowledge will be applied.

BOTTOM-UP APPROACH

Local citizens will participate in decision-making and in this case they will be engaged in: the selection of the cultural heritage that will be involved, the development of appropriate strategy and actions in order to promote their local area and to have opportunities to improve the tourism, visibility and economy in this area.

EUROPEAN ASSOCIATION FOR RURAL DEVELOPMENT EXPERIENCE

(www.elard.eu) has shown that the bottom-up approach should be considered as combining and interacting with national and/or regional authorities to achieve better overall results. In this project, workshops and seminars will be organized in order to improve the awareness, participation and mobilization of the local population to identify the strengths and the weaknesses of the Tisza river area, with special consideration given to the meaning of traditions and cultural heritage at risk of going missing. During this first stage, different governmental, private and third-sector stakeholders will participate in forum discussions to make people more sensitive about the role of culture in their life. Local people participation should not be limited to the initial phase but should extend throughout the promoting process: they will be the main characters of the activities, which will give them the possibilities to transmit their memories and impressions, and to showcase their art and culture.

ART AND CULTURE TRANSMISSION BY INTERACTIVE ACTING

Capturing cultural heritage on video using current technologies and organizing regional festivals offer exciting opportunities to involve local people in valorising their own culture and promoting them in different countries in Europe. The cultural transmission of art, memories and storytelling will be recorded, documented and safeguarded developing a multimedia interface as a valuable archive of photographs, audio and video materials collected, produced and published by local people in collaboration with experts. In order to ensure a proper multidisciplinary approach, anthropological and historical research, as well as video media and public relation knowledge are required and involved. The video performance and interactive activities can offer a contemporary way of communication by combining pictures, narration, and text in order to transmit a message and promote culture as well as one's own language. Moreover, in the last twenty-five years, advances in technology, software and data storage are more widely available and have made video technology accessible for broad applications (Dold, 2014).

Additionally, considering the promotion of the region and the valorisation of intangible and tangible cultural heritage, festivals will be performed during the

project. Events and folk festivals will be organized by the university partners in collaboration with local communities, in order to create opportunities to share traditions, to enhance social cohesion and to promote social inclusion through art performance.

PROJECT CONSORTIUM

A cross-sectorial group of corporations from the different countries involved in this Tisza region project will take part in this consortium, defined by both international and transdisciplinary characteristics. Each partner has a particular role in this proposal, as is shown in the WP structure, and it will contribute actively throughout all planned objectives and activities.

Our leading partner is the University of Debrecen in Hungary (*) and the consortium is composed of different partners coming from the Tisza region and other countries mostly, but not exclusively from the European Union, in order to take advantage of the expertise and to promote this model in other parts of Europe.

The partners of the consortium are:

- Universities and Research Centers oriented towards the research part of the project:
  - Center for Sustainable and Environmental Development, University of Novi Sad, Serbia
  - Faculty of Humanities and Social Sciences, University of Debrecen, Hungary (*)
  - Faculty of Geography, Tourism and Sport, University of Oradea, Romania
  - Faculty of Electrical Engineering and Information Technology, University of Oradea, Romania
  - Faculty of Electronics, Telecommunications and Information Technology, Technical University of Cluj-Napoca, Romania
  - Faculty of Theater and Television, Babes-Bolyai University, Cluj-Napoca, Romania
  - Faculty of Sociology and Social Work, Babes-Bolyai University, Cluj-Napoca, Romania
  - Faculty of Social Sciences, University of Shkodra "Luigj Gurakuqi", Albania
  - Center of Urban, Territorial and Environmental Research, University of Ferrara, Italy
  - Economy and Cultural Activity Management Centre (EGArt), University Ca' Foscari of Venice, Italy

- Regional Agencies for Cooperation and Territorial Management
  - The Council of Danube Cities and Regions
  - Danube Cultural Cluster
  - European Grouping for Territorial Cooperation (EGTC)

- Local and National Governments:
  - Ministry of National Development, Hungary
  - Ministry of Culture and National Cultural Heritage, Romania
  - Autonomous Province of Vojvodina, Serbia
  - Municipality of Kosice, Slovakia
  - Municipality of Baia Mare, Romania
  - Municipality of Uzhorod, Ukraine
  - Municipality of Miskolc, Hungary
  - Municipality of Szolnok, Hungary

- Non-governmental Organisations (NGOs)
  - 3 NGOs in the field of Sustainable Local Development and Social Inclusion from Romania, Hungary and Serbia

Moreover, a wide group of stakeholders will take part in and benefit from the implementation of this project: local communities in the territory, tourism operators (hotels, restaurants and museums), non-governmental organizations (environmental and social ones), small and medium enterprises and industries based in the basin (private sector). Different experts are needed to achieve the objectives and the research activities of the project, such as: anthropologists, sociologists, historians, art scientists, IT scientists, media-developers, territorial planners and environmental managers. All of these experts come from the Partner Universities in order to develop local knowledge and expertise and, at the same time, to encourage regular knowledge and best-practices sharing between them.

OBJECTIVES

As illustrated in the background description, tourism is one industry of the region whose growth can be significantly improved. The development of tourism has been worldwide identified as an effective way to revitalize the economy of a destination, whether it is rural or urban, bearing in mind wellbeing of local communities. Cultural values and their elements occupy a significant place in tourism due to the possibility of their valorization and enrichment of the tour-

ist offer (Berić et al., 2012). Most of contemporary tourist visits are based on cultural attractions and cultural heritage, whereby the Tisza river basin could also generate significant increase in tourist arrivals (Božić, Berić, 2014).

There is a mutual benefit: for locals, tourism activities bring increased economic activity, hotels' occupancy rates, shops and restaurants' revenues. For the tourist, it is an opportunuty to enjoy good deals, discounts and promotions. If this proposal is to be implemented, it could develop synergies with other sectors and branches of the economy, ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities (UNWTO, 2013)

The proposed approach in this project has all the assets to ensure a good result by creating and popularizing a multimedia interface with locally produced promotional materials: the area becomes more well-known and more interesting due to the "stories" that become accessible to the public and, as a consequence, a more consistent influx of tourists can be expected. The main impact could be clearly identified as the increasing revenue of the region, which results from the following cycle: firstly, the incoming tourists will spend more money in local industries and, secondly, the increased demand for services is likely to create additional jobs within the region.

Additionally, two impacts that fall outside the scope of the project proposal could be identified: 1) the revival of the Tisza region as an integral part of European identity: 2) the better preservation of cultural heritage. This is anticipated to occur as a result of the increased interest and presence of researchers in the area, who would contribute towards the improved cataloguing of the region and would also stimulate academic interest in the region. Moreover, the new revenue generated by visiting tourists and researchers could be directed towards cultural heritage preservation and development. Tourism is sometimes seen as a threat to culture, by putting pressure on cultural sites and resources and a tendency to modify the intrinsic value of the living heritage and traditions of an area. However, handled sensitively it can bring benefit by raising awareness and generating income, thereby helping to safeguard historic sites and intangible heritage (UNWTO, 2013). The global trend of cooperation between tourism and culture sectors is in progress, in which such communication simultaneously allows the protection of the public good and achieving economic success, and cultural heritage that Tisza region possesses can definitely be incorporated in these trends (Beneton, 2011).

The goal of this project is to promote and preserve cultural heritage by involving local people in the transmission of their own culture. In order to achieve this goal, some specific objectives have been identified:

1. Develop a multi-media interface which is continuously and dynamically fed by people
2. Develop a bottom-up model of best practices for the transmission of cultural heritage
3. Strengthen the connection between local people and institutions who manage the dissemination of cultural heritage.

Bearing in mind all aforementioned, individual segments of presented Model for Transmission and Promotion of Tisza Cultural Heritage should serve as a framework for further action for the presentation of European cultural heritage in Tisza river basin, within the capabilities and limitations that come from internal and external social, economic and cultural forces.

Figure 5 – Objective tree

	ACTIONS	RESULTS	PARTNERS
WP1 Project management	This WP encompasses all the activities needed in order to ensure that the project is implemented according to the initial plan.		
	1.1. Constitute the project management team 1.2. Coordinate and monitor the project 1.3. Evaluate the project	Project runs smoothly and all activities take place at the scheduled time. Timing: 24 months.	University of Debrecen, Hungary
WP2 Preparatory Package	This WP covers all of the activities needed in order to have a reliable basis (initial diagnosis of regional cultural heritage status) for the creation of the multi-media interface.		
	2.1. Gather preliminary research related to the cultural heritage present in the territory in order to create a base for the multi-media interface and the bottom-up model. 2.2. Participate in different initiatives that could involve stakeholders for the project 2.3 Define the operative program	Necessary tools to create the basic framework of the multi-media interface are available. Timing: 6 months.	Leading Institution: Center for Sustainable and Environmental Development, University of Novi Sad, Serbia. Center of Urban, Territorial and Environmental Research, University of Ferrara, Italy. The Council of Danube Cities and Regions (CDCR). Danube Cultural Cluster (DCC). European Grouping for Territorial Cooperation (EGTC).
WP3 Creating a multimedia interface for the transmission of Cultural Heritage	This package targets the actual establishment of the multimedia interface and implies detailed research to catalogue the existing cultural heritage so that sections on the interface for each potential video material that is to be uploaded can be created.		
	3.1. Create a catalogue of tangible cultural heritage; 3.2. Gather multidisciplinary research to have an authentic picture of people's traditions, customs, values, way of life, which comprise their intangible heritage; 3.3. Create a multimedia platform where people can upload what they produce or advertise their festivals or other events; 3.4. Utilize locally produced materials and manifestations to constantly update the multimedia interface.	Functional multi-media interface after the two years of the project, which is constantly updated even after the implementation period is over. Timing: 18 months.	Leading Institution: Technical University of Cluj-Napoca, Romania. University of Novi Sad, Serbia. University of Debrecen, Hungary University of Oradea, Romania. University Babes-Bolyai Cluj-Napoca, Romania. University of Venice, Italy

WP4 Development of a new locally-based model for the revalorization of Cultural Heritage	The most consistent work package of this project, WP4 involves creating bridges which connect local people with local institutions and authorities and, at the same time, it requires the physical production of local videos, festival and events which will be logistically supported by the partners.		
	4.1. Conduct seminars, panels and workshops to make people more sensitive about their local heritage 4.2. Provide logistic, technical and artistic support for citizens to create and distribute videos which promote their own cultural heritage in the form of "stories"; 4.3. The people create locally-based videos, festivals and events, which are uploaded to the multi-media interface 4.4. Organize regular forums and meetings where people can discuss about cultural heritage (supporting activity to the media methodology proposal).	Fully developed model of best practices for the transmission of cultural heritage and strengthening of the regular contact between locals and institutions. Timing: 18 months.	Leading Institution: University Babes-Bolyai Cluj-Napoca, Romania. University of Novi Sad, Serbia. University of Debrecen, Hungary University of Oradea, Romania. University of Shkoder, Albania University of Ferrara, Italy. Ministry of National Development, Hungary. (MND) Ministry of Culture and National Cultural Heritage, Romania. (MCNCH) All Local Governments (6 governments representatives) NGO's (3 representatives)
WP5 Communication and Promotion	This WP is aimed at disseminating information about the project itself and its development, as well as about the multimedia interface which contains the videos, festivals and events described in WP4.		
	5.1. Develop clear communication channels by creating a project web-site (which links to the multi-media interface) and post regular updates to the web-site. 5.2. Create promotional printed materials to be distributed to stakeholders. 5.3. Create a final best practices report to be posted on the web-site and published.	Final report whose results can be implemented as a best-practices model for other similar cases. Timing: 24 months.	Leading Institution: University of Novi Sad, Serbia. University of Oradea, Romania. Technical University of Cluj-Napoca, Romania. University of Venice, Italy.

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Working Group "ISKAR"
Interactive Learning Method of Cultural Heritage for Europeanization in the Danube Region – ILMECH

ABSTRACT

The project will contribute to raising awareness of tangible (TCH) and intangible (ICH) cultural heritage of Danube Region (DR) by providing modern and innovative tools for teaching its essence to youth.
In the DR there is a lack of a common European identity due to the historical, economic, and political backgrounds. The integration process has been slowed down due to the political instability and different development among the countries of the area. Youth, that will become the future European citizens and the real prospective for the development of their countries, are not much influenced by the memories remaining of the turbulent past of DR. Therefore, they are a sensible target to achieve an Europeanization of this area. To reach this aim, the project will introduce a common and interactive didactic method for the whole DR that teaches to high school pupils the proper value of their TCH and ICH in order to achieve an Europeanization prospective. This method includes "From practice to the theory" approach, "Do it yourself" experience and integration of innovative augmented reality ICT tools (3D reconstruction, educational videos and games). Moreover, the project will provide a web platform in which e-learning courses, free documentation regarding the didactic method developed, ICT tools database and guidelines on their use will be available. Dissemination action among schools will be carried out in order to promote the use of the proposed materials.

KEYWORDS

Intangible and Tangible Cultural Heritage
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Europeanization
ICT tools

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INTRODUCTION

The DR has one of the most diverse population in Europe; it stretches from the Black Forest (Germany) to the Black Sea (Romania-Ukraine-Moldova) and its population is about 115 million people. For half a century, the region was divided among the Eastern and Western blocs, adopting different ways of economic, social, and political development. The macro-region is still dealing with the consequences of this complete division of the area, in particular from the social point of view.

Today, Eastern Europe can be defined as a cultural and socio-economical entity, with main characteristics consisting in Byzantine, Orthodox, and some Turco-Islamic influences. This huge CH needs to be re-interpreted under a new European prospective in order to promote and raise the awareness of its value.

The history of Europe and over sixty years of European integration have fostered the emergence of CH at different levels – local, regional, national and, recently, European. In different countries of the DR the Europeanization process is still at its beginning (Măduţa C., 2014), due to the past political instability and different development among the countries of the area. In particular, a lack of educational approaches to Europeanization can be seen in the macro-region.

In order to support and promote the EU not only as a trade space without borders, but as a union of people and of European citizens specific efforts and actions have been undertaken. Accordingly, the importance of promotion of the cultural identity of the different countries in a mutual exchange of knowledge and respect has been fostered. In this regard, the right perception of the value of the CH is a basic action in order to create a common shared European identity in the DR.

CH represents a recognized value and a binding element of the past and present issues that the DR is tackling. The text of the Convention for the Safeguarding of the Intangible Cultural Heritage (UNESCO, 2003) defines the CH as the legacy of physical artifacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations. In particular, secondary school pupils represent the future generations and have a fundamental role in the maintenance and preservation of CH. Their education regarding CH is the key not only for the maintenance of their national identities but also for the development of a strong and long-lasting European integration. Young people are not much influenced by the memories of the turbulent past of DR and can be trained in transnational cooperation and in the values that CH represent.

Both TCH and ICH can be an instrument to provide the sense of European belonging. TCH because it includes objects significant to the archaeology, ar-

chitecture, science or technology of a specific culture. ICH, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity (UNESCO, 2003).

STATUS QUO

Nowadays, the DR area is a multifaceted reality that still has to deal with its past under the communist regimes. Czech Republic, Slovakia, Hungary, Romania and Bulgaria were behind the iron curtain and under the communist rule, while the countries that made up the former Yugoslavia were under socialist rule, but not directly controlled by Russia. The Europeanization process of the DR macro area started few years ago, after the fall of communism in 1989. Only in the most recent years, the Eastern European countries of the DR embarked in the process to join the EU (Czech Republic, Slovakia, Hungary and Slovenia in 2004, Romania and Bulgaria in 2007, Croatia in 2013). Bosnia-Herzegovina, Serbia, Macedonia, Kosovo and Albania have not joined, yet. Some of the DR countries have a relatively young political structure as national unitary states (e.g. Kosovo, Bosnia-Herzegovina, Serbia) and need to adapt their educational policies in order not only to preserve the status of national and unitary state but also to protect the general European values of tolerance and interethnic stability.

According to Vasile Goldiş thought (Gagea E., 2012) the values of interethnic cooperation and mutual respect between different nationalities can be enhanced by teaching the value of the national identities. CH is an important aspect of these identities that have to be maintained through an adequate set of educational policies. CH Education in DR has been based for a long time on traditional teaching methods; this meant that it usually relied on face-to-face classroom lessons held by one single teacher (often the one in charge of ''Arts''), on the study of printed materials (texts and images), and very seldom on watching videos. Occasionally, the study of CH is accompanied by on-site visits where students could come directly in touch with the artifacts (Van der Leeuw-Roord J., 2005).

Only in the last few years the issues of a common educational policy, European integration and sustainable development have been promoted in DR by funding dedicated projects as Danube: Future (2012) and eSchool4s (2013). In particular, this second project involves the preparation and uploading of e-learning courses regarding sustainability in DR. Regarding the educational method related to ICH transmission, one innovative example is the Hungarian

Tànchàz method that is inscribed in the UNESCO Register of Best Safeguarding Practices of the ICH (UNESCO, 2011).

LINKAGE TO EUSDR AND H2020 STRATEGY

The Project Interactive Learning Method of Cultural Heritage for Europeanization in the Danube Region (ILMECH) addresses the European call "Emergence and transmission of European cultural heritage and Europeanization" (H2020-REFLECTIVE-SOCIETY-2015). ILMECH proposes multidisciplinary and comparative educational methods within different DR countries regarding local CH in a European perspective. The methods will be developed from the reflection and discussion within the different partners, representative of different cultures/nations in order to reach a shared and integrated view of the importance of the CH, respectful of the local identities. The trans-national education of the CH and local identities values to youth people is directly linked to the rise of mutual respect among citizens of the different countries of the DR. In this sense the project addresses also the priorities defined by the EUSDR, in particular the PA07 Knowledge society and PA09 People and skills.

The project strengthens the DR thanks to the cooperation of different institutions, in first places the universities, high schools and museums directly involved in the activities organization and also larger institutions such as Ministries for Education. The extended impact of the project involves also the PA03 Culture and tourism of the EUSDR by promoting a scholar tourism inside the DR and the "people to people" contact. This will encourage the mobility of Danube citizens within the macro area and the rising of the awareness regarding the values and exploitation possibilities of the CH.

PROJECT AND OBJECTIVES

The main feature of the project is linking educational professionals and CH managers for creating youth education activities focusing on a brother European prospective (Europeanization). This project will create an Interactive Learning Method for high school pupils by focusing on CH. It will provide the preparation of didactic courses on specific case studies through: *"people to people", "do it yourself"* activities and introduction of *ICT tools*. These approaches will merge within an integrated method that can fruitfully contribute to better spread knowledge about Cultural Heritage artifacts among secondary school pupils.

These approaches are chosen in order to create interest by young people thanks' to their capability of creating strong and impressive memories.

It is known that certain types of events are remembered with great clarity whereas our memories of other events seem vague. The emotional meaning of the event could play an important role in determining these differences in memory. Indeed, it has been argued that recreating emotional experiences is crucial for defining the self, for planning current actions, and for predicting the future. As reported by D'argembeau A., 2002, memories for positive events contained more sensorial and contextual details than memories for both negative and neutral events. In contrast, memories for negative events were not more detailed than memories for neutral events. The emotional meaning of an event can influence the way this event will be subsequently experienced in memory. *According to this theory, the method developed within this project will be based on experiments and positive emotions in order to promote individual ways of learning and understanding.* Specifically, the didactic method will consist of two major parts namely:

- practical experiences;
- theoretical knowledge based on the re-elaboration of the practical experiences.

The project aims to organize activities as well as summer schools and school exchange programs, museum interchange and role games. In this way the professionals will help the high school pupils to reflect and discuss upon the importance of CH in their environment and beyond, in a brother European perspective.

The implementation of ICT within the project can affect the spatial and functional transformation of the Danube area and raise consciousness of high school pupils regarding the use of them. ICT may guarantee the access to a huge amount of information, which – by its own nature – lays itself open to be ''discovered", rather than ''taught". This goes in the direction of supporting on the one hand active, experiential learning approach and, on the other, the personalization of learning itineraries. Students can access information in many different ways, thus playing an active role in information retrieval and in building up their own learning path, on the basis of their interests, personal aims, needs, etc. This, besides fostering the acquisition of contents, will improve their ability to retrieve information, their methods of evaluation and – more in general – their approach to learning. The use of ICT, in fact, enlarges incredibly the range/number of heritage artifacts that are potentially available for educational purposes by offering the possibility of getting in touch with them also at a distance. In addition, digital technologies also offer significant new

possibilities for both actualizing active learning approaches, and personalizing learning activities according to specific attitudes, tastes, talents and needs of students (Ott M., 2011).

ICT tools, e.g. a web-platform, will be also used for the realization and management of the network of museums, school and universities necessary for the development of the educational method and the organization of practical activities. The objective is to create a stable network able to work with the pupils also after the end of the project.

Protocols and guidelines regarding courses, activities and ICT tools directed to the promotion and safeguarding of CH within high school pupils will be submitted to the Ministries of Education of the participating countries.

Both the protocols and the stable network ensure the economical and social sustainability of the project on the long term. A specific "Continuity Plan" will be prepared in order to allow an effective management of the post-project activities.

ATTENDED RESULTS AND EXTENDED IMPACT

The project will provide an increased awareness of the CH importance among secondary school pupils in the participating partner areas in view of Europeanization by sustaining practical educational activities.

The activities related to the use and implementation of ICT tools will practically improve the professional skills of the students and will enhance their job opportunities.

The project will create a free web platform including e-learning courses on TCH and ICH. The term "e-learning" means that information is presented over computer networks to instructors and pupils who can be in different countries, but all accessing the same materials through their PCs promoting transnational integration. The platform will also manage the network of people and institutions that will generate a real interaction within high school pupils in DR.

The definition of protocols and guidelines consigned at the national Education Ministries, will result in the promotion, valorization and safeguarding of CH. Moreover, the direct involvement of the teachers in the activities will improve their competences ensuring the educational development of the participating partners.

Other cultural stakeholders of the region could be involved in the project in order to enhance the valorization of ICH and TCH, with positive effects on the development of cultural tourism and employment in the area of participating partners.

METHODOLOGICAL APPROACH

The methodological approach will involve a first research phase based on the collection and exchange of the mutual knowledge of the partners regarding the actual educational methods in DR and the perception of CH in each country.

The knowledge regarding the actual educational method will be the basis for the study and development of an interactive educational method by the integration of the *"people to people"* and *"do it yourself"* activities to the traditional approach. At this stage the partners will define exactly the theoretical content of the courses and activities, which values and concepts need to be transmitted to pupils (e.g. topics such as cultural heritage, maintenance, restoration, safeguarding). A set of ICT tools will be proposed and inserted for each course and the partners envisage the possibility of creating new ICT tools such as: databases regarding specific sites or ICH traditions; educational videos on a particular topic; 2D or 3D reconstruction of sites and artifacts. The courses foresee an active participation of the pupils to the ICT implementation (e.g. teach the pupils how to collect data for databases or how to scan a site for a 3D reconstruction).

The experts in the field of CH will carry out practical activities for high school pupils during courses, school exchange programs and excursions. They will act as a bridge between museums and teachers and will support the teachers in understanding and applying the interactive learning method. The activities will take into consideration rules of the EU in regards of underaged pupils.

Finally, a web platform including the materials produced will be implemented together with protocols and guidelines for cultural stakeholders of the region, and a network of museums, school and universities will be established.

For the project to succeed, the participation of experts from the following fields is required: pedagogy, economy, computer science and expert of ICT tools, TCH and ICH (historian, anthropologist, conservation scientist, ethnologist, archeologist, and heritage interpreters).

PROJECT CONSORTIUM AND PARTNER INSTITUTION

The consortium will be composed of partners from Austria, Croatia, Hungary, Italy, Romania and Slovenia. While some of them have already a strong sense of European identity, others are still in an integration process. The expertise of the partners will cover the project needs as explained in the methodological approach. In particular the institutions that will participate are:

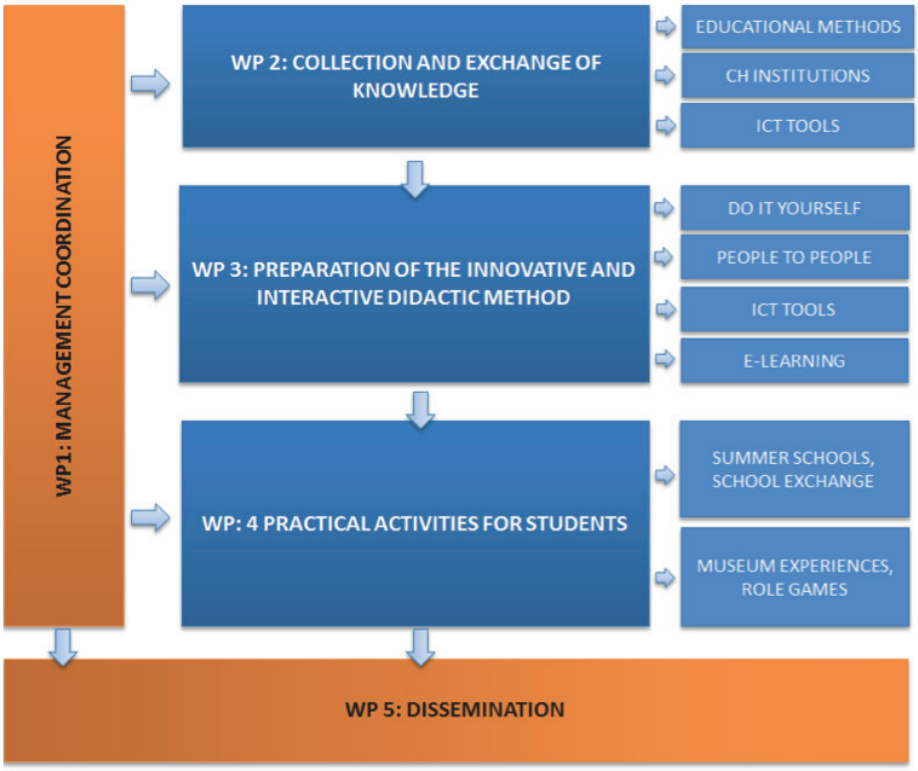
– University of Primorska, Slovenia – Lead partner (UP)
– 1 Decembrie 1918 University, Alba Iulia, Romania (UAB)
– Ca' Foscari University of Venice, Italy, (UNIVE)
– Hungarian Open Air Museum Szentendre, Hungary (HOAM)
– Institute for the protection of Cultural Heritage of Slovenia (IPCH)
– University college of Teacher Education Tyrol, Austria (PHT)
– University of Ferrara, Italy (UNIFE)
– High schools from Austria, Croatia, Romania, Slovenia, Hungary (HSs)
– Zagreb School of Economics and Management, Croatia (ZSEM)

UP and PHT will play a key role in the field of education and pedagogy while the IPCH will be engaged in the cultural heritage promotion and information to the public of the importance of preserving it; UNIVE and UAB, due to their research activities concern aspect of conservation of CH, will provide expertise in the field of preservation and restoration of TCH while the HOAM is nowadays one of the most important museum which deals with the transmission of ICH; UNIFE and ZSEM are involved because of their research in the field of ICT tools. Finally, High schools network will be selected during the project inside the participating countries.

Figure 1 – Participating partner countries

WORK PACKAGES

Figure 2 – Work packages tree



WP 1 MANAGEMENT AND COORDINATION (MONTHS 1-36)

The overall objective is to carry out a sound management and coordination. The specific objectives will be: to oversee the effective project co-ordination and management; to ensure the communication inside the partnership and the different WPs; to perform the financial, legal, administrative and technical co-ordination; to assure the achievement of the objectives and the technical quality of the deliverables; to establish the links and interrelations with all project Work Packages; to manage knowledge and intellectual property rights (IPR).

Task 1.1 Governance structure (Lead partner: UP; Participating partner: all)
Task 1.2 Overall coordination (Lead partner: UP; Participating partner: all)
Task 1.3 Communication flow, reporting and meetings (Lead partner: UP; Participating partner: all)

WP1: DELIVERABLES AND MILESTONES
D1.1 First year report – meeting report (Month 12);
D1.2 Mid-term report – overall coordination, technical report, financial report (Month 18);
D1.3 Second year report – meeting report (Month 24);
D1.4 Final report-overall coordination, technical report, financial report (Month 36)
M1.1, M1.2, M1.3, M1.4 Meetings took place (Month 2, 18, 24, 36)
M1.5 Governance structure (Month 3)
M1.6 Final reports and publishable final activity report (Month 36)

WP 2 COLLECTION AND EXCHANGE OF KNOWLEDGE (MONTHS 1-6)

The main objective is to obtain an overview of the existing situation about the different educational approach in the participating partner countries.

Task 2.1 Educational methods regarding CH in the DR (Lead partner: UP; Participating partners: UNIVE, HOAM, UAB, HSs)
A broad overview of existing educational methods in the DR will be obtained by collecting information available to the partners, consulting the available literature and the archive documentation.
Task 2.2 Cultural and scientific institution deputed/devoted to CH awareness (Lead partner: IPCH; Participating partners: all)
An overview of existing institutions, a selection of most suitable institutions in relation to the education of CH and first contacts for the organization of an educational network.
Task 2.3 ICT tools in the current educational approach (Lead partner: ZSEM; Participating partner: UNIVE, UNIFE,PHT, UAB, HSs).
Overview of ICT tools nowadays used for everyday education in class, museum and CH sites.

WP2: DELIVERABLES AND MILESTONES

D2.1 Summary report on education of CH in the Participating partner countries (Month 6)

D2.2 Summary report on Cultural and scientific institution deputed/devoted to CH awareness (Month 6)

D2.3 Summary report on ICT tools in the current educational approach (Month 6)

M2.1 Description of methods, techniques, procedures and criteria in the current educational systems of involved country (Month 6)

WP 3 PREPARATION OF THE INNOVATIVE/INTERACTIVE DIDACTIC METHOD (MONTHS 4-24)

The general objective is to develop a toolkit and tools for educators and other stakeholders to introduce the values of TCH and ICH in the DR to answers to a challenge of Europeanization of the area.
Interactive teaching courses designated for high school pupils in the DR will be developed and the courses will include experimental teaching and special collaboration with the cultural institutions and particular museums of the territory. At the end of the course, high school pupils will have acquired basic knowledge about the CH of the DR in relation to European Heritage and on the importance of the ICH and the TCH. In fact, ICH is important because of its mainspring of cultural diversity and it is a guarantee of sustainable development. While, TCH is important for the study of human history because it provides a concrete basis for ideas and can validate them. Its preservation demonstrates recognition of the necessity of the past. Among the basic concept that will be transmitted with activities, there will be: basic definition of CH, conservation, preservation, restoration, maintenance, monitoring and valorization.

Task 3.1 Didactic approach from the practice to the theory (Lead partner: PHT; Participating partners: HOAM , UP, ZSEM, UNIFE, UNIVE)
The didactic approach will include the following steps:

- discovery: participation on an experimental based activity, if it's possible among a heritage bearer community or at a heritage site or a museum;
- discussion: after the activity to share and talk about experiences and perceptions, emotions and thoughts;

- interpretation and explanation: in this part, the interpretation of the different previously experienced heritage elements are placed in a European context.

Within this task the steps will be studied in relation to specific concepts regarding CH and the content of the course will be defined precisely.

Task 3.2 Integration of "people to people" and "do it yourself" activities (Lead partner: HOAM; Participating partner: all)

The reflection phase that follows the "do it yourself" experience is of particular importance for understanding and transmission of CH values. Since different CH elements can be experienced in several ways, the possibilities and the realization of the different tasks should have to adapt to the form of the exact TCH or ICH element. For example, an oral tradition or expression has to be interpreted and showed with a different mode than a rituals or a festive event. Therefore this task deals with the use of "people to people" approach and "do it yourself" experiences. The objective is to better define and investigate the role of these approaches within the reflection on the importance and values of TCH and ICH.

Task 3.3 The introduction, role and importance of ICT in teaching and learning methods (Lead partner: ZSEM; Participating partners: all)

The use of ICT in CH education addresses the needs of high school pupils in relation to online classes and courses for introducing CH in high school and educational institutes. In this project, the integration of ICT into the teaching and learning systems will place pedagogy over technology and will be no limited to master skills but rather, will involve using ICT effortlessly.

In order to integrate ICT tools in the educational approach, a new ICT tool – Science Cultural Heritage Studying (SCHS) – will be implemented in the project. SCHS can help in raising awareness in the importance of CH in the learning systems. SCHS concept is characterized by the following features:

- establishing relationships in the structure of teachers and high school pupils in the high schools and institutions;
- creation of interactive maps and virtual reconstruction of CH sites;
- development of CH digitization database by including historical background of the Danube site, sources and methodologies for researching.

SCHS will connect CH sites into larger group of high school pupils, and take a closer look at the multi – dimensional nature of CH. To achieve

these goals, development of ICT equipment and emerging technologies such as Web Services (WS), on-site and remotely sensed data collection in CH, e-Libraries, e-Archives and e-Learning will be used in support of project. Processes of digitalization of CH artifacts will also be learned by the pupils, using digital scanning devices and simulation tools. These processes need to consider a framework for the scan including: the steps to document a particular CH or all of the site and documents by means of 3D Laser Scanner instances.

Task 3.4 Protocols and Guidelines for the developed innovative educational approach (Lead partner: PHT; Participating partners: UP, IPCH, HSs) Definition and submission of protocols and guidelines for the development of courses and activities promoting the valorization and safeguarding of CH to the main cultural stakeholders of the region (Ministries of public education, Universities, Museum)

WP 3: DELIVERABLES AND MILESTONES

D3.1 Analysis of the didactic approach from the practice to the theory (Month 10)

D3.2 Report on the development of the integrated didactic approach from the "practice to the theory" with "do it yourself" experiences (Month 18)

D3.3 Document on new developed ICT tools for teaching and learning methods (Month 18)

D3.4 Protocols and Guidelines of the developed educational approach (Month 24)

M3.1 Development of the integrated educational method (Month 18)

M3.2 Development of protocols and Guidelines for the CH stakeholders (Month 24)

WP 4 PRACTICAL ACTIVITIES FOR HIGH SCHOOL PUPILS (MONTHS 19-36)

The WP4 will provide a practical application of the previously developed methods. Within this WP, *pilot courses and educational activities will be proposed as case studies* for the application of the developed method. The case studies are selected in consideration of the Europeanization issues as they represent diverse example of interlinked, multicultural TCH and ICH. Three pilot case studies have been already selected and will be presented within the tasks 4.2 and 4.3 in order to give a clear example of the developed educational methods. During this WP the partners will develop also of a *didactic web platform*.

Task 4.1 Definition of the activities promoted by the participating partners (Lead partner: UP; Participating partners: all)

The partners will define and organize the educational activities that will be carried out in the project. The activities includes: school exchanges, summer/winter schools organization, visits to museums with "do it yourself" and "from practice to the theory" method/experimental teaching, contact with tradition bearer communities, application of the developed ICT tools (special mobile apps, e-learning, 3D reconstruction, virtual tours, stereo vision, PlayStation app). The partners will prepare the didactic material necessary for the program. All the activities will be free of charge for high school pupils in order to afford everybody to participate to the specific activities. For this reason a large part of the budget is addressed to the organization of activities for pupils and the partners will find specific co-founders among banks and CH institutions in order to co-finance the activities.

Task 4.2 Activities related to TCH: case study of the archeological site of Alba Iulia (Romania) (Lead partner: UAB; Participating partner: UNIVE,UNIFE, HSs)

Alba Iulia is located in the center of Romania, southeast of the Apuseni Mountains, and it is historically important not only for Rumanians but also for Hungarians and Transylvanian Saxons. Because of its antiquity and location in a multicultural province, it has a great cultural and educational potential. The archeological site is located in the southeastern area of the city between the bastions of Eugene of Savoy (Bastion Bethlen) and St. Stephen (Steinville). The oldest archaeological materials are from the early Bronze Age period while last phase of Roman habitation is superimposed and partially affected by an early medieval level (X-XII centuries).

The site will be a useful example for the application of the new method "do it yourself". In fact, student will do practical activity of excavation through typical archeological tool kit like trowels, brush, plumb lines, shovels, picks and axes. Furthermore, they will participate to the understanding of state of conservation of the site through practical observation with different instrument such as psychrometer, Dino microscope, UV lamp and thermal imaging camera.

The site includes three Roman building, two dating between the beginning and the middle of the second century A.D., and another one dated from the end of the second century and the first half of the third century A.D. These discovered Roman buildings will be mod-

eled in 3D to show their present state and to reconstruct their appearance through the centuries. Reconstructions will be populated with animated characters and with virtual narrators. 3D scanning technologies and 3D imaging will provide 3D models of finds from the rescue excavation. Accurate three-dimensional representations of CH sites are highly valuable for scientific study, conservation, and educational purposes (Zlot R., 2014).

Task 4.3 Activities related to ICH: case studies of Horezu ceramics (Romania) and Busó Festivities at Mohács (Hungary) (Lead partner: HOAM; Participating partners: HSs, ZSEM)

The objective of the disclosure of *ICH Craftmanship of Horezu ceramics (Romania)* will make high school pupils aware of the moral aspect/message of traditional craftmanships.

Horezu ceramics are a unique traditional craft, handmade in the northern part of Vâlcea County, Romania. They reflect generations of knowledge and craftsmanship. Men and women generally divide the fabrication processes. The craft is transmitted through families, in workshops from master to apprentice, and at fairs and exhibitions. The element gives the community a sense of identity, while maintaining a social function in everyday existence (UNESCO, 2012).

The activity proposes: the visits of the pottery area and observation of the craftsmen's work. Afterwards, the student will be asked to try to draw motifs (with traditional tools to a not jet decorated ceramic, or to a paper with pencil). During class lectures, the educator/teacher will bring a traditional Horezu ceramic and let the high school pupils to touch it, and try to draw the motifs, or make artistic photos about it. There are numerous possibilities regarding the survey and reflection upon the actual original objects. To watch videos about the heritage and the activities connected with it, is also a section of the discovery part. A discussion/reflection part will follow: during the discussion part, provocative and reflective questions, personal opinions would be the center of the conversation. To lead the discussion to the direction of the male and female roles in the process of making the ceramics, and also the division of labor, and the local and individual examples of it.

Some questions could be: What colors are used in the decoration part of the Horezu ceramics? When was the last time you made an object with your hand, and what was it? These people from the Horezu area are proud of their heritage. What do you thing, what kind of heritage are the people proud of at your local area?

Finally, an interpretation part will take place. The detailed explanation of the different workflows, the geographical determination, the historical and international relations of this technique, and the different kinds of comparable ICH elements are going to be mentioned and ascertained (good examples for relation: Pottery from Magyarszombatfa (Hungary), Pottery tradition of Mezőtúr, Hungary). The teacher will be advised to use ppt, slideshows to show as much European examples for special ceramic techniques as possible; try to highlight the similarities and not the differences between these methods (motifs, cultural areas, tools used during the object creation).

The objective of the study of *Carnival customs in Europe through the example of the Busó Festivities at Mohács (Hungary)* is to make high school pupils aware of the moral aspect/message of carnival customs the busó festivities at Mohács are an end-of-winter custom performed by persons in special masks as a ritual aiming to repel winter. It beings on the Thursday of Carnival week and goes on till Pancake Tuesday. The main features are the busós – frightening looking figures wearing wooden masks and big woolly cloaks. This line of events, now a festival of national renown, includes a parade accompanied by dance and music attracting the entire population of the city, the busó groups, the craftsmen/women who created the masks and other accessories as well as the musicians and dancers. All of this generates a powerful sense of identity within the community, which is confirmed by continued preparation, maintenance of the masks, clothes and accessories (Csonka-takács E., 2011).

During the educational activities different tools (what the busós use) can be touched, examined, tried (to wear the woolly cloaks). Different clappers, musical instruments can be tried also by the high school pupils. To make photos from each other during wearing the mask and to watch a short video about the ICH element and the activities connected with it can be useful for the discussion part. 'To be behind the mask' is a possible indicated course line, which can be used to discuss with the high school pupils the different roles and cultural patterns in this tradition. The topics of diversity, or the ethnical differences as well as and the individual impressions can be used as indicator topics and factors to discuss the issue of this heritage element. Some questions for the high school pupils can be: What kind of noise-making instruments are used during this tradition? Did you smile, behind the mask, when your friends made a photo of you? Why?

What do you think why young people from Mohács are still continuing to follow this tradition? Why can it be interesting for them? What are you doing in carnival time? What was your last costume in that part of the year? Was it scary or funny?

The detailed explanation of the different roles (busós, dancers, musicians, tourists etc.) the geographical determination, the historical (different local legends, oral history connected with the origin of this tradition) and international relations of this carnival (Kukers in Pernik, Bulgaria or Schemenlaufen, the carnival of Imst, Austria) and the different kinds of comparable ICH elements are going to be mentioned and ascertained. The teacher will be advised to use ppt, slideshows to show as much European examples for carnival traditions as you can, try to highlight the similarities and not the differences between these festival traditions (used tools, human or animal genres, masks, music, moves etc.).

Task 4.4 Creation and implementation of an educational web platform (Lead partner: ZSEM; Participating partners: all)

A web platform will be created and implemented in order to include the prepared didactic documents and materials and e-learning courses on TCH and ICH together with a database on available ICT tools for education. The web platform will have also a role in the dissemination of the project activities.

WP4: DELIVERABLES AND MILESTONES

D4.1 Report to define the activities which will be promoted by the participating partners (Month 20)

D4.2 Organized activities including the organization of the activities related to the case studies (Month 36)

D4.4 Feedback from high school pupils and teacher regarding the proposed activities (Month 36)

D4.5 First summary of the web-platform including screenshots (Month 24)

D4.6 Final summary of the web-platform with screenshots and list of the educational material (Month 36)

M4.1 Definition of the activities (Month 20); M4.2 Preparation of the web-platform (Month 22); M4.3 Finalization of the web platform (Month 36)

WP 5: DISSEMINATION
(MONTH 3-36)

The overall goal is to disseminate the project results to High Schools and cultural stakeholders of the participating partner countries. The dissemination strategy will comprehend newsletters, conferences and workshop organizations and, website creation.

Task 5.1 Newsletter (Lead partner UP; participating partner: all)
Task 5.2 Conferences, Workshops and participation to CH festivals and gatherings (Lead partner UP; Participating partner: all)
Task 5.3 Website and web-platform (Lead partner ZEN; Participating partner: all)
Task 5.4 Extended impact to local SMEs in the field of Tourism by providing them data and materials that can be used for promotion of the local CH (Lead partner UP; Participating partner: all)

WP5: DELIVERABLES AND MILESTONES
D5.1 1st , 2nd , 3rd year digital newsletter (Month 12, 24, 36, respectively)
D5.4, D5.6 Workshops and Festivals
M5.1 Website and web-platform creation (Month 3)
M5.2 Workshop (Month 32)

ABBREVIATION AND ACRONYMS

CH Cultural heritage
TCH Tangible Cultural Heritage
ICH In tangible Cultural Heritage
DR Danube Macro-region

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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 affraid 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 21ST CENTURY:

Projected trends of changes in temperature in the DRB in the 21st 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 21st 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 occurence 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 *transdiciplinary, 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 oppinions 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 transdiciplinary 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 21st century will severly 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 possiblities 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 policians* 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)

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

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-

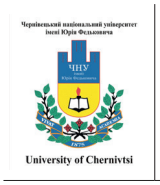
search Centre for the Study of the Mediterranean Region and the Carpathian basin) and the Geography Faculty, this partner will be responsible for elaboration or critical evaluation of plans how global problems addressed in our project will be addressed at a regional and local level within the DRB.
Languages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

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

Working in a multi-ethnical 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 Sapientia University).



5.
UKRAINE
YURIY FEDKOVICH CHERNIVTSI NATIONAL UNIVERSITY

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 transdisciplinary 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 awarness 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 explainig 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 6th 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 transcisciplinary 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 analized by organizers, but also by experts in communication sciences. Having placed the results in a broader context and analized 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 menitoned 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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Working Group "DRAVA"
ArchaeoGates
Danube River Submerged Heritage Scanning and Data-base

ABSTRACT

The objective of ArchaeoGates project is to identify the cultural sites submerged under the Danube, to collect and process the data to develop a database (Danube River Submerged Heritage D.A.R.S.H.), with the possibility to extend it to include other river basins and/or lakes. The equipment used in the implementation of the project are side-scan sonar, seismic radar, scuba diver recognitions. For a tangible perception of the discovered cultural patrimony on the bottom of the river, 3D models and projections will be created: these reconstructions of the submerged sites will add an immeasurable value to the area and to the whole Danube Region. The case study is focusing on the Iron Gates area. The recovery of previously unexplored submerged cultural heritage will foster knowledge on cultural heritage and history of Europe, with the goal of preserving and promoting the value of the sites on local, regional, national and international level.

KEYWORDS

River archaeology
Cultural heritage
Database
Danube
Iron Gates

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1. CONTEXT

Cultural heritage as an evidence of the past is constantly threatened and in danger of complete destruction. The esteem of cultural heritage is one of the main tasks of the preservation of cultural identity of the Danube Region, as well as the sustainable use and development of this potential.

Nowadays, a remarkable amount of cultural sites of great importance are submerged under the water of the Danube, not only as a consequence of the change of the river-bed through the ages, but also as a result of human modifications (dams, levees, etc.).

Accordingly, the following project proposal will address the untapped potential of the Danube river basin area, focusing on the opportunities for sustainable growth addressing the research and innovation divide.

It addresses the Social Challenge Europe in a Changing World – Inclusive, Innovative and Reflective Societies; it will take into account most Horizon 2020 cross-cutting issues, primarily social sciences, promotion of Responsible Research and Innovation (RRI), SMEs and widening participation.

Also, the project will have a great impact on achieving the goals of the Danube Region strategy, especially impacting the socio-economic dimension; it aims at Priority Actions related to Competitiveness, People and skills and Knowledge society within the pillar Building prosperity and Culture and tourism, people to people of the Connecting the region pillar.

The use of different survey techniques will make it possible to have a clear idea of the submerged cultural sites; the 3D reconstruction of those sites will make this valuable heritage available for everyone, through the development of an international database of the Danube River Submerged Heritage (D.A.R.S.H.).

The method will be tested in a specific area of the Danube river, the Iron Gates region.

2. THE PROJECT

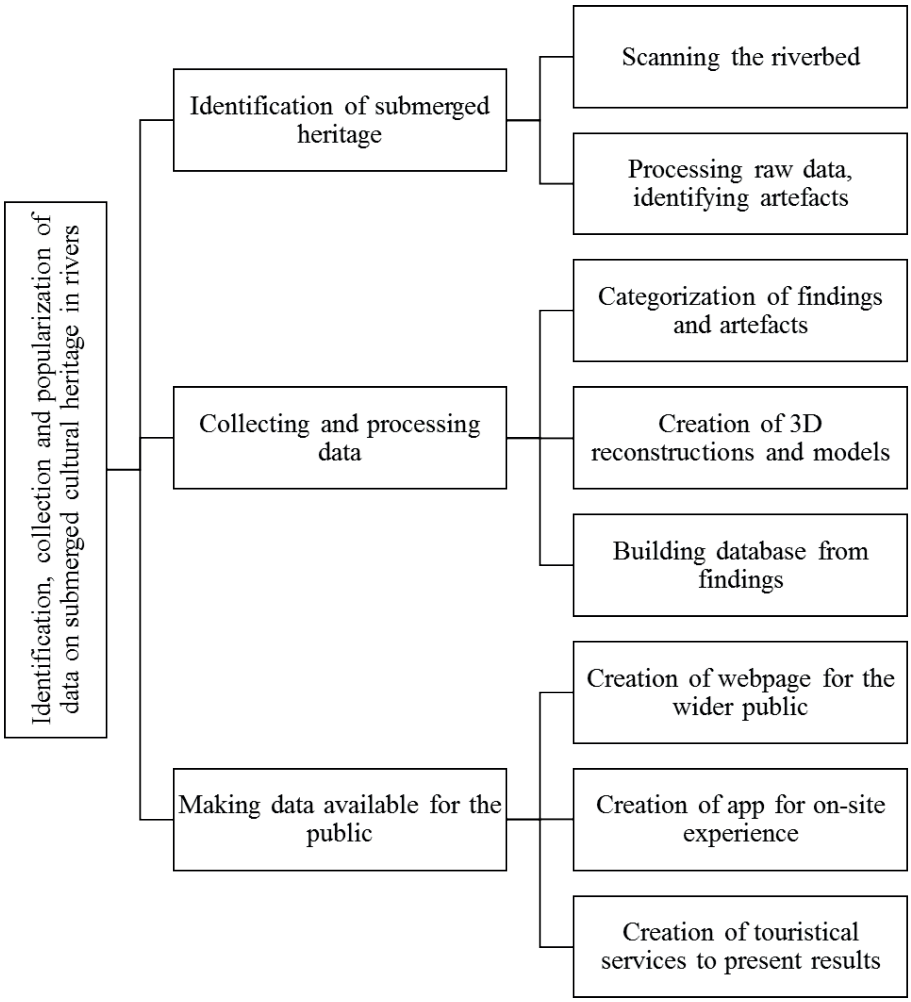
ArchaeoGates Project is proposing to develop a new database of the existing submerged sites and objects on the river beds. The new database, Danube River Submerged Heritage (Da.R.S.H.), will be accessible and available on the web for all interested public.

The equipment used in the implementation of the project is *side-scan sonar, seismic radar, scuba diver recognitions*. The gear will be used at the scanning of the riverbed and of the former shores. The collected information of

the submerged sites will be processed by specialists and researchers using different software products in order to create the complex database. For a tangible perception of the discovered cultural patrimony on the bottom of the river, 3D models and projections will be created: these reconstructions of the submerged sites will add an immeasurable value to the area and to the whole Danube Region.

The case study is focusing on the Iron Gates area in the Danube River Basin, but the method and the techniques can also be applied to the entire Danube Basin, other rivers and even lakes.

Figure 1 – Objective Tree



The main objective of the project, as the objective tree shows, is to identify the cultural artefacts and sites submerged under the Danube, to collect and process the data and to develop a publicly accessible database, with the future possibility to extend it and include other river basins and/or lakes as well. The first step is the identification of the flooded cultural, historical and archaeological sites and scanning them with different survey techniques. These, after analysing and processing raw data, will be uploaded to a free interactive database, available from a website, which can be utilized both by researchers in several scientific fields and for – among others – educational purposes as well. At a later stage it creates the possibility of touristic development as well.

In order to reach the general objectives described above, detailed surveys have to be performed. The previously identified sites have to be scanned and the raw data has to be analysed and processed, creating 3D reconstructions of the underwater complexes. This data then has to be organized and catalogued in a newly created database.

The results have to be made accessible to both professionals and the general public, which requires the creation of a website with an interactive, user-friendly design. In addition, in the long term, a multimedia application for mobile devices can be designed and touristic infrastructure can be developed to enhance the on-site experience.

This makes the utilization and exploitation of the potential of the underwater cultural heritage possible and enables it to act as a platform, to bring the submerged objects and structures accessible to different stakeholders. Researchers, especially in social sciences and humanities, will be able to use the survey methods and data for further research, SMEs will have the opportunity for creation of new cultural and touristic products, children and the general public will learn from the created products, etc.

3. METHODS AND APPROACH

With modern survey methodologies it is now possible to actually discover and display sites that are now under the water and under the sediment.

Through the scanning methods, we will obtain 3D reconstructions and other digital products, which show the real cultural prestige of the area and are used for various purposes, including cultural product creation, education etc.

The beginning of underwater archaeology dates back to the turn of the 19th-20th century, and became a real scientific discipline by the diffusion of autonomous diving equipment. However these researches focused on marine archaeology and even the UNESCO convention on Underwater Cultural Herit-

age (2001) concentrates only on marine archaeology. The reason is that the physical conditions of rivers are different from that of the sea: the visibility is usually close to zero and the current is stronger, which means that the methods and technologies of marine archaeology are not automatically applicable.

The role of new technologies in river archaeology is to reduce the handicap caused by the unfavourable environmental conditions.

The new high resolution side-scan sonar (900-1200 MHz) is usually applied to survey the morphology of the sea floor, it can also produce a realistic image of the riverbed and it will make detailed images of underwater objects. This system is based on the different backscattering given by various material and lithotype and records the backscattering data through a digital technology that gives back high resolution images, it identifies the different type of floor of the river, and the objects eventually dispersed on it. The trace recorded can go wide until 500m each side of the machine, and the system works until 1500m of depth. This sonar is a useful tool for detecting large areas during short time, in the case of "open" river bed, or to mapping already known composite sites (shipwreck, groups of ships, walls).

The other technology is seismic radar, which can penetrate into the sediment: echo sounds reflect the anomalies of sedimentation, so it is possible to detect covered objects. By the use of GPS methodologies it is possible to combine the sections made by the devices and create 3D images of river-bed.

The scuba-dive archaeological survey in the river will allow the identification and dating of the scanned sites. Those practical data are needed for the database, which will contain not only the geographical information, but also the archaeological and historical ones.

Raw data collected by sonar and radar mapping of the Danube riverbed will be processed at a local computer. Local computer processing will be used for image processing of gathered data by sonar and radar mapping. This image processing will be used for the removal of noise from the pictures and then for improving the picture quality. The data, processed at the local computer (at the site of measurement), will be used in special software solution (provided by University of Zagreb) in which virtual 3D model of the site (underwater artefacts) will be built and reconstructed with regard to data quality. The virtual 3D model of the site will be saved on a system cloud platform with dedicated virtual machine for archiving of 3D model data. This cloud platform can be used to remotely access the 3D data models by the developed ArchaeoGates web application from anywhere in the world.

4. PILOTING AREA

The Iron Gates is one of the most remarkable river gorges in Europe and it occupies the area from the village Vinci to the village Kostol on the right coast (Serbia), and from Moldova Veche to Drobeta Turnu Severin on the left coast (Romania). The length of this river segment is approximately 130 kilometres. The importance of this area is reflected in its favourable geo-traffic location since it is located on the international water route E-80 (the Pan-European corridor VII). The construction of the Djerdap (Iron Gate) Hydro-Electric Power Plant lead to the flooding of many cultural sites of European importance. The Iron Gates is not only a unique natural environment with botanical, ornithological and environmental importance (Djerdap National Park in Serbia and Iron Gates Natural Park in Romania), but is also an area with historical monuments (Lepenski Vir, pillars of Trajans Bridge, Tabula Trajani, fortresses of Drobeta, Golubac, Fetislam, Decebal's statue etc.)

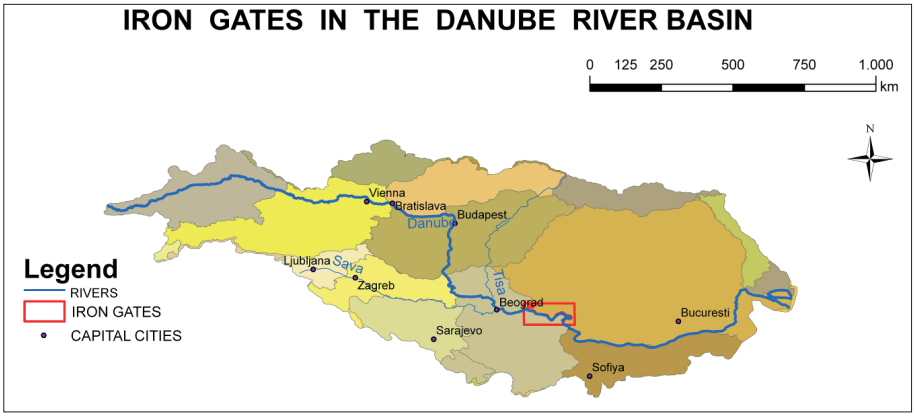
The construction of the Djerdap (Iron Gate) Hydro-Electric Power Plant lead to the flooding of the Danube riversides. Therefore, below the surface, in the mud, lies a priceless cultural heritage, inaccessible to us as well as the future generations (Radojičić, Vasić, 2003). The flooded area has so far remained unexplored, which is why it is particularly important to perform underwater exploration of the flooded prehistoric, Roman, medieval and modern heritage.

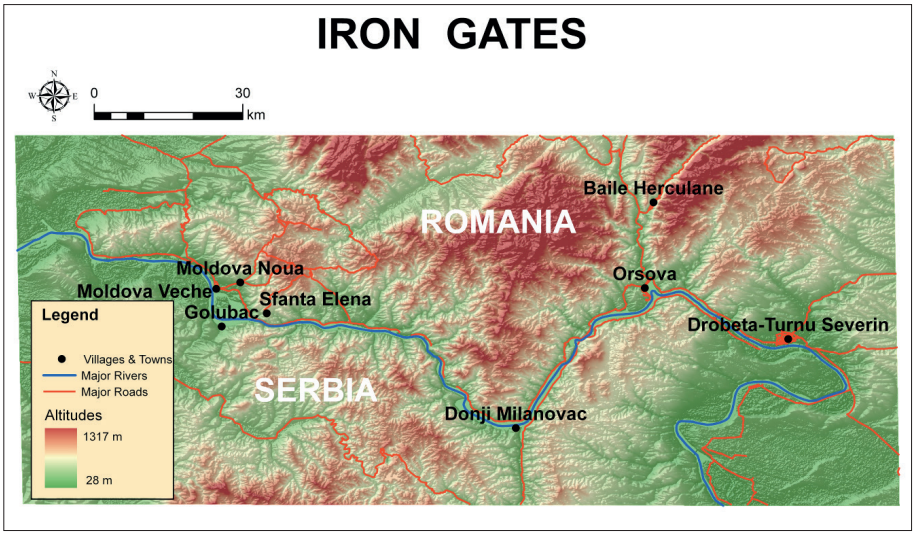
The Iron Gates is not only a unique natural environment (it lies within Djerdap National Park in Serbia and Iron Gates Natural Park in Romania), but also a significant touristic target area rich in natural and cultural values with various monuments of the rich history of Lower Danube. This area has been the crossroads for many cultures for millennia, since the early prehistoric era until the present day. One of the most valuable sites of prehistory from the VI and the VII millennia BC can be seen at Lepenski Vir (Janićijević, 2005), along with numerous other museums and exhibitions.

As a consequence of the flooding of the Danube's floodplains following the installation of the Iron Gate's dams between 1972 and 1984, a lot of archaeological sites, historic artefacts and villages are currently underwater. Even if the villages and some sites are known, their potential is not actually exploited at all. As far as archaeology is concerned, some surveys have been made on both banks of the river between 1960 and 1980, but a lot of archaeological data has been lost: a massive part of the cultural heritage of that area is underwater.

Although it is an exceptionally valuable tourist area, according to data of the National Bureaus of Statistics of the Republic of Serbia and Romania, in the last decade the number of tourists has decreased and the domestic tourist demand is still dominant. Foreign tourists mostly visit the region within the

tourist cruises. In order to ensure mass tourist demand, it is necessary to improve the content of the aquatic and nautical route significantly, along with presenting the natural and the cultural values.





5. EXPECTED RESULTS AND VALUES

The implementation of the project will generate the Da.R.S.H. database and website, which will make the cultural heritage visible and accessible for the public. The recovery of previously unexplored submerged cultural heritage will

foster knowledge on cultural heritage and history of Europe, with the goal of preserving and promoting the value of the sites on local, regional, national and international level. Due to unpractical methods, gear and the hostile river environment, river archaeology has not presented much interest for the researchers. New survey techniques will make – through scanning and 3D projections – this heritage available for everyone. The modern techniques are not only applicable in the Danube basin, but also in other river basins and lakes. This will add cultural and historical value to all explored sites. The complex database will serve as support for archaeologists, anthropologists, botanists, historians, hydrologists, software developers, technicians and other researchers and will serve as an example for future procedures for other areas of interest.

An important achievement of the application of these methodologies is also the identification of the unexploded bombs, from World Wars and the recent Balkan Wars. This will enable the possibility to secure the area of the survey from this danger.

The Dissemination and Outreach Work Package (WP4) will be led by the University of Novi Sad, and developed in coordination with Babes- Bolyai University, in a transnational cooperation, which will make it possible to have a better coverage of the area of interest.

Furthermore, the project will improve awareness of cultural heritage on local, regional and international level, enhance touristic development and its economic impact on the local, national and international scale. In that way, the project will create, widen and maintain awareness about the heritage, culture, local and national identity and help to make the European cultural heritage visible and accessible for public. This project will ensure the new use of still unexplored cultural heritage. The recovery of the currently unknown submerged cultural heritage is one of the first steps towards the sustainable development of the region.

6. CONSORTIUM

LEAD PARTNER: UNIVERSITY OF TRIESTE (ITALY)
Other partners: Babes-Bolyai University (Romania), University of Novi Sad (Serbia), University of Zagreb (Croatia), University of Rijeka (Croatia), Corvinus University of Budapest (Hungary), International Commission for Protection of Danube River, Geographical Institute "Jovan Cvijič" of the Serbian Academy of Science and Arts, Belgrade (Serbia), Romanian Academy of Sciences (Romania), Hungarian Academy of Sciences – Centre for Ecological Research – Danube Research Institute (Hungary), University of Udine, Department of History

and Cultural Heritage (Italy), Public Company Djerdap National Park (Serbia), Iron Gates Natural Park (Romania).

University of Trieste will be the lead partner the project, since they are in possession of the seismic radar necessary for the survey. The Corvinus University of Budapest (Hungary) and the International Commission for Protection of Danube River will provide research and data on the landscape history of the region.

The Geographical Institute Jovan Cvijic (Serbia) and the Romanian Academy of Sciences (Romania) will develop the desk research on the state of art of already known submerged sites. University of Udine (Italy) will take care of the underwater archaeological survey.

Babes–Bolyai University (Romania) and University of Novi Sad (Serbia) are responsible for contact with local authorities and dissemination, with the help of Public Company Djerdap National Park (Serbia), Iron Gates Natural Park (Romania).

The University of Zagreb, Department of wireless communication (Croatia) will lead the digitalization of the data, the creation of the database and of the web-site, in partnership with the Danube Research Institute (Hungary).

The University of Rijeka (Croatia) will elaborate the sustainable management model for cultural assets in the Danube region.

7. WORK PACKAGES

WP 1. MANAGEMENT

Project management will be carried out by the University of Trieste.

Task 1.1 Responsibility for the overall administration and financial transactions management of the project.

Task 1.2 Coordination of the work among the project partners and implementing the contacts between them.

Task 1.3 Supervision and monitoring of the progresses.

WP 2. UNDERWATER RESEARCH

Underwater research part will be led by University of Trieste.

Task 2.1 Monitoring the desk research of archaeological sites in the Danube river, underwater, focusing on the Iron Gates area.

Task 2.2 Manage of survey of sites and objects available using the needed methodologies.

Task 2.3 Organization of scuba-diving survey, in cooperation with Department of History and Cultural Heritage of University of Udine.

WP 3. DIGITALIZATION

The University of Zagreb will manage the digitalization.

Task 3.1 Digitalization of the data obtained with the survey.

Task 3.2 Supervision of the creation of a GIS database of the existing submerged cultural heritage (Da. R. S. H.) at the Iron Gates area.

Task 3.3 Monitoring the creation of the web site.

WP 4. DISSEMINATION AND OUTREACH

University of Novi Sad will lead the dissemination part.

Task 4.1 Management of the diffusion of the existence of the project and of the knowledge acquired during the research.

Task 4.2 Organization of media coverage.

Task 4.3 Scientific community exchange.

Task 4.4. Community coverage with activities directed towards SMEs, NGOs and the general public

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LINKS

Djerdap National Park: http://www.npdjerdap.org/en

Horizon 2020 – The Framework Programme for Research and Innovation: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0808&from=EN

Iron Gates Natural Parc: http://www.pnportiledefier.ro/

Romanian National Arheological Repertoire: http://ran.cimec.ro/sel.asp

Implementation of the EU Strategy for the Danube Region: http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2011-0065+0+DOC+XML+V0//EN&language=EN

International Commission for the Protection of Danube River: http://www.icpdr.org/main/

Iron Gates Natural Park: http://www.pnportiledefier.ro/

Romanian National Institute of Patrimony: http://www.cimec.ro/arheologie.html

Romanian National Institute of Statistics: http://www.insse.ro/cms/

Statistical Office of the Republic of Serbia: http://webrzs.stat.gov.rs/

Working Group "SAVA"
Valorization of Wood Cultural Heritage (WCH) for Sustainable Future in Danube Region

ABSTRACT

Rural areas in the Danube Region face economic, societal, cultural and environmental challenges. They are rich in diverse cultural heritage which is often neglected and not taken into consideration as a potential resource for development. Wood resources form an integral part of tangible and intangible cultural heritage. As an environmentally friendly material, wood can play an important role in sustainable development. Valorization of wood traditions according to present needs may help to mitigate and overcome problems of rural areas. The general objective of the project is the sustainable rural development through valorization of wood cultural heritage. Wood cultural heritage may be seen as an asset to enhance economic development in rural areas. Transfer of knowledge on wood cultural heritage and its importance will improve the social relations in local communities and raise awareness on environmental issues.

KEYWORDS

Wood cultural heritage
Sustainable development
Rural areas
Danube Region

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CONTEXT OF RESEARCH TOPIC

BACKGROUND OF THE PROBLEM

Even though they are all part of an important European region, the countries of the Danube Region Basin exhibit regional disparities in economic, demographic, social or cultural development. This is especially evident in the former socialist countries still facing the problems of societies in transition. The countries taken into consideration for this project face unemployment high rates: Hungary 7.4%, Croatia 20.3%, Slovakia 12.3%, Romania 6.5% and Albania 18% and low GDP growth rates, all of them under 1% (http://it.tradingeconomics.com/). This uneven development is even more highlighted in the differences between urban and rural areas. Rural areas, despite the fact that their population makes an important specific share of the total population (Albania 45%, Croatia 42%, Hungary 30%, Slovakia 46%, Romania 46% http://data.worldbank.org/), face an unfavorable situation which is based mainly on unemployment. This can be linked mainly to:

- fragmented land
- agricultural economies
- lack of networks for marketing and distribution,
- limited capacity planning
- lack of use of local resources
- remote infrastructure.

Lack of employment opportunities is one of the main reasons for emigration by the young, who are not familiar with and do not appreciate local resources and capacities. In the entire region, they tend to leave rural area for larger cities or western countries.

Besides youngsters, other social groups who, on a daily basis, face a low quality of life are elderly people, who are becoming marginalized, and unemployed women. They are not aware of their local resources and opportunities and their short-term economic solutions are often oriented toward activities that have a negative influence on the physical and human environment in general. In many cases, people use wood cultural heritage as a way of living, for example by making souvenir products, wooden houses and furniture etc., however, these are isolated examples, often produced for a limited market and not using environmentally friendly technologies. Trying to adapt to consumers' needs, woodcraft products are at risk of becoming similar everywhere, thereby losing their cultural identity. Furthermore, as it is not seen by the younger

generation as a means of earning a living, the knowledge transfer from the old generation to the young is fading.

Wood cultural heritage is not perceived as a part of the physical and human landscape, not only at the local level, but also at the regional one. It is often neglected by institutions or organizations when compiling development strategies and spatial planning. Being an integral part of cultural heritage, wood cultural heritage raises the question of the contemporary need to protect and preserve it, as well as to introduce it to the younger generation as an ecological material for regional development. The wood cultural heritage of the Danube Region may also be seen as a tool for communication and connection between cultures and countries.

LINKS TO EUSDR AND HORIZON 2020 CHALLENGES AND PRIORITIES

The planned project is strongly related to the challenges and priorities of EUSDR and Horizon 2020. The main connection with Horizon 2020 is the "*Europe in a changing world – Inclusive, Innovative and Reflective Societies"* within the *Social Challenge.* In the *Danube Strategy, all four pillars* (*Connect the region, Protecting the Environment, Strengthening the Region* and *Building Prosperity*) can be easily identified as areas connected to the goal of the project. Through project activities, tangible and intangible wood cultural heritage will be identified and re-valorized *at the local, regional and European level,* which will help to preserve and promote it as an important part of the European heritage and identity.

At the *local level,* skilled people will be involved in education and training, as well as in social and economic development of rural areas. Individuals and groups at the local level will be trained and encouraged to use their wood resources as new possibilities. Cooperation and interactions between different stakeholders will lead to strengthening institutional capacities and future international cooperation.

At the *regional level,* best practices will be shared, heritage databases will be exchanged, and networks of stakeholders will be developed among the selected countries in the Danube Region (Albania, Croatia, Hungary, Romania, Slovakia). Various forms of formal and informal trainings planned in project activities will help to save and innovate wood cultural heritage and to transfer it for future generations.

In a *European context,* by connecting cultures and experiences and putting them into a regional framework, the positive perception and value of wood culture heritage will be recognized and identified as a resource for the future (for example through tourism and landscape management in rural areas).

Finally, these activities will reach knowledge societies in the pilot regions, which is a precondition for achieving sustainable rural development.

STATUS QUO

Wood has been a traditional material in the Danube region, used throughout the centuries, from prehistoric times until nowadays, in different areas of human life: building, shaping local environment, arts, making household and agricultural items, transportation needs etc. Different environmental circumstances in the Danube River Basin has led, over time, to using different tree species for many purposes, and developing different approaches to woodcarving and other traditions. All these traditions of wood are an important part of local identities, but also a common tradition in the countries of the Danube region. The interaction between humans and wood resources has become vulnerable in many dimensions (http://books.google.it/). In rural areas of the Danube region, the tradition of wood – as tangible and intangible heritage, cultural and natural heritage, local and regional heritage – is still present, but undervalued and not recognized as a potential for rural development. The tradition of using wood in everyday life is an important aspect of the cultural heritage, not only for the Danube region, but also for all of Europe.

In Croatia, wood cultural heritage represents an important part of local and regional heritage and identity, especially in the central part of the country. In the regions of Posavina, Pokuplje, Banovina, Turopolje, Hrvatsko Zagorje, Prigorje, there are different traditions related to wood. In Turopolje, there are around forty wooden churches and chapels built from the 17th to the 20th centuries (http://www.tzzz.hr/). Along the Kupa and Sava rivers, especially in Lonjsko Polje Nature Park, there is a number of villages with preserved houses and households (http://www.pp-lonjsko-polje.hr/). An example is the village of Krapje, which has the status of "building heritage village" since 1995. In the mentioned areas, a variety of other wood traditions have been preserved, such as the building of wooden boats (Posavina and Pokuplje), musical instruments, children's toys, barrels and other items related to traditional agriculture. Traditional manufacturing of children toys in Hrvatsko Zagorje has been placed on the UNESCO Representative List of Intangible Cultural Heritage of Humanity (http://www.unesco.org/; Biškupić Bašić 2013). A number of wooden buildings and villages with related building traditions is part of the national cultural heritage lists run by the Ministry of Culture (http://www.min-kulture.hr/) and a number of them has been renovated and adopted to contemporary living conditions or tourism activities. Traditions related to wood have been part of

scientific research from the 19th century until nowadays. Furthermore, handbooks, guides and papers with instructions for preservation and regeneration of wood cultural heritage were published (Mlinar 2001, Petrić2000, Salopek et al. 2006 etc.) and certain builders and architects have specialized for these kinds of building and preservation works.

In Hungary, wood as a material was traditionally used in basketry and to create special dishes (so-called carapace). These activities were mainly connected to the rivers and streams, because the tree species feasible for these items are strongly dependent on water (willow, poplar etc.). These traditions were clearly connected to rural communities (in most of the cases to the Roma) (El-Hassan 2013). Nowadays one can only occasionally find these activities in the countryside. As a consequence, these traditions have begun to disappear. Another example of wood cultural heritage in Hungary is the wooden churches, which are mainly situated in the northeastern part of the country. This heritage, as an international value, is included on the UNESCO World Heritage List as of 2000, as "The wooden churches of the Northeast Carpathian-basin" together with Slovakia, Romania, Poland and Ukraine (http://www.unesco.hu/). In Hungary, houses made only from wood are not common, but traditionally wood was an important material, especially for roofs of buildings. These structures were usually well decorated. A good example of this traditional architecture is the village of Hollókő, which is a World Heritage site in North-Hungary (Benkő 2009). Richly decorated special gates, so-called "Szekely gate", are a very old tradition. They are used in Hungary, but the center of this cultural tradition is located in Romania, in a particular area of Transylvania. A group of Hungarians living there ("szekely") often use this type of gate (the name of this special gate derives from there) (Kós 1989).

The early tradition of woodcraft in Albania has its roots in the mastery of its shepherds. It was used to make musical instruments, cradles or household products. Later on, the wood artistic work constituted a profession that was developed in different regions (Diber, Berat, Voskopoje, Korce etc.). During the 19th century, the art of wood crafting was developed in many cities like in Shkodër, Elbasan, Shkodër, Gjirokastër, Tiranë etc. Despite the fact that stone buildings dominated in Northern Albania in the 20th century, carved wood was one of the main materials used to decorate the exterior and interior of the family houses of nobles, in addition to brick and tile as cover for roofs (Budina, Oksana 2003). Apart from artistic woodcrafts and household wooden utensils, many parts of the characteristic houses, many of them protected as cultural monuments or by UNESCO, such as the centers of Gjirokaster and Berat (http://whc.unesco.org/), were built with carved wood. From 1945 to 1990, there were many organized manufacturers and factories making artistic works mainly for

export, but, at the same time, they served to preserve this important cultural heritage. At the beginning of the 1990s, this tradition faded and, in the last few years, there are some efforts from the Ministry of Labour, NBS (Enhance of Social Business) or NGOs to increase the number of "Made in Albania" artisan products. These efforts consist mainly of identifying and supporting small activities related to artisan work, mainly through fairs and exhibitions, especially in Albanian areas. There are also some projects related to the wood and stone craft tradition between Gjirokaster (Albania) and Mecovo (Greece), aimed at preserving cultural heritage (Kola 2013, Andoni 2015).

In *Slovakia*, the tradition of using wood has a long history. The most famous are wooden churches in the Carpathian Mountains, built between the 16th and 18th centuries, which represents good examples of a rich local tradition of religious architecture (http://whc.unesco.org/). Construction of buildings without a single iron nail is unique, but no longer practiced. Vlkolínec, as another UNESCO World Heritage Site in Slovakia, is the most complete and remarkably intact group of 45 traditional log houses with the features of a central European village (http://whc.unesco.org/). Čičmany, Pribylina, Zuberec and other open air museums are examples of preservation of traditional wooden dwellings used for centuries by Slovak inhabitants. There are still many wooden houses in rural areas, mostly used for recreation purposes. The first wooden mills appeared in Slovakia in the 8th and 9th centuries, mostly in the southern part of Slovakia. Nowadays, there are five wooden water mills on the Little Danube River and, a few in the mountains (Kvačany and Prosiek valley). The tradition of using the Váh River for the transport of wood and other goods dates back to the 17th century (http://www.plte-orava.sk/). Special wooden flatboats sailed by raft men dressed in traditional clothes are now used as a tourist attraction only in two areas (Strečno on the Váh River and the Dunajec River). Due to the mountainous character of Slovakia, wood was an accessible material used in households and art (musical instruments, toys). There is a special museum in Zvolen wholly dedicated to wood and forestry. The permanent exposition named "Traditional crafts for the present" shows the traditional wooden crafts and their final products and offers inspiration for modern products made by traditional knowledge (http://www.ldmzvolen.sk/).

The wood cultural heritage in Romania includes a variety of objects: wooden village churches in Maramureș (North of Romania), traditional wooden houses in mountain areas, which, for centuries, were a landmark identity for the population (example: Țara Moților). In addition, wood cultural heritage includes elements of wood art, woodcraft, such as crosses, wooden religious panel paintings, outside doors with traditional elements (doors of Maramureș). An important part of wood cultural heritage is knowledge and popular techniques

for making these wooden elements. In the current period, Romania has capitalized most from its immovable wood cultural heritage because it is included in certain tours. Moreover, some wooden churches of Maramureć(eight churches of this type) are included on the UNESCO World Heritage List. A characterization of the conservation-restoration problems, specific for some of the most representative wooden churches and ancient village houses, are presented in two large open-air national popular art museums – Muzeul Satului (Village Museum) in Bucharest and Astra Museum near the Transylvanian city of Sibiu (Constantinescu 2008).

The wood cultural heritage is best represented in its diversity in each of the countries mentioned above, thus representing a core resource for sustainable development. Despite its richness and potential, wood cultural heritage and related traditions, except for some individual examples, are not valorized enough, which may be seen in many aspects:

- destruction of wood artifacts,
- replacement of traditional buildings with modern ones,
- insufficient concern for preservation (tangible/intangible),
- not recognized among young people as a resource,
- not encouraged by institutions for self-employment and starting up small family businesses,

- being at risk to lose its identity,
- attempts to globalize it, trying to adapt to consumers' demands and using imported materials.

In each of the countries, there are several activities within the wood processing industry, the opening of small and medium enterprises and the creation of wood manufacturing organizations. But these are isolated examples, often based on non-environmentally friendly methodologies, without being connected to each other and business oriented, not caring for authentic tradition. On the other hand, good examples come from the more developed areas of the Danube Region Basin.

In ITALY, and especially in Friuli Venezia Giulia, the use of wood and particularly the preservation of traditions related to wood, have, for decades, been widely included in local and regional economic planning. As evidence, cited can be numerous examples of investment in the use of wood as a raw material, like the districts that are specialized almost exclusively for the production of chairs and furniture and characterized by an intense division of labor between small and medium-sized enterprises, (http://www.osservatoriodistretti.org/) the creation of wood observatories since 1999 in order to acquire the data for the forest and wood sector at the regional and extra-regional level and return the processed information to the segment and those involved in the supply chain through the organization and construction of various archives related to the most important aspects (http://www.regione.fvg.it/), or the creation of micro locations where artisans show enchanted visitors a thousand ways of working with wood and other events organized in order to transmit the traditions associated with the use of wood and their applications with the latest technology (http://www.udine20.it/).

POSSIBLE SOLUTIONS TO THE PROBLEM AND IMPROVEMENT OF THE ROLE OF CULTURAL HERITAGE AND SUSTAINABLE DEVELOPMENT OF THE DANUBE REGION

All countries involved have a strong tradition in the usage of wood, but do not use the whole potential which wood and traditions connected with this environmentally friendly material provides. The restoration and innovation of traditions, in accordance with present needs, may help to mitigate and overcome problems of rural areas.

To help solve the problem and enhance rural development in a sustainable way, the knowledge on wood cultural heritage needs to be preserved, innovated and used as catalyst for synergic effects.

The aim of the project proposed is the sustainable rural development through valorization of wood cultural heritage. We want to make people of rural areas aware of the values of the traditional work with wood of previous generations, link generations and transmit traditional knowledge on wood cultural heritage. Wood cultural heritage is not only a complex of materials, but also of knowledge and meanings, which have been useful in strengthening the relation between generations. The activities concerning the knowledge transfer of wood cultural heritage in the Danube River Basin from the older generations to the younger ones will help to regenerate this chain that is at risk. The project idea is based on the following main pillars: IDENTIFY WOOD CULTURAL HERITAGE, TRANSFER KNOWLEDGE BETWEEN GENERATIONS, IMPROVE EMPLOYMENT OPPORTUNITIES, ENHANCE THE USE OF WOOD AND PRESERVE ITS CULTURAL HERITAGE.

The preservation and capitalization of the intangible cultural heritage are two operations which are closely related, their performance shifts from looking at cultural property as a legacy of sentimental value, to the use thereof as core resources (but sustainably capitalized). People in rural areas will be trained in wood processing, woodcraft, wooden architecture, wooden items, use of wood in tourism, transportation and rural surroundings etc. Woodcraft activity opens potential jobs for wood makers, cultural workers as artisans, sculptors and others. Creating new jobs related to wood traditions and the usage of local natural and human resources can enhance rural development and stimulate multiplicative effects, because jobs based on wood cultural heritage can stimulate the creation of jobs in other related industries. In addition, opportunities for the employment of marginalized vulnerable groups such as youth, women, physically challenge and unemployed will be created. Moreover, new business opportunities can contribute to the diversification of the regional economic activities mostly dependent on a single industry. To meet environmental challenges, the project focuses on raising awareness on the importance of using wood as a renewable natural resource and sustainable material, not neglecting the importance of forestry. Societal challenges can be met by bridging the gap between generations and encouraging cooperation among countries and communities at the local, regional and international levels. Locally produced wood products and services can support the regional identity and pride.

Valorization of wood cultural heritage in the Danube Region will help to preserve cultural heritage connected to wood and bring positive economic, social and environmental impacts to rural areas in the Danube River Basin. Restoring traditional knowledge will contribute to better mutual understanding and, at the same time, support European identity.

METHODOLOGICAL APPROACH

SCIENTIFIC DISCIPLINES INVOLVED IN THE PROJECT

The project requires international cooperation and interdisciplinarity. Throughout the project, a wide range of experts from the Humanities, Social, Natural and Technical Sciences (archeology, architecture, art history, ethnology and cultural anthropology, history, sociology, geography, tourism, architecture, landscape architecture, economy, education sciences, communication sciences, information technology, etc.) will be involved.

DATA AND METHODS NEEDED

The methods are ordered according to the work packages. For research and analyses, data collecting, in-depth interviewing, focus group, delphi method, participant observation, GIS methods will be used. For training, methods of formal and informal education will be used. For networking, communication and promotion, similar methods will be employed: IT, marketing.

PROJECT CONSORTIUM

INSTITUTIONS INVOLVED

Constantine the Philosopher University in Nitra, Cà Foscari University of Venice, University of Trieste, University of Udine, Corvinus University of Budapest, University of Zagreb, Babeș-Bolyai University, Cluj-Napoca, University of Shkodra

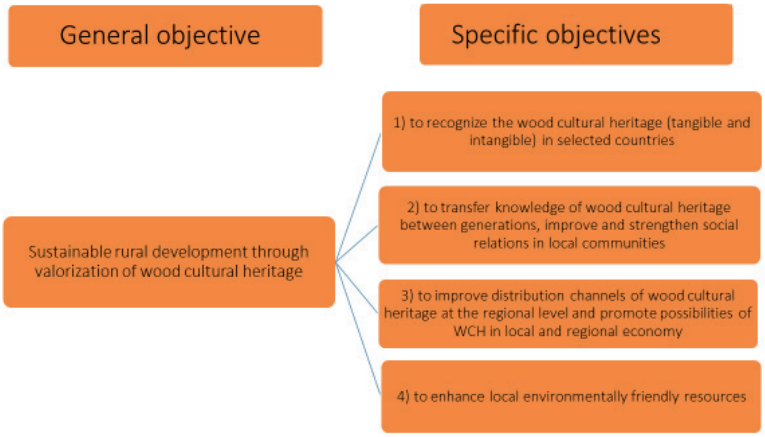
EXPERTISE THEY BRING TO TACKLE THE CHOSEN PROJECT PROBLEM

– *Corvinus University of Budapest* – expertise in project management. The Department of Landscape Planning and Regional Development will play an important role in the process of dissemination of the importance of landscape management for sustainable development.

– *University of Zagreb* – expertise in the research and identification of wood cultural heritage in each of the countries. Therefore, from each of the universities, researchers specialized in ethnology and cultural anthropology, history and art history, and also information technologists, will be involved. As a university specialized in Ethnology and Cultural Anthropology and Art History, it will offer its expertise in elaborating the feasibility study and in processing the data collected in this work package.
– *University of Trieste* – expertise based on its early tradition in networking (LAG, NGOs, local government, local experts) and also in bringing examples of best practices in wood cultural heritage, in particular from Northern Italy. It also has a long tradition in Education.
– *University of Shkodra* – expertise in developing and defining the training methodology that will be used in the process of transferring knowledge linked to wood cultural heritage.
– *Constantine the Philosopher University in Nitra* will be in charge of promoting the project, its activities (training programs and interpretation centers) and economic potentials of wood cultural heritage at the local and regional levels, due to its experience in marketing and economics.
– *Babeș-Bolyai University, Cluj-Napoca* will be part of the project implementation through its expertise in the process of elaborating the ICT tools through GIS methods, but also in the development of economic strategies.

SOLUTIONS / OBJECTIVES

GENERAL AND SPECIFIC OBJECTIVES



EXPECTED/ENVISAGED RESULTS

According to the general objective, the main expected result of the project is a greater consideration of wood cultural heritage as a way toward development. During the project, specific objectives will be achieved and activities done with results in different areas. Some of the main expected results are as follows:

- definition and recognition of wood cultural heritage in the Danube River Basin,
- creation and publication of databases of wood cultural heritage at the local and regional levels,
- networking of specialists and target groups who will participate in education and training programs,
- establishment of training and interpretation centers in each pilot area,
- more educated target groups in pilot areas on the wood cultural heritage and about self-employment competences,
- better cooperation between the younger and older generations,
- more coherent local communities,
- more employment opportunities,
- opening of new distribution channels for wood products and services,
- higher usage of local human resources,
- higher cooperation between experts on wood cultural heritage at the local and European levels,
- increased awareness in target groups about the irreplaceable role of forestry and local government,
- taking into consideration wood cultural heritage in sustainable landscape management.

ACTIVITIES

OBJECTIVE 1: *to recognize the WCH (tangible and intangible) in selected countries*

ACTIVITIES:

- create protocol,
- contact stakeholders at the local level (local action groups, NGOs, local government, local experts),
- create database about wood cultural heritage (tangible and intangible),
- conduct research and analyze the database,
- make feasibility study and identify the pilot areas.

OBJECTIVE 2: *to transfer knowledge of WCH between generations, improve and strengthen social relations in local communities*
ACTIVITIES:
- create a network of specialists and target groups who will participate in education,
- establish training and interpretation centers in each of the pilot areas,
- training at different levels,
- promote the training and interpretation centers and training programs at the local and regional levels.

OBJECTIVE 3: *to improve distribution channels of WCH at the regional level and promote possibilities of WCH in local and regional economy*
ACTIVITIES:
- organize an international meeting on WCH and exchange experience on successful wood small and medium sized enterprises,
- organize training on self-employment competencies by involving financial experts,
- create a website on WCH (distribution channel for wooden products, best practices),
- organize a fair or exhibition with wood cultural heritage related products and services.

OBJECTIVE 4: *to enhance local environmentally friendly resources*
ACTIVITIES:
- involve forestry experts into education (meetings with primary school children, tree planting days),
- organize meetings and workshops with local government on sustainable landscape management.

ORGANIZATION OF THE PROJECT WORK

WORK PACKAGE 1: *Project management*
TASKS: establish leader team, technical committee and work groups, define and administer project monitoring and reporting, preparation of project publicity materials, organize kick-off meeting
LEADER: Corvinus University of Budapest
PARTNERS: Constantine the Philosopher University in Nitra, Cà Foscari University of Venice, University of Trieste, University of Udine, Babeș-Bolyai University, Cluj-Napoca, University of Shkodra, University of Zagreb

WORK PACKAGE 2: *Research and analysis of tangible and intangible wood cultural heritage*

TASKS: create protocol, create database on wood cultural heritage (tangible and intangible), do research and analyze the database, make feasibility study and identify the pilot areas

LEADER: University of Zagreb

PARTNERS: Constantine the Philosopher University in Nitra, Cà Foscari University of Venice, University of Trieste, University of Udine, Corvinus University of Budapest, Babeș-Bolyai University, Cluj-Napoca, University of Shkodra

WORK PACKAGE 3: *Networking of professionals, stakeholders and target groups at local, national and international levels*

TASKS: contact stakeholders at the local level (LAG, NGOs, local government, local experts), create a network of specialists and target groups who will participate in education, organize an international meeting on WCH and exchange experience on successful wood small and medium sized enterprises

LEADER: University of Trieste

PARTNERS: Constantine the Philosopher University in Nitra, Corvinus University of Budapest, Babeș-Bolyai University, Cluj-Napoca, University of Shkodra, University of Zagreb, Cà Foscari University of Venice, University of Udine

WORK PACKAGE 4: *Training of wood related skills and self-employment competencies*

TASKS: establish training and interpretation centers in each of the pilot areas, training at different levels, organize training on self-employment competencies, involve forestry experts into education (meetings with primary school children, tree planting days), develop training programs

LEADER: University of Shkodra

PARTNERS: Constantine the Philosopher University in Nitra, Cà Foscari University of Venice, University of Trieste, University of Udine, Corvinus University of Budapest, Babeș-Bolyai University, Cluj-Napoca, University of Zagreb

WORK PACKAGE 5: *Sharing knowledge and experiences at the local and international levels*

TASKS: promote training and interpretation centers and training programs at the local and regional levels, organize an international meeting on WCH and exchange experience on successful wood small and medium sized enterprises, create a website on WCH (distribution channel for wooden products, best practices), organize meetings and workshops with local government on sustainable landscape management

LEADER: Constantine the Philosopher University in Nitra
PARTNERS: Cà Foscari University of Venice, University of Trieste, University of Udine, Corvinus University of Budapest, Babeș-Bolyai University, Cluj-Napoca, University of Shkodra, University of Zagreb

WORK PACKAGE 6: *Dissemination*
TASKS: organize promotional activities, carry out promotional activities, feedback and dissemination of results to similar projects
LEADER: Constantine the Philosopher University in Nitra
PARTNERS: Cà Foscari University of Venice, University of Trieste, University of Udine, Corvinus University of Budapest, Babeș-Bolyai University, Cluj-Napoca, University of Shkodra, University of Zagreb

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Working Group "VUKA"
Former Socialist Countries Open their Past to Europe (SCOPE)

ABSTRACT

The project "Former Socialist Countries Open their Past to Europe" (SCOPE) focuses on gathering cultural heritage (CH) in the form of documents and personal testimonies from the former socialist countries (FSC) in the Danube Region. The main goals are to create an extensive database (DB) of the publicly available and newly collected documents, and to develop a user-friendly application for data search and analysis. The collection of available documents will be examined by group of historians to select significant CH movements on a specific geographical area. Innovative tools, SCOPE website and application, will provide effective research and analysis of documents in a new, standardized database. SCOPE tools allow quick searching of all available documents using keywords or phrases; classification of results according to geographical position/dates/types/historical impact; and graphical illustration of activities against the socialist/communist regimes through the defined period of time. The novelty of the project is the use of the 'citizen science' approach to acquire personal testimonies of cultural opposition movements during the communist period through SCOPE tools. An interactive part of SCOPE application will collect users' feedback in order to analyze if the documents serve the purpose of awareness raising on the anti-communist past among EU citizens.

KEYWORDS

Cultural heritage
Socialism
Communism
Opposition movements
SCOPE

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CONTEXT OF RESEARCH TOPIC

BACKGROUND

After 1945, as one of the main consequences of the Second World War, Europe was divided into two great parts: the capitalist Western and the communist Eastern Block. The Soviet Union seized its political, ideological and in most cases, military control over the eastern part of the continent. During the Cold War, many countries in the Danube Region (such as Romania, Bulgaria, Hungary, Czechoslovakia) and in a wider sense the German Democratic Republic were under the full influence and governance of communist regimes, while Yugoslavia followed a special type of socialism. There were numerous cultural opposition movements against the regimes in socialist countries, despite of the "all-seeing" eyes of secret police and the high risk of persecution.

After the collapse of the Eastern Block in 1989, and the fall of the Soviet Union two years later, the former socialist countries (FSC), begin to re-evaluate their communist past in various ways. Because of sensitivity of this issue, this process is not completed even nowadays when most of the FSC are part of the European Union (EU). There are many politically motivated disputes about the assessments of great historical events and anti-communist resistance in the communist era (e.g. the revolution in Hungary in 1956 or the Prague Spring in 1968), which *became the most popular research topics after 1989* [Mark 2005, p. 963.]. However there are also cultural activities from this historical period, unknown in the EU and other FSC. Huge parts of the cultural heritage (CH) of the anti-communist cultural opposition movements never got significant publicity, because lots of the documents about this topic were not available for research for many years after the system change [Miller 1998, p. 313.]. As a consequence documents regarding the CH of the FSC are widely dispersed and as such are unknown and neglected to the general public even they could serve to understanding of the new democratic reality and the formulation of the new societal identity in Europe.

LINKS TO EUSDR AND HORIZON 2020 CHALLENGES AND PRIORITIES

The project Former Socialist Countries Open their Past to Europe (SCOPE) addresses Horizon 2020's call (REFLECTIVE-4-2015) "Reflective Societies: Cultural Heritage and European Identities" to tackle the broader societal challenge "Europe in a changing world – inclusive, innovative and reflective societies".

SCOPE recognizes the cultural opposition in European FSC as a valuable CH and as a factor that shaped and still has an influence on the identities of a significant part of European society. The project integrates the research and innovation actions with the aim to promote this CH and make it easily accessible to the wider public, especially to young generations.

At the same time, SCOPE will trigger a cooperation of a number of research and heritage institutions such as universities and museums. Because it targets the wider EU society, the project contributes to the Priority Area 7: "Knowledge Society", Pillar "Building Prosperity" of the EU Strategy for the Danube Region (EUSDR) [COM (2010) 715 final]. One of the key factors for sustainable development of the Danube Region is the society's ability to create and exploit knowledge. SCOPE will provide the necessary infrastructure and information and communication tools for competitive research and education in the CH field of the FSC [SEC (2010) 1489]. As an innovative project that contributes to the promotion and dissemination of the unique CH of European FSC, SCOPE will enhance the prosperity of the Danube Region and the fulfillment of EU's commitments within Europe 2020 [DR: Project and Innovations].

STATUS QUO

The analysis of the state of art indicates that the predominant approach used to study CH is a "top-down" approach. Most of existing databases (e.g. Piredeu [FP-7 Piredeu, 2012]) contain solely official documents for experts or people deeply involved in a specific research field. Specific CH projects and studies implemented in the Danube Region normally refer to material heritage (e.g. monuments, churches, archeological remains, fortress, and castles). Technologies are used mainly to promote regions with material heritage and not to explore the regions or as an educational and pedagogical tool [Co-Cu-Co OBP, 2004]. Several projects are devoted to the linguistic and religious minorities in the Danube Region countries (e.g. Plurel, [Plurel, 2014], Respect [Respect, 2013]). The methodological approach applied in those projects is based on qualitative instruments such as interviews, depth-interviews, content analysis of private diaries, letters, etc. This approach reinforced the discourse within some regions of FSC and had important impact on the pluralism in the EU. A disadvantage of such projects is the limited dissemination that is caused by insufficient access to data and inability to use collected knowledge for educational purposes or tourism development. Also, projects are usually focused on CH of a specific minority group.

Research of socialism and anti-socialist movement is already widely explored [Lipset, 1983], [Balažić, 2009]. However, there are two main limitations of this type of research: the focus on a particular geographical area and the bias caused by the influence of the author's attitudes. Previously conducted research projects did not provide a standardized and reusable DB of CH documents and tools for research and analysis.

SOLVING THE PROBLEM

In order to raise public awareness on opposition actions against the socialist regimes, the project proposes a strategy of combining publicly available documents with personal testimonies. Publicly available documents will be collected and evaluated by a group of historians from different universities across FSC. Their task is to select and to briefly describe significant, history-changing events that should be presented to the general public. Data revised by historians will serve as a base to build an extensive and standardized collection of easily accessible CH documents.

The database of scientific data will be integrated in an innovative tool called SCOPE in order to make the collection easily available to the general public. SCOPE will be designed as an application for smartphones and will display information (selected by historians) related to the geographical location of the user. An important feature of SCOPE is the possibility to extend the collection of currently available documents by allowing users to upload personal testimonies in the form of comments, images or documents. Newly acquired findings will be examined by historians to evaluate their significance and impact to the current knowledge about anti-socialist movements. Additionally, SCOPE will provide simple analysis and research functionalities for an innovative exploitation of gathered data in education and CH sector.

Those actions will result in the better promotion of anti-socialism actions in Europe in order to preserve CH documents and use them for education of young generations about anti-socialist past. A standardized collection of documents, complemented with new findings, would foster cooperation among different historical and educational institutions allowing them to focus on lessons learned from socialist past of today's and potential future EU members.

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

As outlined in the specific challenge of the call 'Reflective-4-2015', the CH of FSC '*has shaped - and still influences - the attitude of several generations of today's EU citizens towards their political and social participation, understanding of the new democratic reality and formulation of the new societal identity.*' The EUSDR underlines the fact that '*the Region possesses a striking cultural, ethnic and natural diversity.*' Therefore it is necessary to preserve and disseminate the CH of the partner countries while balancing the official view, as expressed in governmental publications, with the alternative view of the cultural opposition from the socialist age.

The availability and use of specifically developed tools will improve the awareness of researchers and the new generations of countries in the Danube Region. Producing a self-perpetuating system for obtaining CH documents will enable the scientific community to find unconventional research topics, which have never been explored. In the same time it will make research results available to all stakeholders and interested parties.

METHODOLOGICAL APPROACH

SCIENTIFIC DISCIPLINES INVOLVED IN THE PROJECT

The project SCOPE requires an interdisciplinary approach for further exploration of the CH of opposition movements in former socialist countries. The following scientific disciplines will be necessary in order to achieve the main aim of the project: cultural history, sociology and public relations, art in all its manifestations, religion/theology, data mining and analysis, didactics and pedagogy, information and communication technology (ICT), etc.

DATA AND METHODS

The first step of the SCOPE project is to create an international network of selected institutions (universities, museums, public and private libraries, public and private archives, etc.) from the FSC, interested in sharing their documents in an open and public database. An international group of historians from part-

ners' universities will collect and manage the documents (written documents, photographs, documentaries, music, etc.).

Standard methods of historical and social sciences [Shafer 1980; McCullagh 1984; Howell & Prevenier 2001; Berg, et al. 2004; McCormack 2004] will be used in order to analyze the contents of the documents and to prepare them for the database. Short description with additional materials (photographs, documents, etc.) of significant events will be prepared for all geographical areas of interest (cities/villages in the FSC).

A relational database, based on the relational model of data, will be created in order to categorize all collected CH documents and to be connected with a brief description defined by group of scientists. Database normalization will be used to eliminate the redundancy (duplication) of data, which prevents data manipulation and loss of data integrity. A relational database management system will be used to query and maintain the database using SQL (Structured Query Language).

An on-line website and a smartphone application SCOPE will be implemented using programming language Java. Functional testing will be done to ensure that website and application are working according to requirements. Performance testing will assure proper behavior under certain conditions (e.g. bad network coverage, low available memory, and simultaneous access to application's server by several users). Memory leakage testing will be conducted to check managing of the allocated memory. Usability testing will be carried out to verify users can use all functionalities of website and application.

The Citizen Science approach will be applied to collect additional CH documents in a form of personal testimonies of users. This approach, also called "crowd science", is a scientific approach in which citizens, not necessarily experts, collect and/or process data as part of a scientific enquiry [Silvertown 2009]. Science and research are activities potentially available to everyone: the combination of historical data and assembly of a large, dispersed team of observers can therefore create a large amount of opportunities for historical researches at unprecedented spatial and temporal scales.

A specific protocol based on a new interdisciplinary approach will be developed in order to analyze user data collected that will be continuously reviewed by team of historians. Moreover, even though the content will be uploaded in different languages, the most relevant data will be translated in English and in the other languages of the involved countries. All uploaded data and comments will be monitored by a moderating team composed by historians and sociologists in order to evaluate their quality. The "double check" made by the researchers and by the users (through their comments) will improve the data evaluation process.

The application will be firstly tested by some selected institution and volunteers and will be open to the public by the most used digital distribution platforms for mobile apps (e.g. Apple store, Android market). The promotion of the application will be implemented by each university in our consortium through a network of contacts among schools, libraries, museums tourist promotional public and private office, etc., of their city/province/region.

Collected CH documents will be analyzed to extend current knowledge about anti-socialist movements in FSC, and to provide a set of recommendations for raising awareness of socialist regime of citizens of current and future EU members. An innovative methodology implemented in interactive part of SCOPE, that allows users to express their own attitude about specific anti-socialism movements through direct testimony, will ensure the continuity of this project and applications of developed methodology/tools in the similar historical context.

CONSORTIUM

INSTITUTIONS INVOLVED IN THE PROJECT AND THEIR EXPERTISE

Project SCOPE requires involvement of higher education institutions and their background research groups, whose main interest refers to the CH in the selected period. Partners in SCOPE are mainly young researchers and specialists in the field of history, sociology and computer technologies. Nevertheless, it is a goal of the project is to involve museums and NGOs by sharing the incoming documents, testimonies, photographs.

UNIVERSITIES	Abbreviation	Expertise
Eötvös Lóránd University of Budapest (Faculty of History)	ELTE	History/ Sociology
Comenius University in Bratislava (Faculty of Philosophy)	CUB	History
University of Novi Sad (Faculty of Philosophy)	UNS	History

UNIVERSITIES	Abbreviation	Expertise
University of Trieste (Dept. of Political and Social Sciences, Dept. of Life Sciences)	UNITS	Citizen science
University of Ljubljana (Department of History)	ULJ	History / Social science
University of Zagreb (Faculty of Electrical Engeenering and Computing)	UZE	Information techologies
Babes-Bolyai University of Cluj-Napoca (Department of History)	BBU	History
University of Sofia (Faculty of History),	US	History
University of Leipzig (Faculty of History, Arts and Oriental Studies)	ULZ	History /Art
Charles University of Prague	CUP	History
EXTERNAL AGENCY (administrative company)	EAG	Management – tech- nical administration

MUSEUMS
The House of Terror in Hungary The National Archive of Hungary
The Museum of Communism in Prague
The National Socialism Documentation Center of Cologne
The Museum of Contemporary Art in Zagreb The Institute for Art History in Zagreb
Museum of Communism of Bucharest
Museum of Communism of Bratislava
The Museum of Socialist (Totalitarian) Art in Sofia

SOLUTIONS / OBJECTIVES

LOGICAL FRAMEWORK MATRIX

Project description		Objectively Verifiable Indicators	Sources of Verification	Assumptions
Goal	To enhance the political and social participation, understanding of the new democratic reality and formulation of the new societal identities in FSC	Participation of citizens from FSC in EU programmes, initiatives and administration.	Census, Database (DB), Statistical analyses done by external institutions.	Open access to EU, national and regional DBs and statistical data.
Purpose	To collect testimonies and documents as part of the cultural heritage (CH) from opposition movements in FSC	DB of testimonies and documents.	Archives, web sites, personal testimonies collected in a specific database. Methods: historians and ICT specialists.	Cooperation from citizens who dispose of knowledge about the cultural opposition and/or their relatives.
Outputs	1. A DB of collections of independent cultural movements and activities against the regimes in FSC.	1.1. A DB enriched from each partner. 1.2. A structured DB for each opposition movement identified.	1. A DB and a register.	1. Willingness of citizens and institutions to share knowledge.
	2. A tool (an application) to utilize and contribute to the DB.	2. A free application for smartphones.	2. An application, feedback from users.	2. Existence of documents.
	3. A set of recommendations and guidelines for valorization and dissemination of CH in FSC.	3.1. A set of recommendations based on research findings proposing methods for preservation of CH in FSC. 3.2. Guidelines on good practices for preservation of CH from opposition movements in FSC.	3.1. A Whitepaper of recommendations. 3.2.1. A whitepaper to be used by non-member countries in the process of joining the EU. 3.2.2. A handbook of best practices and lessons learned for EU countries which are not participating in the project.	3. Widespread usage of smartphones.

Outputs				4. The application is updated with the development of technology, hardware, and software. 5. Cooperation from European and national authorities, as well as from all potential stakeholders.
Activities	1. TRANSVERSAL ACTIVITIES: 1.1. Project Management 1.2. Dissemination, Lessons Learned, and Exploitation 2. SPECIFIC ACTIVITIES: 2.1. Data Acquisition and Gathering 2.2. DB Creation 2.3. Application Development 2.4. Testing and Improvement (DB maintenance).	PERSONNEL: researchers, teachers, museum staff, ICT specialists, volunteers. EQUIPMENT: a server, smartphones for testing the application. SUPPLIES: wi-fi hotspots, software platforms (open source), internet subscription fees.	Gantt chart, Intermediate and final reports, Preliminary (2.4 million euro) and actual budget. Meetings.	A consortium of research institutes, universities, schools, museums, NGOs from EU FSC, non-EU FSC, and countries who are influenced by the CH of FSC.

GENERAL OBJECTIVES

The *general objective* is to preserve cultural heritage and raise awareness of anti-socialist movements through innovative exploitation of documents and objects from the socialist area.

SPECIFIC OBJECTIVES

The SPECIFIC OBJECTIVES are:

1. Collecting publicly available and currently unknown CH data in order to make them easily available to the general public, and to enhance their promotion as an important testimony of anti-communist opposition movements;
2. Creating new technological instruments to enhance quality of research and exploitation of the CH documents for research and education of young generations;
3. Establishing a network and cooperation infrastructure among involved universities and other governmental and non-governmental institutions;
4. Providing a set of recommendations based on research findings for raising awareness and preservation of lessons learned from the socialist past of today's and potential future EU members.

EXPECTED RESULTS

The deliverables of project SCOPE are:

1. A standardized database of the cultural heritage documents of anti-socialist movements in Danube Region countries,
2. An innovative infrastructure for collecting personal testimonies about opposition movements,
3. A website and an application for analysis, and research of documents collected in the CH database,
4. A set of recommendations for preserving of the CH and better promotion of anti-socialist movement in Europe as a tool for education of young generations,
5. Reports about project works.

ORGANIZATION OF THE PROJECT WORK AND BUDGETING

WORK PACKAGE AND TASK STRUCTURE, LEADERS, INVOLVED PARTNERS

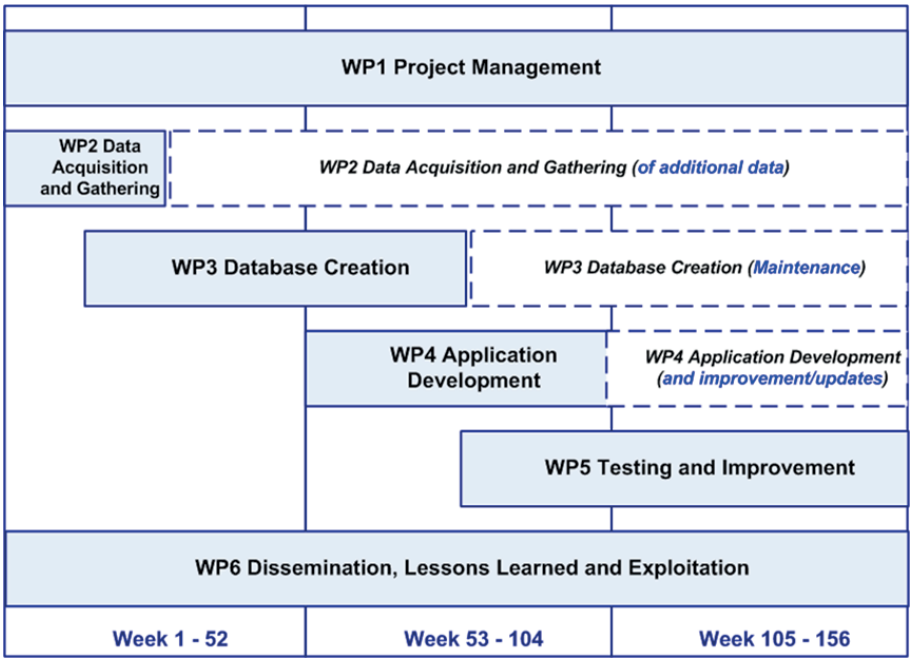

Figure 1 – Work Packages

WP1 PROJECT MANAGEMENT

The project management will be carried out by one manager assigned by the leading partner ELTE.

1.1. Project Monitoring

The implementation of the project will be continuously supervised and consulted. In addition, it will be evaluated during the meetings, approximately once in 8 months.

1.2. Reporting

Partner institutions will issue two intermediate reports and one final report of the project.

WP2 DATA ACQUISITION AND GATHERING

The data will be acquired and gathered in a collaboration of all partner universities utilizing "citizen science" approach. This way, knowledge will become available for the end-users as well as inputs for further research will be provided.

2.1. Collecting Publicly Available Data about Anti-Socialist Movement

Universities will provide basic scientific information about geographically relevant historical events.

2.2. Preparing Data for General Public

On the basis of scientific data, the partner universities will prepare simple and compact summaries (max. 200 words) for each topic and location that will be utilized by the SCOPE application.

WP3 DATABASE CREATION

A basic server will be developed by the ICT partners for the database (DB) for the information set collected by the above mentioned scientific partners.

3.1. Defining Database Structure

The ICT partners from UZE will provide a frame for the DB content that will be in line with the instructions of the leading partner (ELTE).

3.2. Organizing Data in Database

At this step, the partners from UZE will integrate the frame and the information content and will further organize, administer and update them.

WP4 SCOPE APPLICATION DEVELOPMENT

Following the previous steps, the ICT partners will develop a tool (SCOPE) to explore and enhance the content of the DB.

4.1. Identifying Main Functionalities

An advantage of the SCOPE application will be the free access to the DB content for the wider public, especially the young generation. The application will be able to detect the current location of the user and provide

relevant content from the DB. When the user opens the application, simple information (max. 200 words) about certain highlighted opposition movements of that particular place will appear on the screen.

Example 1: A tourist at the II. János Pál pápa Square (former Köztársaság Square) in Budapest will be informed about the siege against the headquarter of the Hungarian Workers' Party on 30th October 1956 conducted by the insurgents.

If the user is interested, 'Read more' links will be available. At the same time, users will be able to browse the database and find information about other locations as well.

Users will have the chance to upload any documents, pictures, testimonies, songs and other digitalized artwork assigned to specific places through their smartphones. These objects will eventually serve as CH from the opposition movements in FSC. This way a 'win-win' situation beneficial to the users as well as researchers will emerge and will allow a continuous growth of the DB. Uploaded files will always be reviewed and approved by quality managers (one person per country) before becoming visible in the application.

Regularly, the content of the DB will be analyzed and can be utilized for various scientific purposes. Statistical analysis about e.g. frequency of uploads and number of users will be made. The application will allow (via a voting scale) users to evaluate how they perceive the usefulness of the information given by SCOPE.

4.2. Implementing Main Functionalities in SCOPE

The ICT department (UZE) will have the main responsibility to develop, organize and administer the application SCOPE.

WP5 TESTING AND IMPROVEMENT

5.1. Application Testing

Before the application is launched, its features, practicability and usability will be tested by the project team and groups of students selected by the leading partner ELTE.

5.2. Improvement of Application

During the duration of the project, all identified errors of SCOPE application will be corrected and the application will be constantly updated.

WP6 DISSEMINATION, LESSONS LEARNED AND EXPLOITATION

As one of the two transversal work packages, this WP is managed by CUB and will be implemented by all partners. All partners as well as museums and tourist information centers will display project information and the QR code

of the SCOPE application. The dissemination will use the SCOPE application along with established communication channels and media such as: newsletters, a web site, leaflets, brochures, posters, social media (Facebook, Twitter, LinkedIn), YouTube, Vimeo, events (scientific conferences, seminars, workshops, SCOPE-cafes).
The 'Lessons learned' segment of this WP will concentrate on collecting feedback (both positive and negative) via comments from users and developers. The most important part is to analyze the effects that the updates in the SCOPE application have on improvement of the awareness of EU citizens on the CH of FSC.
The results of the project will be used in order to improve the SCOPE application and the newly acquired findings will serve as a base for deeper research of the CH of FSC. The research results will then be fed in the DB and subsequently in the SCOPE app.
The app will perpetuate its life in:

- the activities of museums and art exhibitions,
- merging with augmented reality apps,
- connecting of people who were oppressed by the former socialist regimes and who have natural motivation not to forget and to inform society.

BUDGET

Corresponding to the limits set in REFLECTIVE-4-2015, the budget amounts for 2030375 EUR and is presented in an additional file. The reimbursement rate for the project is 100% and the requested grant will completely cover the total estimated eligible costs. Various specific tasks (for example the work of experts on marketing, editing and translation) will be subcontracted.

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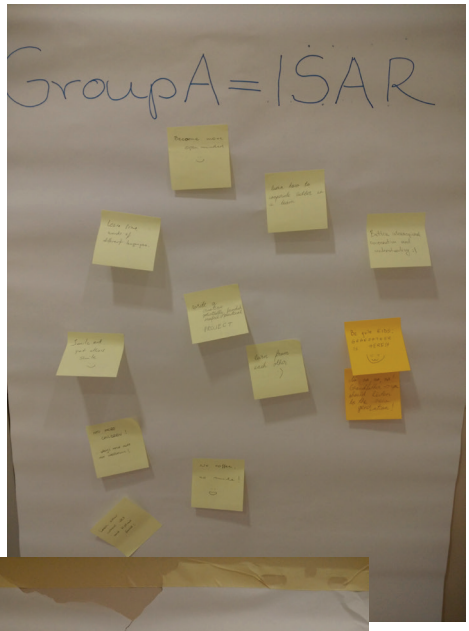
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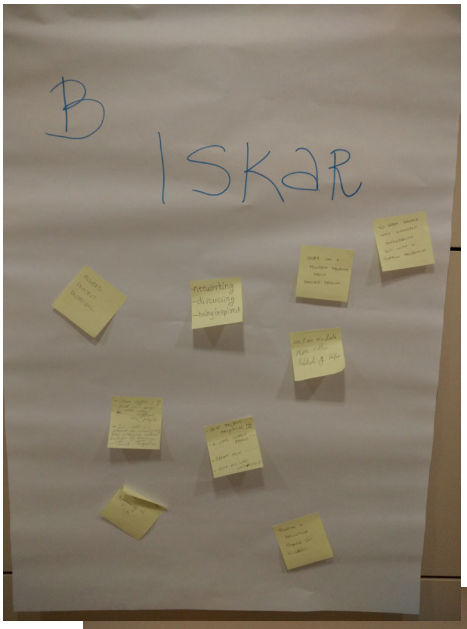
B
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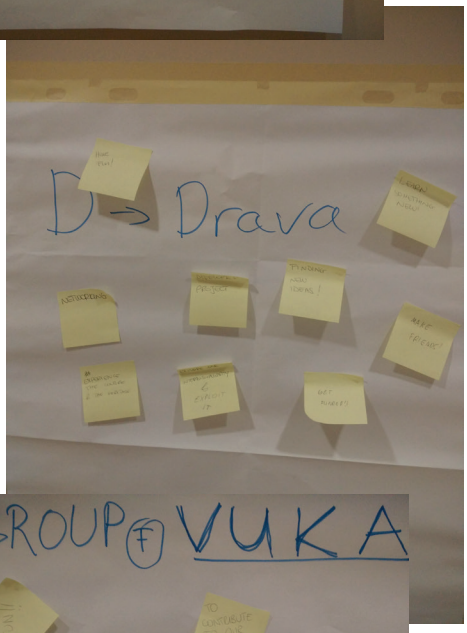
GROUP C - INN
SOCIAL
PERSONAL
LEARNING
CULTURAL HERITAGE
(NEW) IDEAS
improving our competencies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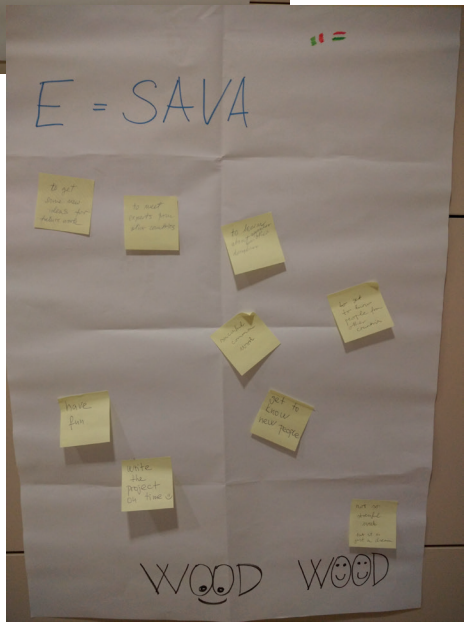
E = SAVA
WOOD
WOOD

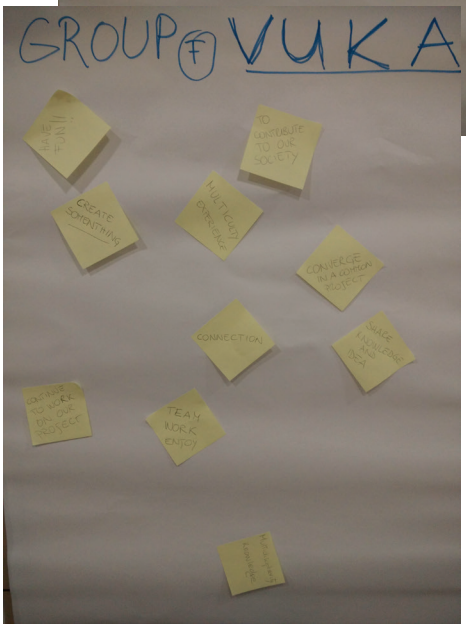
GROUP F VUKA
CREATE SOMETHING
CONNECTION
TEAM WORK ENJOY

Photo of participants to the Trieste excursion, 18th March 2015

Group photo of participants and teachers, Gorizia Conference Center, 23rd March 2015

Conclusions

Prof. Manuela Montagnari Kokelj
University of Trieste
School Deputy Director

The third and last edition of the Dianet International School was concluded with success. The format did not change compared to the previous in its basic components – lectures, excursions and group work – and their distribution in the course of the 10 days of activity; the main topic was different, but complementary. The title, *The role of Cultural Heritage for the sustainable development of the Danube Region*, was meant to suggest that the focus was mainly on *Cultural Heritage:* it was so, but the several material and immaterial elements that can be labelled as *culture* were never detached from their natural setting, and were quite often approached in an interdisciplinary way. This connection photographs the real world, but it was also intentionally designed to stress the *fil rouge* that connects the 2015 with the 2014 edition of the School, which investigated the role of *Natural Heritage*, and with the 2013 one, where examples of the *interdisciplinary methods* used in basic and applied research were presented. In a way, the 2015 edition made a synthesis, through selected case studies, on how *the sustainable development of the Danube Region* can be managed without losing fundamental components of the individuals' and communities' life.

Lectures and excursions scheduled in March 2015 combined theory and practice, and were organized so as to discuss *conservation*, *preservation* and *valorization* of *Cultural Heritage*. It might be redundant to say that before taking any decision on the best actions necessary to achieve these goals it is important to know the nature of the object to be protected. Anyway, the first step of any intervention must be the study of the present characters of the object and its biography, which is determined by the interaction of both human and natural events through time. Classification is often part of this basic study, or it comes immediately after. Each category of artefacts and ecofacts (to use an archaeological terminology), as well as plants animals rocks etc., requires specific parameters of analysis: these should be shared as widely as possible, at least at regional level – as in the case of the *Regional Institute for the Cultural Heritage of Friuli Venezia Giulia*, that hosted half day of the first excursion – better if at national and transnational level. The topic had been only touched on at the School, but it would deserve more attention, also because shared databases using comparable classificatory parameters are one of the weapons to fight against the constantly increasing illegal trafficking of cultural objects. This is explicitly recognized by the *Comando Carabinieri Tutela Patrimonio Culturale*, the special Unit created in Italy in 1969[1], one year ahead of the issue of the *UNESCO Convention on the means of prohibiting and preventing the illicit import, export and transfer of ownership of cultural property 1970*. Among the preventive measures that the Convention recommends to its Member States, Article 5 (b) indicates "establishing and keeping up to date, *on the basis of a national inventory of protected property* [my italics], a list of important public and private cultural property whose export would constitute an appreciable impoverishment of the national cultural heritage"[2].

In other situations, when a certain standardization in the classificatory parameters is not required, databases created in the context of scientific research can be usefully exploited also for applied research. This link between science and dissemination was evident in different moments of the School activities, from theory to practice. It underlay the lectures in the Session of the School dedicated to the *valorization* of *Cultural Heritage*, and was openly discussed when the evaluation of the means to enhance tourism based on tangible and intangible cultural patrimony focused on ICT (Information and Communication Technology) in its various forms, from the more scientific –

1 See the 2008 dccument of the *Comando Carabinieri*, in particular part 1.5 for their activities and parts 4-5 for international laws: www.carabinieri.it/internet/imagestore/cittadino/informazioni/tutela/culturale/Raccolta_normativa.pdf.

2 www.unesco.org/new/en/culture/themes/illicit-trafficking-of-cultural-property/1970-convention/text-of-the-convention/

GIS (Geographic Information System) applications, webGIS, virtual tours... – to the more social ones, such as Facebook, Instagram, Twitter, You tube etc. Examples of science-based realized projects were given also in the excursions. *KeyToNature: a new e-way to discover biodiversity*[3], for instance, is a project essentially designed for multimedia outcomes, supported by an enormous base of data and images that can be used for many different studies. The analysis of the damages caused by plant infestation and environmental pollution on buildings and monuments, necessary to plan the most appropriate conservation and restoration activities, is such a one, and Villa Manin di Passariano is a perfect case study. Here the opportunity and necessity of interdisciplinary collaboration of specialists in various fields was stressed by the teachers, but was self-evident. In the case of *KeyToNature*, biologists worked together with professionals in pedagogy, education and information technology to develop new identification tools available on a variety of platforms, including laptops and mobile phones, for use within schools and universities as well as for the nonspecialist; but biologists and other experts in environmental sciences have to collaborate with art historians, architects, engineers, restorers to take action for the preservation of *Cultural Heritage*.

Most participants in the School seem to have assimilated the importance of linking science and dissemination, of making people outside the academic world fully aware of the richness of local, national and transnational *Cultural Heritage*, tangible and intangible, as well as of the big challenges issued by the protection of *Cultural* and the indissolubly intertwined *Natural Heritage*. Most participants also recognize the value of all ICT tools, in addition to more traditional ones. These topics are in fact often present in their projects. Interdisciplinarity is somehow less visible. A clue to understand this apparent lack could be found in certain answers to the questionnaire submitted to the attendees, where emphasis was put on the difficulty of collaborating, just for few days, with persons not known till the beginning of the School, and whose field of study was quite distant. This perceived difficulty should stimulate an in-depth analysis for the future: are certain fields – such as archaeology, for instance – more intrinsically open to interdisciplinary work? how to combine interdisciplinarity with specialization? when to introduce it in the students' educational path?

I believe that it could be interesting and fruitful to put these questions to the participants in the 2015 Dianet School – who had a task harder than that of their predecessors, as their projects had to be built according to the contents

3 www.keytonature.eu/wiki/

of the Horizon 2020 new calls – to the colleagues who gave lectures and presentations, to the facilitators and the staff members.

Even if this were not possible, I am sure that we all have gained some benefit from the time spent together during the 2015 edition of the School. Consequently, also on behalf of the Director, prof. Marco Dogo, I want to thank them all for their contribution, and to thank in particular Stefano Brumat for his unique cordiality, helpfulness and competence, without which the last edition of the Dianet School, as well as the previous ones, could not have been realized as successfully as it was.

Concluding remarks on the DIAnet International School project

Mr. Stefano Brumat
University of Trieste
Project Administrator of Danube:Future

The project cycle of the DIAnet schools on sustainable development in the Danube Region has concluded with this edition on the "Role of Cultural Heritage", a thematic issue which was addressed with an interdisciplinary approach.

The Danube plays an important role in climate-friendly trans-European network development. Its sustainable future depends on sound knowledge about the past. European research and higher education funds do not generally foster interdisciplinary cooperation. Therefore, the humanities have not been stimulated to bring their expertise into the interdisciplinary portfolio of knowledge, which is necessary for the transition to sustainability. Danube:Future[1] aims at developing interdisciplinary research and education in the Danube River Basin (DRB) simultaneously accounting for the solution of pressing environmental issues and a sustainable future of the region. If a new type of interdisciplinary methods and approaches, driven by humanities, is used, changes of biodiversity, sediment mobility, soils, climate, precipitation, discharge patterns and water quality can be studied in combination with studies of changes in governance, or in the social, economic and legal context, which will enable

1 More details on the project on this link: www.danubefuture.eu/project

us to develop policies for a sustainable development of the Danube River Basin. The multi-lingualism of the DRB is a major challenge for which solutions have to be developed.

The Danube, as the most international river basin in the world, offers an excellent possibility for designing interdisciplinary projects. Danube:Future is expected to play a pioneering role in European research programs, especially in Central, Southeastern and Eastern Europe. A comparative perspective with other river basins (e.g. Po, Seine, Rhone) brings knowledge and methodological skills from existing research teams into the project.

The DIAnet international schools offer a unique learning environment. Young researchers from all Danube Rectors' Conference (DRC) and Alps Adriatic Rectors' Conference (AARC) universities, involved in the sustainable development of the Danube River Basin with particular emphasis on the roles of natural and cultural heritage, are trained to apply for funding in competitive programs in the wide field of inter- and transdisciplinary sustainability studies.

The DIAnet International Schools envisage achieving the following results:

1) promotion of mutual understanding between the participants from the universities of the AARC and DRC networks, with the aim of strengthening cooperation between regions and neighboring states;

2) a lasting effect on research and teaching of science within the network, bringing young scholars to the international research community;

3) new routes based on interdisciplinary studies.

As we have come to the end of this three-year project, it is time for summing up[2].

- 94 young researchers (PhDs, early Post-doc researchers) from 26 DRC and AARC member universities and 75 teachers were involved altogether;

- 3 students attended all three School editions and 12 took part in two of them;

- 18 project proposals were delivered, all thematically relevant.

2 The reports of each edition are available on this link: www.danubefuture.eu/reports.

As a follow-up of the Schools, several participants started cooperation actions (one project application, joint publications) and some others attended the "First Danube:Future workshop" in Klagenfurt in April 2015 contributing to the "*White Paper on the research and capacity building needs of the Danube Region*"[3].

Taking into account the three editions, we can summarize both positive and negative aspects of the project[4].

As for its **strengths**, the School benefited from the internationality of the participants and from their broad disciplinary background and experiences in interdisciplinary work. Offering a wide field of topics and opening the School to participants from all scientific fields and countries from the Danube Region has provided the chance to foster international and interdisciplinary cooperation. The participants' feedback clearly demonstrated that this is an asset of the DIAnet schools. The lectures addressed important topics in sustainability, natural and cultural heritage, focused on the Danube River Basin. The different types and blending of training methods (lectures, excursions, group work, and presentations) were appropriate to stimulate discussions among the participants and within the groups. The organization of the schedule, with lectures and excursions in the first part of the school and group work in the second part, proved to be effective towards achieving the School results.

The working group sessions motivated participants to discuss sustainability problems and to develop joint projects. The use of strategic documents such as Horizon 2020 (and related calls) or the Danube River Basin Management Plan (ICPDR), as the basis for the projects was helpful for the working groups and led to draft proposals which have a chance of being developed into full proposals. Furthermore, the work of the facilitators from the universities of Alpen Adria Klagenfurt, BOKU Vienna and Novi Sad throughout all the editions helped the participants in developing project ideas. Detailed instructions for group work were provided: "Handout for group work", "EU funds overview" and lessons on Project Cycle Management, were delivered to enable less experienced participants to get familiar with the targets.

Of course, there is still room for improvement. A few **weaknesses** were mentioned by participants in their responses to the questionnaires. The workload was deemed too high: the program covered 10 days from Saturday afternoon until Monday morning. The most challenging factor was the number of indoor activities. Some participants would have liked to be involved in the group formation pointing out the difficulty in working with people from such different research fields, as groups were formed beforehand by the organ-

3 Document available on www.danubefuture.eu/documents.

4 Full details on the SWOT analysis are available in the reports of each edition.

izers who focused especially on forming mixed groups of participants with different levels of experience (PhD and Post-Doc students), of different nationalities and from different disciplines. Some participants also found that lectures were sometimes too general and that they provided not enough information on existing projects or best practices to be used as examples during their group work.

Why should we organize new editions of the International School? After successfully completing this project, we are convinced that this kind of training school offers **chances** for young researchers. First of all, Danube:Future is a joint cooperation of the DRC and the AARC, providing access to the largest institutionalized pool of young researchers and PhD-students in the biggest EU macro-region. The flagship project Danube:Future can contribute to several priority areas of EUSDR because it engages with research in intermodality, sustainable energy, culture, tourism, protecting the environment, etc. By offering experience in interdisciplinary group work, the International Schools engage with capacity building in a crucial area and at a crucial moment. By mapping the EUSDR challenges onto the Grand Challenges of Horizon 2020, schools contribute to the preparation and workability of Horizon 2020. This is a unique opportunity to learn and interact in interdisciplinary groups with high-level international skills.

In general, training in developing business ideas should be considered as a standard tool. The proposal of the incubator BUILD! in Klagenfurt (Austria) to participate in the Danube:Future international school with a "Business Model Canvas workshop" is a relevant idea to test the proposed Danube:Future approach with a limited financial risk. If successful, this could become a standard tool for the follow-up activities of the School.

The future organizers have also to take into account possible **threats** For building an interdisciplinary school, several lectures covering different research fields must be part of the agenda. This may lead – in some participants' opinions - to an excess of lectures and too long a duration of the School. However, one can trust that young researchers are motivated to participate in the schools and to use this opportunity for their future careers. This aspect should be highlighted and adequately explained before the start of the schools.

Finally, we must take into consideration the follow-up actions. The School aims at training young researchers in building interdisciplinary projects. It is clear that – usually at the start of their career – they cannot apply for European projects on their own. Therefore, their universities should support them in further enhancing their project ideas and finalizing the proposals they have developed during the School.

This is why the Core partners would like to organize further editions of the DIAnet School for the next years. Although the schedule is not yet finalized, the DIS for 2016 is being planned with future editions in mind which will hopefully provide young researchers of the Danube Region with a highly rewarding learning experience and professional opportunities.

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The 2015 DIAnet International School (DIS) was the last of three editions and was held in Gorizia (Italy) in March 2015. The project cycle of the DIAnet schools on sustainable development in the Danube Region has finally concluded with this edition on the "Role of Cultural Heritage", a thematic issue which has been addressed with an interdisciplinary approach. Ten countries of the Danube region were represented by 39 participants from 16 Universities. During the School, training was ensured through a blend of lectures, excursions and project group work. The Welcome Ceremony opened with the address by the Rector of the University of Trieste, followed by the Deputy-Mayor of Gorizia.

These Proceedings include the presentations on "*War, colonization and trade in the Danube Basin in the modern era: some sustainability-related issues*" by Prof. Marco Dogo, the School Director, and "*The Role of Cultural Heritage in the Danube River Basin*" by Prof. Verena Winiwarter, the Danube:Future Project Coordinator. Six project ideas were drafted by the School participants with the assistance of two facilitators from the University of Novi Sad, the leading partner. A final evaluation of the event by Prof. Manuela Montagnari, the School Deputy-Director, can be found at the end of this book as well as some final considerations concerning the results and achievements of the three-year project.

The DIAnet International School is part of the Capacity Building Module of Danube:Future – *A sustainable future for the Danube River Basin as a challenge for interdisciplinary humanities*, a Flagship project of EUSDR PA7 – Knowledge Society.

Stefano BRUMAT

He is the Project Administrator of the Danube:Future project and organizer of the DIAnet International Schools. Since 2009, he works at the University of Trieste where he currently attends to the development and management of EU-financed regional and transnational projects.

Danube:Future
capacity building

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